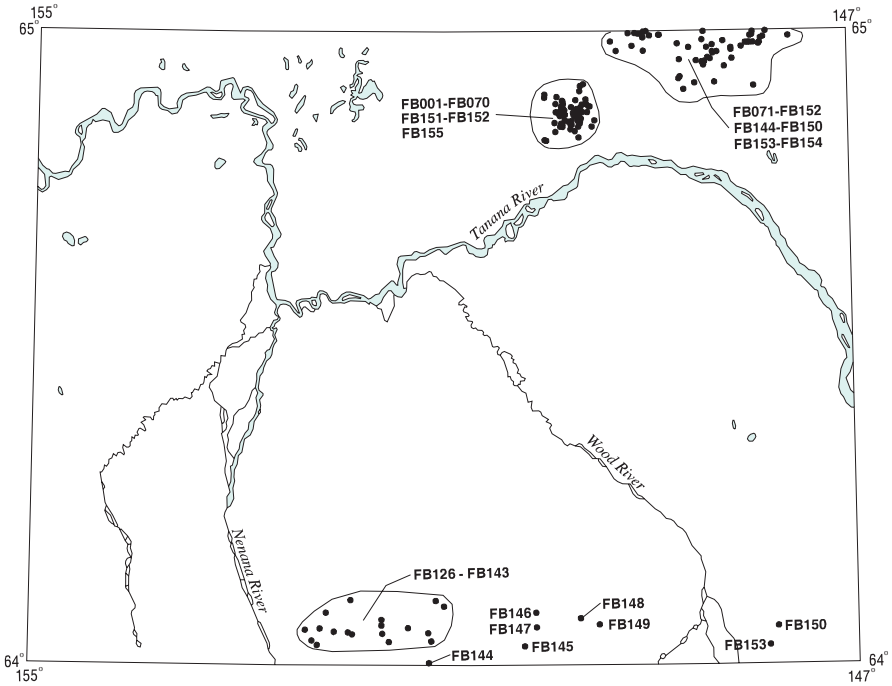
Alaska Resource Data File

Fairbanks quadrangle

Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences throughout Alaska.



Distribution of mineral occurrences in the Fairbanks 1:250,000-scale quadrangle, Alaska

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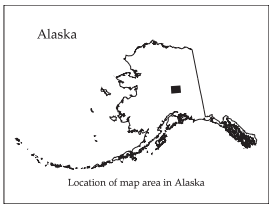
Curtis J. Freeman and Janet Schaefer
Fairbanks, Alaska



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OPEN-FILE REPORT 01-426

Site name(s): Nugget Creek

Site type: Mine

ARDF no.: FB001

Latitude: 64.901 **Quadrangle:** FB D-3

Longitude: 148.125

Location description and accuracy:

The Nugget Creek mine is located in the NE1/4 sec. 22, T. 1 N., R. 3 W., Fairbanks Meridian. The placer tailings are marked on the Fairbanks D-3 topographic map. The mine is about one mile south of the junction of Goldstream Creek and Nugget Creek and about 2.5 miles northwest of the top of Ester Dome. This mine is locality 46 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The rocks in the vicinity of Nugget Creek are quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). There are several Cretaceous dikes in the headwaters, as well as a unit of amphibolite, magnetite-rich biotite schist, quartzose schist and marble. Gold was mined from stream placers in 1938, 1939 and 1940 (Smith, 1939 [B 917-A]; Smith, 1941; Smith, 1942).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Placer mining was reported in 1938, 1939 and 1940 (Smith, 1939 [B 917-A]; Smith, 1941; Smith, 1942.

Production notes:

There is no record of the amount of gold produced from placer mining that took place in 1938, 1939 and 1940 (Smith, 1939, B 917-A; Smith, 1941; Smith, 1942).

Reserves:

Additional comments:

References:

Smith, 1939 (B 917-A); Smith, 1941; Smith, 1942; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Mother; Murphy; Stipp, Logan and Murphy

Site type: Prospect

ARDF no.: FB002

Latitude: 64.896 **Quadrangle:** FB D-3

Longitude: 148.126

Location description and accuracy:

The Mother prospect is located in the SW1/4SE1/4 sec. 22, T. 1 N., R. 3 W., Fairbanks Meridian. The prospect is on a ledge just east of the west fork of Nugget Creek. The prospect is about 2.4 miles northwest of the top of Ester Dome and at an elevation of about 1,200 feet. The prospect is locality 1 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Brecciated, iron-stained quartz and silicified schist assayed $0.46 gold per ton (0.022 ounce of gold per ton) (Hill, 1933, p. 122). At the creek level, the vein structure is approximately 20 feet wide. In a cut near the top of the ridge a quarter of a mile east of the creek, a vein consisted of 10 feet of quartz breccia on the north wall and 10 feet of bluish clay with quartz fragments above the south wall. The quartz next to the north wall showed evidence of mineralization and was reported to average $20 of gold per ton (0.97 ounce of gold per ton) in a small area where the upper work was being done (Hill, 1933, p. 122). The clay and quartz carried only a few cents in gold per ton. Some pieces of high-grade quartz with free gold were noted (Hill, 1933, p. 122).

Alteration:

Quartz is brecciated and iron-stained, and schist is silicified (Hill, 1933).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

By 1931, development at this prospect included several open cuts and three tunnels; one was near the creek level and two were near the crest of the ridge to the east. All were caved at the time of Hill's visit (Hill, 1933, p. 121).

Production notes:

Reserves:

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Lookout; Turnbarge

Site type: Mine

ARDF no.: FB003

Latitude: 64.829 **Quadrangle:** FB D-3

Longitude: 148.125

Location description and accuracy:
The Lookout mine is located in the SW1/4NE1/4 sec. 15, T. 1 S., R. 3 W., Fairbanks Meridian. This mine is on the west bank of Emma Creek at an elevation of approximately 1,000 feet. It is approximately 3 miles west-southwest of the town of Ester. This mine is locality 2 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Gold was produced from a 6-foot-wide, auriferous, leucocratic dike that cuts a north-east-trending vein (Chapman and Foster, 1969, p. D19). The gold ranges from 685 to 756 fine (Glover, 1950). Bedrock is Fairbanks Schist consisting of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Gold in leucocratic dike

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Gold ore was reportedly mined from a 6-foot-wide dike but the workings were not described (Chapman and Foster, 1969, p. D19).

Production notes:

An unknown amount of gold was produced from a 6-foot-wide auriferous dike (Chapman and Foster, 1969, p. D19).

Reserves:

Additional comments:

References:

Glover, 1950; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapman and Foster, 1969

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Emma Creek

Site type: Prospect

ARDF no.: FB004

Latitude: 64.828 **Quadrangle:** FB D-3

Longitude: 148.119

Location description and accuracy:

The Emma Creek prospect is located in the NE1/4SE1/4 sec. 15, T. 1 S., R. 3 W., Fairbanks Meridian. This prospect is approximately 1 mile upstream from the mouth of Emma Creek in the vicinity of the Lookout mine (FB003); it is about 3 miles west-southwest of the town of Ester. The prospect is locality 43 of Cobb (1972 [MF 410]).

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:

Emma Creek is a tributary of Alder Creek and drains an area of Fairbanks Schist that is composed of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Ellsworth and Parker (1911, p. 158), indicated that there may have been a little mining in 1910. It is unclear what kind of mining, lode or placer. It is assumed, but not known, that the commodity was gold. The Lookout gold mine (FB003) is located upstream, about 1,000 feet west-northwest of this prospect; here gold was produced from a 6-foot wide, auriferous leucocratic dike that cuts a northeast-trending vein (Chapman and Foster, 1969, p. D19).

Alteration:

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

Ellsworth and Parker (1911, p. 158) indicated that there may have been a little mining in 1910.

Production notes:

Reserves:

Additional comments:

References:

Ellsworth and Parker, 1911; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Ellsworth and Parker, 1911

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Lepsoe

Site type: Prospect

ARDF no.: FB005

Latitude: 64.897 **Quadrangle:** FB D-3

Longitude: 148.08

Location description and accuracy:
The Lepsoe prospect is at an elevation of 1,600 to 1,800 feet along the ridge northeast of Nugget Creek (Hill, 1933, p. 152). It is approximately 1.5 miles north-northwest of the top of Ester Dome, in the SW1/4 sec. 24, T. 1 N., R. 3 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Claims were staked on a 20-foot-wide quartz vein that strikes N. 40 W. and parallels a granite porphyry dike (Hill, 1933, p. 152). The Cretaceous granite has intruded the Fairbanks Schist, which is composed of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:
Associated with a Cretaceous granite porphyry dike.

Deposit model:
Gold-quartz vein associated with a granite porphyry dike

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

Two claims were staked prior to 1933, but very little work was done (Hill, 1933, p. 152).

Production notes:

Reserves:

Additional comments:

In 1933, the claims were owned by Helbarth Lepsoe (Hill, 1933, p. 152).

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Blue Bonanza; Midnight Sun

Site type: Mine

ARDF no.: FB006

Latitude: 64.891 **Quadrangle:** FB D-3

Longitude: 148.06

Location description and accuracy:

The Blue Bonanza mine is located in the NW1/4NE1/4 sec. 25, T. 1 N., R. 3 W., Fairbanks Meridian. This mine is on the divide between Sheep Creek and Nugget Creek at an elevation of about 1,900 feet. It is about 0.7 mile north of the top of Ester Dome. The mine is locality 8 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Ag, Pb, Sb

Ore minerals: Arsenopyrite, galena, gold, stibnite, tetrahedrite

Gangue minerals: Quartz

Geologic description:

Ore was mined from a rich quartz vein that was 18 inches thick at the surface and narrowed with depth. Two periods of vein formation have been described. The older quartz is crushed and has cavities, whereas the younger quartz has glassy crystals and is banded parallel to walls (Smith, 1913 [B 525]). Gold is visible both near and remote from sulfides. The sulfides are galena, pyrite, and some stibnite; considerable silver is present in tetrahedrite. By 1914, a shaft was driven to a depth of 130 feet; however, the richest ore was concentrated in a zone 12 to 15 feet below the surface (Chapin, 1914 [B 592-J, p. 321-355]). Hill (1933) described a quartz vein on the property as being 5 to 6 inches wide and oriented N. 10 W., dipping 65 E. A grab sample from the dump contained $9.22 of gold per ton (0.45 ounce of gold per ton) (Hill, 1933).

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

The mine was developed by a 35-degree inclined shaft at least 30 feet deep; the richest ore was concentrated in a zone 12 to 15 feet below the surface (Chapin, 1914 [B 592-J, p. 321-355]).

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapin, 1914 (B 592-J, p. 321-355); Hill, 1933; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Parker

Site type: Occurrence

ARDF no.: FB007

Latitude: 64.89 **Quadrangle:** FB D-3

Longitude: 148.058

Location description and accuracy:
This occurrence is approximately three-quarters of a mile north of Ester Dome, on the saddle between Nugget Creek and Sheep Creek in the NW1/4NE1/4 sec. 25, T. 1 N., R. 3 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
This occurrence consists of an irregular, 1- to 6-inch-thick, gold-bearing quartz vein oriented N. 15 E., dipping 55 W. (Chapman and Foster, 1969, p. D19; Stewart, 1933, p. 145). The quartz is coarsely crystalline and contains small amounts of metallic sulfides (Stewart, 1933, p. 145). Bedrock in this area, on the northern flanks of Ester Dome, consists of two units of the Fairbanks Schist: a quartz-muscovite schist and an amphibolite-biotite schist (Newberrry and others, 1996). The vein was developed by a number of open cuts and by a 70-foot-deep inclined shaft (Stewart, 1933, p. 145).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

The Parker vein was developed by a number of open cuts and by a 70-foot-deep inclined shaft (Stewart, 1933, p. 145). In 1933, drifting along the vein began, both to the north and south, on the 50-foot level below the shaft (Stewart, 1933, p. 145).

Production notes:

Reserves:

Additional comments:

Also see the Blue Bonanza mine (FB006).

References:

Stewart, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Stewart, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Sanford; Lone Tree

Site type: Mine

ARDF no.: FB008

Latitude: 64.892 **Quadrangle:** FB D-3

Longitude: 148.01

Location description and accuracy:

The Sanford mine is located in the NW1/4 sec. 29, T. 1 N., R. 2 W., Fairbanks Meridian, at an elevation of 1,550 feet on the summit of the ridge between Sheep Creek and Happy Creek. The location is marked on the Fairbanks D-3 topographic map; it is about 1.3 miles northeast of the top of Ester Dome. The mine is locality 12 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Sanford mine is on a ridge near the contact of biotite schist of the Muskox sequence with bleached feldspathic, quartzose schist and quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist (Newberry and others, 1996). Gold was mined from a quartz vein that strikes N. 40 E. and dips 45 SE. By 1931, about 150 tons of ore that yielded $6,700 in gold (about 324 ounces of gold) was milled from the property (Hill, 1933, p. 149). Part of this ore was said to have had an average grade of $52 in gold per ton (2.42 ounces of gold per ton) (Hill, 1933, p. 149). The shaft on the vein was 150 feet deep in 1931. About 30 feet east of the main shaft, some high-grade ore in a vertical vein was explored by several suface pits.

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

James Hill (1933, p. 149) made a visit to the property in 1931, and the following is a summary of his observations. A 105-foot shaft was sunk on the dip of a vein oriented N. 40 E., 45 SE. From the surface to a depth of 20 feet, the vein had been stoped both north and south of the shaft. There was a 65-foot drift to the south at the 20-foot level of the shaft and a 60-foot drift to the south on the 65-foot level. All the ore above the 65-foot level had been stoped. Some high-grade ore in a vertical vein striking N. 20 E. was explored by several suface pits about 30 feet east of the main shaft.

Production notes:

By 1931, about 150 tons of ore that yielded $6,700 in gold (about 324 ounces) was milled from the property (Hill, 1933, p. 149).

Reserves:

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Rogach

Site type: Prospects

ARDF no.: FB009

Latitude: 64.886 **Quadrangle:** FB D-3

Longitude: 148.084

Location description and accuracy:
The Rogach prospect pits is at an elevation of about 1,130 feet between the two forks at the head of Nugget Creek. It is about one mile northwest of the top of Ester Dome, in the SE1/4NE1/4 sec. 26, T. 1 N., R. 3 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Several rock units are within the area prospected for gold by John Rogach. Cretaceous dikes have intruded the Fairbanks Schist, which is composed of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Amphibolite, marble, and biotite schist are also found in the area around the Rogach prospects at the head of Nugget Creek. In the fall of 1938, the workings at the prospect consisted of pits and shallow shafts (Reed, 1938, p. 5).

Alteration:

Age of mineralization:

Deposit model:
Gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

In the fall of 1938, the workings at the prospect consisted of pits and shallow shafts (Reed, 1938, p. 5).

Production notes:

Reserves:

Additional comments:

References:

Reed, 1938; Chapman and Foster, 1969; Newberry and others, 1996.

Primary reference: Reed, 1938

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Flagler

Site type: Prospect

ARDF no.: FB010

Latitude: 64.886 **Quadrangle:** FB D-3

Longitude: 148.056

Location description and accuracy:

The Flagler prospect is at an elevation of about 2,000 feet in the NE1/4SE1/4 sec. 25, T. 1 N., R. 3 W., Fairbanks Meridian. It is about 0.5 mile north of the top of Ester Dome. This prospect is not named in the text of Smith (1913 [B 525, p. 197-198]); however, it is labeled as the Flagler Prospects on figure 20, p. 204.

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:

A large body of mineralized quartz was explored by an open cut and a 12-foot inclined shaft (Smith, 1913 [B 525, p. 197]). The quartz vein trends north and dips 45 degrees east. Near a nearby pinnacle, more or less lens-shaped masses of quartz, some over 6 feet in diameter, are exposed in a zone oriented north-south (Smith, 1913 [B 525, p. 197]). Smith described this quartz as compact, little shattered, glassy, and not very promising.

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

The prospect was explored by an open cut and inclined shaft about 12 feet deep (Smith, 1913 [B 525, p. 197]).

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542-F); Chapin, 1914 (B 592-J, p. 321-355); Chapman and Foster, 1969; Cobb, 1976 (OFR 76-662).

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Rhyolite

Site type: Prospect

ARDF no.: FB011

Latitude: 64.882 **Quadrangle:** FB D-3

Longitude: 148.063

Location description and accuracy:

The Rhyolite prospect is located on the north side of Ester Dome at the head of Nugget Creek. It is about 2,000 feet north of the top of Ester Dome, in the SE1/4 sec. 25, T. 1 N., R. 3 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Rhyolite prospect occurs in Fairbanks Schist and is associated with a mafic sill cut by two megascopic faults (Rogers and others, 1998). The Fairbanks Schist in the area is composed of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Soil samples collected from 1990 to 1992 contain gold values in excess of 100 ppb gold. In 1998, drilling by Placer Dome Exploration, Inc., encountered gold intercepts as high as 2.66 ounces of gold per ton over 19.7 feet (Szumigala and Swainbank, 1999, p. 9). The high-grade gold mineralization is associated with a flat-lying fault (Rogers and others, 1998).

Alteration:

Supergene alteration is attributed to weathering. Hydrothermal alteration includes pervasive cross-cutting sericitic and silicic alteration and stockworks of quartz-sericite-sulfide veins spatially associated with megascopic and smaller scale, pre-existing brittle structures (Rogers and others, 1998).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

From 1990 to 1992, American Copper and Nickel Co. collected soil samples, conducted an IP/resistivity geophysical survey, and drilled four core holes (Rogers and others, 1998). Placer Dome Exploration, Inc., drilled the Rhyolite prospect in 1998.

Production notes:

Reserves:

Additional comments:

References:

Newberry and others, 1996; Rogers and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Rogers and others, 1998

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Michley

Site type: Mine

ARDF no.: FB012

Latitude: 64.881 **Quadrangle:** FB D-3

Longitude: 148.026

Location description and accuracy:

The Michley mine is located in the SE1/4SW1/4 sec. 30, T. 1 N., R. 2 W., Fairbanks Meridian. This mine is at an elevation of about 1,560 feet in the head of Sheep Creek. It is about 0.8 mile east of the top of Ester Dome. This mine is locality 13 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

By 1931, a 200-foot crosscut was driven S. 75 E. into the hill through flat-lying quartz-mica schist (Hill, 1933, p. 149). Several narrow quartz veinlets with north-south strikes and steep dips either to the east or west are exposed in the tunnel. The quartz is milky white and does not appear to carry many sulfides. About 155 feet from the mouth of the tunnel, short drifts to both the north and south follow a vein that is oriented N. 4 W., dipping 60 E. near the the crosscut, but is nearly vertical in the face of the south drift. The vein is generally composed of white quartz about 2 inches thick; but in one zone, the white quartz is 12 inches thick with 4 to 6 inches of gouge surrounding it. The ore from a small stope just north of the crosscut is said to have returned approximately $10 of gold per ton (0.48 ounce of gold per ton) (Hill, 1933, p. 149).

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

By 1931, a 200-foot crosscut was driven S. 75 E. into the hill (Hill, 1933, p. 149). About 155 feet from the mouth of the tunnel, short drifts to both the north and south follow a vein that is oriented N. 4 W., dipping 60 E. near the the crosscut, but is nearly vertical at the face of the south drift.

Production notes:

Ore from a small stope is said to have returned approximately $10 of gold per ton (0.48 ounce of gold per ton) (Hill, 1933, p. 149).

Reserves:

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Farmer

Site type: Prospect

ARDF no.: FB013

Latitude: 64.879 **Quadrangle:** FB D-3

Longitude: 148.057

Location description and accuracy:
The Farmer prospect is about 800 feet west-southwest of the bench mark on top of Ester Dome. It is along the ridge that trends southwest from the top of Ester Dome, in the SE1/4 sec. 25, T. 1 N., R. 3 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
In 1913, the vein was exposed in an inclined shaft about 15 feet deep (Smith, 1913 [B 525, p. 198]). The Farmer vein is lens shaped, trends north-south, and dips about 40 E. The vein contains visible gold, cuts schist, and is in turn cut by numerous small faults. Pyrite is the most common sulfide, but it is not abundant. The bedrock at the top of Ester Dome is bleached, feldspathic, quartzose schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

In 1913, a vein was exposed in an inclined shaft about 15 feet deep (Smith, 1913 [B 525, p. 198]).

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Chapman and Foster, 1969; Newberry and others, 1996.

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (southeast Ester Dome)

Site type: Prospect

ARDF no.: FB014

Latitude: 64.876 **Quadrangle:** FB D-3

Longitude: 148.063

Location description and accuracy:
This unnamed prospect is located in the SE1/4NW1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. It is located on the ridge about 0.4 mile southwest of the top of Ester Dome. This prospect is included in locality 4 of Cobb (1971 [MF 410]).

Commodities:

Main: Sb

Other:

Ore minerals: Stibnite

Gangue minerals:

Geologic description:
Stibnite occurs in a 2- to 3-foot-wide quartz vein that strikes N. 60 E. in mica-quartz schist (Brooks, 1916 [B 649, p. 41]).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
Brooks (1916 [B 649, p. 41]) reported that a 75-foot cut was caved when visited by Prindle in 1908.

Production notes:

Reserves:

Additional comments:

References:

Brooks, 1916 (B 649); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Brooks, 1916 (B 649)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Farmer

Site type: Mine

ARDF no.: FB015

Latitude: 64.876 **Quadrangle:** FB D-3

Longitude: 148.051

Location description and accuracy:
The Farmer mine is located in the NE1/4NE1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. The workings are at an elevation of about 1,900 feet near the head of the west fork of Ready Bullion Creek. This mine is locality 9 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals: Pyrite

Geologic description:
Visible gold and pyrite occur in a north-trending, apparently lenticular vein in schist (Smith, 1913 [B 525 p. 198]). The schist dips 40 degrees east and is cut by many small faults. The vein is oriented N. 25 E., 52 W. and has a hanging wall of quartz-mica schist (Hill, 1933). Below the hanging wall, there is 4 inches of iron-stained quartz, followed by 14 inches of crushed, bluish schist, followed by 2 feet of iron-stained fault breccia made up of fragments of schist and quartz (Hill, 1933, p. 122-123). A sample taken across 4 feet assayed $7.06 in gold per ton (0.34 ounce of gold per ton) (Hill, 1933, p. 123). By 1914, an inclined shaft had been sunk 60 feet on the vein, but the work was abandoned because the results were not encouraging (Chapin, 1914 [B 592-J, p. 352]).

Alteration:
Below the hanging wall, there is 4 inches of iron-stained quartz, followed by 14 inches of crushed, bluish schist, followed by 2 feet of iron-stained fault breccia made up of fragments of schist and quartz (Hill, 1933, p. 122-123).

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

By 1914, an inclined shaft had been sunk 60 feet on the vein but the work was abandoned because the results were not encouraging (Chapin, 1914 [B 592-J, p. 352]).

Production notes:

There is no record of the amount of gold that was produced.

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapin, 1914 (B 592-J, p. 352); Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): McQueen

Site type: Prospect

ARDF no.: FB016

Latitude: 64.873 **Quadrangle:** FB D-3

Longitude: 148.083

Location description and accuracy:

The McQueen prospect is located in the NE1/4 sec. 35 and NW1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. This prospect is at an elevation of about 1910 feet and is about 0.8 mile west-southwest of Ester Dome.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

In the 1990's the McQueen prospect was investigated for its gold potential. Previously, stibnite had been mined nearby (FB017). In 1990 and 1992, American Copper and Nickel Co. conducted soil sampling that defined a area that was nomalous in gold approximately 300 meters long; the values varied from 250 to 500 ppb gold. Additional soil sampling in the area revealed that this prospect is part of a northeast-trending soil anomaly that extends from the Irad prospect (FB045) to the headwaters of Sheep Creek (Rogers and others, 1998). Drilling by Placer Dome Exploration, Inc., in 1998 confirmed that the gold anomaly is related to a northeast-striking, high-angle fault that localizes the gold mineralization (Rogers and others, 1998).

Bedrock at this site is Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Supergene alteration is attributed to weathering. Hydrothermal alteration includes pervasive cross-cutting sericitic and silicic alteration and stockworks of quartz-sericite-sulfide veins spatially associated with megascopic and smaller scale pre-existing brittle structures (Rogers and others, 1998).

Alteration:

Supergene alteration is attributed to weathering. Hydrothermal alteration includes pervasive cross-cutting sericitic and silicic alteration and stockworks of quartz-sericite-sulfide veins spatially associated with megascopic and smaller scale pre-existing brittle

structures (Rogers and others, 1998).

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
From 1990 to 1992, American Copper and Nickel Co. (ACNC) collected soil samples at the prospect and defined an area of anomalous gold about 300 meters long. Airborne geophysical surveys were conducted by the State of Alaska and by ACNC. In 1998, Placer Dome Exploration, Inc., conducted a ground-based magnetic geophysical survey; VLF data was also collected. Two core holes and one trench were also completed by Placer Dome.

Production notes:

Reserves:

Additional comments:

References:
Brooks, 1916 (B 642); Brooks, 1916 (B 649); Chapin, 1919; Hill, 1933; Ebbly and Wright, 1948; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996; Rogers and others, 1998.

Primary reference: Rogers and others, 1998

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Jennie C.; McQueen; Black Diamond

Site type: Mine

ARDF no.: FB017

Latitude: 64.873 **Quadrangle:** FB D-3

Longitude: 148.073

Location description and accuracy:

The Jennie C. mine is located in the SE1/4NW1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. The McQueen mine is on the ridge about 0.8 mile southwest of the top of Ester Dome along the road that extends southwest from the top of Ester Dome. This antimony-bearing lode was staked by R.W. McQueen in 1915, and the claim was located under the name of Jennie C. (Brooks, 1916 [B 649, p. 40]). Hill (1933, p. 157) refers to this mine as the McQueen property. Cobb (1976 [OFR 76-662, p. 163]) lists Black Diamond as another name used for the prospect. This mine is included in locality 4 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other:

Ore minerals: Stibnite

Gangue minerals:

Geologic description:

By 1915, a small pit had been dug on the prospect that exposed iron-stained quartz with stibnite in shoots and kidneys (Brooks, 1916 [B 649, p. 40-41]). The ore body strikes N. 50-70 W. and dips to the north (Brooks, 1916 [B 649]). The bedrock is Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Chapin (1919, p. 323) reported that the lode consisted of nearly solid stibnite with a little quartz. One sample from the ore dump contained 28.12 percent antimony (Killeen and Mertie, 1951, p. 12). A small amount of stibnite was mined during World War I when the workings consisted of two shafts and a tunnel (Killeen and Mertie, 1951).

Alteration:

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
In 1951, workings consisted of two shafts and a tunnel ((Killeen and Mertie, 1951).

Production notes:
A small amount of stibnite was mined during World War I (Killeen and Mertie, 1951).

Reserves:

Additional comments:

References:
Brooks, 1916 (B 642); Brooks, 1916 (B 649); Chapin, 1919; Hill, 1933; Ebbly and Wright, 1948; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Brooks, 1916 (B 642-A)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Barker and McQueen

Site type: Mine

ARDF no.: FB018

Latitude: 64.87 **Quadrangle:** FB D-3

Longitude: 148.071

Location description and accuracy:
The Baker and McQueen mine is located in the NE1/4SW1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. This mine is at an elevation of approximately 2,100 feet about 0.9 mile south-southwest of the top of Ester Dome. The mine is included in locality 4 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Gold occurs in a relatively sulfide-free quartz vein that trends northwest and dips steeply northeast (Smith, 1913 [B 525, p. 209]). By 1914, two shafts were sunk to a depth of 40 and 45 feet, and an incline was driven along a narrow stringer for 100 feet. Four tons of ore were mined and milled from these workings (Chapin, 1914 [B 592, p. 352-353]), but there is no record of recent activities.

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

By 1914, two shafts were sunk to a depth of 40 and 45 feet, and an incline was driven along a narrow stringer for 100 feet (Chapin, 1914 [B 592, p. 352-353]).

Production notes:

Four tons of ore were mined and milled from these workings (Chapin, 1914 [B 592-J, p. 352-353]) but there is no record of recent activities.

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapin, 1914 (B 592-J, p. 352-353); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-622).

Primary reference: Chapin, 1914 (B 592, p. 352-353)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Vuyovich

Site type: Mine

ARDF no.: FB019

Latitude: 64.869 **Quadrangle:** FB D-3

Longitude: 148.049

Location description and accuracy:

The Vuyovich mine is located in the NE1/4SE1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. This mine is near the head of Ready Bullion Creek. It is on the east side of the drainage at an elevation of about 1,250 feet and approximately 0.8 mile south of the top of Ester Dome. This mine is locality 9 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Gold

Gangue minerals: Arsenopyrite

Geologic description:

A narrow, auriferous quartz vein that strikes N. 50 E. was explored by a 50- to 60-foot-long tunnel (Hill, 1933, p. 128). This vein, which has a maximum width of only 6 inches, was said to have yielded some very rich ore. Hill (1933, p. 128) described the ore on the dump as being iron-stained, crushed quartz, some of which contained free gold. Panning tests indicated considerable arsenopyrite and free gold.

Alteration:

Quartz is iron-stained.

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

A tunnel about 50 to 60- eet long was caved when visited by Hill in 1931 (Hill, 1933, p. 128).

Production notes:

There is no record of the production.

Reserves:

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Cottonblossom; St. Jude; Olsen

Site type: Prospect

ARDF no.: FB020

Latitude: 64.867 **Quadrangle:** FB D-3

Longitude: 148.068

Location description and accuracy:
The Cottonblossom prospect is located in the NW1/4 SE1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. This prospect is on the ridge between Ready Bullion Creek and Willow Creek. It is at an elevation of about 1,880 feet about 0.6 mile south-southwest of the top of Ester Dome. The prospect is included in locality 5 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Gold, stibnite

Gangue minerals:

Geologic description:
A mineralized zone near a fault plane contains auriferous quartz veins and pods of stibnite (Smith, 1913 [B 525]). (Chapin, 1914 [B 592-J, p. 321-355]) reported 100 feet of tunnel and crosscuts. The mineralized zone was explored by two shafts that trend N. 35 W.; dump materials consist of dark mica schist and very little quartz (Hill, 1933).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

Chapin (1914 [B 592-J, p. 321-355]) reported 100 feet of tunnel and crosscuts. Hill (1933) reported that by 1931 the mineralized zone was explored by two shafts oriented N. 35 W.

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapin, 1914 (B 592-J, p. 321-355); Brooks, 1916 (B 649); Hill, 1933; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Silver Dollar; Makaich; Radovich

Site type: Mine

ARDF no.: FB021

Latitude: 64.867 **Quadrangle:** FB D-3

Longitude: 148.054

Location description and accuracy:

The Silver Dollar mine is located in the NE1/4 SE1/4 sec. 36, T. 1 N., R. 3 W., Fairbanks Meridian. This mine is on the west side of Ready Bullion Creek; it is at an elevation of about 1,300 feet about 0.9 mile south of the top of Ester Dome. The mine is included in locality 5 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Gold has been mined from a quartz vein that strikes N. 30 E. and dips 68 SE (Hill, 1933, p. 127). This 5-foot-wide vein consists mainly of crushed quartz with some altered schist. A sample across the full width of the vein assayed $9.63 in gold per ton (about 0.46 ounce of gold per ton). When visited by Hill in 1931, there was about 10 tons of ore left on the dump, a grab sample of which assayed $74.76 in gold per ton (about 3.6 ounces of gold per ton). By 1931, about $4,000 worth of gold (about 193 ounces of gold) was mined from the shaft and tunnel at an elevation of about 1,300 feet or about 150 feet above the creek. Southwest of the upper tunnel there were several shallow shafts, all of which were caved when visited by Hill in 1931. For a discussion of the Silver Dollar/ Ready Bullion prospect explored in the 1990's by Placer Dome Exploration, Inc., see the Ready Bullion prospect (FB024).

Alteration:

Schist is altered.

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

By 1931, about $4,000 worth of gold (about 193.5 ounces) was mined from the shaft and tunnel, which are at an elevation of about 1,300 feet or about 150 feet above the creek (Hill, 1933, p. 127). Southwest of the upper tunnel there were several shallow shafts, all of which were caved when visited by Hill in 1931. A tunnel started from a point near the creek level was driven S. 65 W. for 515 feet (Hill, 1933, p. 128).

Production notes:

By 1931, about $4,000 worth of gold (about 193.5 ounces of gold) had been mined (Hill, 1933, p. 127).

Reserves:

Silverado Gold Mines, Ltd. reported a probable resource of 1,232,636 ounces of gold on their Ready Bullion/Silver Dollar property (Silverado Gold Mines, Ltd., Ester Dome project web site, February 17, 2000; http://www.silverado.com). This property includes this site and the Ready Bullion mine (FB024).

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Maloney

Site type: Prospect

ARDF no.: FB022

Latitude: 64.856 **Quadrangle:** FB D-3

Longitude: 148.088

Location description and accuracy:
The Maloney prospect is located in the SE1/4 sec. 2, T. 1 S., R. 3 W., Fairbanks Meridian. The Maloney shaft is located approximately one-half mile northwest of the junction of Willow and Ester Creeks; it is approximately 1.9 miles south-southwest of the top of Ester Dome. This prospect is locality 3 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other:

Ore minerals: Arsenopyrite, stibnite

Gangue minerals:

Geologic description:
A 90-foot shaft intersected a 12- to 14-foot-wide vein at a depth of 50 feet (Hill, 1933, p. 123). The vein strikes east-northeast and dips southeast. Material on the dump is mainly quartz schist; there is also some quartz that contains arsenopyrite and stibnite (Hill, 1933, p. 123).

Alteration:

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

The workings consisted of a 90-foot shaft that could not be entered when visited by Hill in 1931 (Hill, 1933, p. 123).

Production notes:

There is no record of the amount of production, if any.

Reserves:

Additional comments:

References:

Hill, 1933; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Hudson

Site type: Mine

ARDF no.: FB023

Latitude: 64.855 **Quadrangle:** FB D-3

Longitude: 148.063

Location description and accuracy:

The Hudson mine is at an elevation of about 1,500 feet and 0.4 mile north of the mouth of Moose Gulch and 1.5 miles west-northwest of the town of Ester. It is in the SW1/4 sec. 1, T. 1 S., R. 3 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Before 1913, most of the mining between Moose Gulch and Ready Bullion Creek, took place at an elevation of about 1,500 feet at the Hudson mine (Smith, 1913 [B 525, p. 203-206]). Smith reported that the rock in the shaft was mineralized; however, there was no well-defined lode. A fault plane was exposed on the east side of the shaft that showed well-marked striations and grooves that indicated multiple directions of movement. The bedrock is chloritic schist with numerous small quartz veins that cut the schist at high angles. In addition to the narrow quartz veins, there are larger masses of barren quartz. In a few places, the bedrock is quartzite that is stained brown with limonite, likely from the decomposition of sparsely disseminated pyrite. The richest ore in the mine occurs in narrow quartz stringers that intersect the country rock in various directions. Free gold occurs in these sulfide-free quartz stringers, with a greater concentration of gold near the walls rather than in the center of the veins. Although most of the gold occurs in these narrow quartz veins, numerous gold particles were panned from a sample of the country rock.

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Before 1913, most of the mining between Moose Gulch and Ready Bullion Creek, took place at an elevation of about 1,500 feet at the Hudson mine (Smith, 1913 [B 525, p. 203-206]). The original shaft was sunk at an elevation of about 1,500 feet but was soon abandoned and a new shaft was sunk a short distance above it. The original shaft was vertical to a depth of 40 feet; the dip of the deposit then flattened, and a 45 -egree incline was sunk to the northwest to a depth of about 94 feet. When visited by Smith in 1912, the lower part of the incline had caved.

Production notes:

There is no record of the amount of production, but there was some.

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Chapman and Foster, 1969.

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ready Bullion; Borovich and Stevens; Hudson

Site type: Mine

ARDF no.: FB024

Latitude: 64.854 **Quadrangle:** FB D-3

Longitude: 148.058

Location description and accuracy:

The Ready Bullion mine is located in the SE1/4 sec. 1, T. 1 S., R. 3 W., Fairbanks Meridian. This group of claims, centered at an elevation of about 1,100 feet, is on the hillside between Moose Gulch and Ready Bullion Creek, about 1.5 miles west-northwest of the town of Ester. The mill is located to the south at an elevation of about 800 feet just north of Ester Creek. The old underground workings are on the hillside above the mill at an elevation of 1,060 to 1,200 feet (Williams and Saunders, 1957). The mine is locality 10 of CObb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Antimony sulfosalts, arsenopyrite, gold, stibnite

Gangue minerals:

Geologic description:

Gold was mined from the Ready Bullion group of claims in 1912 and 1913, from 1926 to 1931, and in 1933 (Cobb, 1976 [OFR 76-662, p. 116]). The ore occurs in several veins and shear zones in mica schist and quartzite. The veins contain several varieties of quartz associated with gold, arsenopyrite, stibnite, and an antimony-lead sulfide (bournonite or boulangerite?) (Hill, 1933, p. 127). Visible gold is found in quartz stringers but nearby schist is also auriferous (Smith, 1913 [B 525]). Gold fineness of 682 and 819 was reported (Glover, 1950). Postmineral movement has been intense along the main vein; as a consequence, there is heavy clay gouge on the walls and in various places in the ore (Hill, 1933, p. 127). The main ore veins generally strike north and dip steeply to the east or south; the ore zones are as much as 20 feet wide (Hill, 1933, p. 126).

The main development consisted of two drifts that for the most part explored one zone of mineralization (Hill, 1933, p. 124). From surface workings it is evident that several other veins also exist. The upper tunnel was approximately 600 feet long with six crosscuts ranging from 20 to 100 feet in length. The 1,280-foot-long lower tunnel was 570 feet south of and 100 feet lower than the upper tunnel. Between the lower and upper tunnels,

a large stope was mined. The stope was 160 feet long and 40 feet wide on an 8-foot wide vein. This stope reportedly yielded about 3,600 tons of ore with an average grade of about $6.09 in gold per ton (about 0.29 ounce of gold per ton). Other samples taken from various veins throughout the workings of the lower tunnel ranged in grade from about 23 cents in gold per ton to $20 in gold per ton (about 0.01 to 0.97 ounce of gold per ton) (Hill, 1933).

In 1950, the property was explored by a number of prospect trenches which were excavated by bulldozer (Williams and Saunders, 1957, rev. 1964). Samples from these trenches contained gold values from trace amounts to 0.22 ounces of gold per ton and silver values from 0.24 to 1.44 ounces of silver per ton. In 1956, some additional bulldozing was done and four samples were taken. Gold values ranged from 0.01 to 14.10 ounces of gold per ton (Williams and Saunders, 1957). The sample with a gold value of 0.22 ounce of gold per ton came from an area of soft, dark blue schist, and also contained 28.57 percent antimony. The sample with a gold value of 14.10 ounces of gold per ton came from a vein that appeared to strike north and dip to the east.

Alteration:

Iron, manganese, arsenic, and antimony oxidation products are present everywhere from the surface to the maximum depth of the underground workings, 160 feet (Hill, 1933, p. 127).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

The following account of the workings at the Ready Bullion group of claims is taken from observations made by James Hill in 1931 (Hill, 1933, p. 123-127). In 1926, the Ready Bullion group of 18 claims was assembled by the Eva Quartz Mining Company and included a mine referred to in earlier reports as the Hudson mine (the Hudson mine is described separately in FB023). The main development consisted of two drift tunnels, one at an elevation of 1,000 feet on the Borovich claim and the other at 1,100 feet on the Hosanna claim. Trenching completed to the north of the tunnels indicated that the zone of mineralization likely extended the full length of the claim group and probably into the adjacent ground to the north. In 1931, high-grade ore in a vein to the east of the workings was discovered. By 1931, the upper tunnel had caved and could not be examined. The underground plans showed that it was approximately 600 feet long with six crosscuts rangng from 20 to 100 feet in length.

The mouth of the lower tunnel was 570 feet south of and 100 feet lower than the upper

tunnel. There was an ore bin with a capacity of about 25 tons at the end of the dump. The tunnel was equipped with 8-pound rails throughout its entire length of 1,280 feet. Most of the crosscuts in the ore zone were caved when visited in 1931. A fairly large zone was mined between the lower and upper tunnels. This stope was about 160 feet long and about 40 feet high on a vein about 8 feet wide. This stope reportedly yielded approximately 3,600 tons of ore that averaged $6.09 in gold per ton (about 0.29 ounce of gold per ton). Near the face of the upper tunnel, a small stope yielded a few hundred tons of ore averaging $11.84 in gold per ton (about 0.57 ounce of gold per ton) from a vein with an average width of 3 feet. Other samples taken from various veins in the workings of the lower tunnel ranged in value from about 23 cents in gold per ton to $20 in gold per ton (about 0.01 to 0.97 ounce of gold per ton).

In 1950, the property was examined by a number of prospect trenches excavated by bulldozer (Williams and Saunders, 1957). In 1956, some additional bulldozing was done, and four samples were taken (Williams and Saunders, 1957). In 1960, the Chatham Creek Mining Company mined the upper part of Ready Bullion Creek near Ester. In early August of 1960, they were working on the second cut of the season just below the fork in the upper part of the creek (Saunders, 1960). Additional work was done by Silverado Gold Mines, Ltd. in the 1980's and 1990's, and they reported a probable resource of 1,232,636 ounces of gold on their Ready Bullion/Silver Dollar property (Silverado Gold Mines, Ltd., Ester Dome project web site, February 17, 2000; http://www.silverado.com).

Production notes:

Mining was reported in 1912-1913, 1926-1931 and 1933, but total production was not given (Cobb, 1976 [OFR 76-662, p. 116]). One stope yielded approximately 3,600 tons of ore with an average grade of about 0.29 ounce of gold per ton (Hill, 1933, p. 125).

Reserves:

Silverado Gold Mines, Ltd. reported a probable resource of 1,232,636 ounces of gold on their Ready Bullion/Silver Dollar property (Silverado Gold Mines, Ltd., Ester Dome project web site, February 17, 2000: http://www.silverado.com). This property is a combination of this site and the Silver Dollar prospect (FB021).

Additional comments:

In 1931, the Ready Bullion group consisted of 18 claims: the Geneva, Mary Stay, Hosanna, Hudson, Horseshoe, Ready Bullion, Lode Fraction, Stibnite no. 1, Stibnite no. 2, Borovich, Borovich Fraction, Borovich no. 2, Native Daughter, South Pole, North Pole, Camp, Sunflower, and Fraction (Hill, 1933, p. 123). In 1926, the property consisted of eight lode claims owned by the Eva Quartz Company (Wimmler, 1926 [ATDM PE 58-1]).

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapin, 1914 (B 592-J); Brooks, 1916 (B 649); Wimmler, 1926 (ATDM PE 58-1); Smith, 1932; Hill, 1933; Smith, 1933 (B 836); Smith, 1933 (B 844-A); Smith, 1934 (B 864-A); Smith, 1938 (B 897-A); Smith, 1939 (B 910-A); Glover, 1950; Killeen and Mertie, 1951; Williams and Saunders, 1953; Saunders, 1960; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Koegley

Site type: Prospect

ARDF no.: FB025

Latitude: 64.852 **Quadrangle:** FB D-3

Longitude: 148.063

Location description and accuracy:
The Koegley prospect is located in the SE1/4SW1/4 sec. 1, T. 1 S., R. 3 W., Fairbanks Meridian. The prospect is on the eastern slope of Moose Gulch about 0.2 mile north of its mouth. The prospect is 1.5 miles west of the town of Ester. The prospect is locality 7 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
A short tunnel was driven in mineralized schist that is cut by small, gold-bearing quartz stringers (Smith, 1913 [B 525, p. 206]). Bedrock at the prospect is biotite schist of the Muskox sequence (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

A short tunnel was driven in mineralized schist that is cut by small, gold-bearing quartz stringers (Smith, 1913 [B 525, p. 206]).

Production notes:

There is no record of any ore produced from the tunnel described by Smith (1913 [B 525, p. 206]).

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Moose Gulch

Site type: Occurrence

ARDF no.: FB026

Latitude: 64.85 **Quadrangle:** FB D-3

Longitude: 148.067

Location description and accuracy:
The Moose Gulch occurrence is located in the SW1/4 sec. 1, T. 1 S., R. 3 W., Fairbanlks Meridian. Moose Gulch is small south-flowing tributary of Ester Creek, about 1.6 miles west of the town of Ester. The location given is on the lower part of the creek, where it is assumed the placer activity took place.

Commodities:

Main: Au

Other: Sb

Ore minerals: Gold, stibnite

Gangue minerals:

Geologic description:
Old placer working were found to contain cobbles of stibnite as much as 6 inches in diameter (Killeen and Mertie, 1951, p. 20). One cobble of stibnite contained 62.11percent antimony (Killeen and Mertie, 1951, p. 12). There is no other information on placer activities on the creek.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
Old placer workings were reported in 1951 (Killeen and Mertie, 1951, p. 20).

Production notes:

Reserves:

Additional comments:

References:
Killeen and Mertie, 1951.

Primary reference: Killeen and Mertie, 1951

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Gale

Site type: Prospect

ARDF no.: FB027

Latitude: 64.85 **Quadrangle:** FB D-3

Longitude: 148.058

Location description and accuracy:
The Gale prospect is located in the SW1/4SE1/4 sec. 1, T. 1 S., R. 3 W., Fairbanks Meridian, on a south-facing slope just north of the Ester Creek tailings. It is about 0.3 mile east of Moose Gulch at an elevation of about 860 feet and about 1.4 miles west of the town of Ester.

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:
A prospect pit was sunk 20 feet on iron-stained quartz and brown-weathered schist that reportedly carried some gold (Smith, 1913 [B 525, p. 206]). The quartz appeared to be in small stringers in the schist, but large pieces of the quartz were seen on the dump.

Alteration:
Quartz is iron-stained and the schist is weathered (Smith, 1913 [B 525, p. 206]).

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

A prospect pit was sunk 20 feet deep on iron-stained quartz and brown-weathered schist that reportedly carried some gold (Smith, 1913 [B 525, p. 206]).

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapman and Foster, 1969; Cobb, 1976 (OFR 76-662).

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Social Security; Norris

Site type: Prospect

ARDF no.: FB028

Latitude: 64.842 **Quadrangle:** FB D-3

Longitude: 148.085

Location description and accuracy:
The Social Security prospect is located in the S1/2NE1/4 sec. 11, T. 1 S., R. 3 W., Fairbanks Meridian. This prospect is near the summit of a small hill just north of the Chena Station Road, off the Old Nenana Highway. It is about 2.2 miles west-southwest of the town of Ester. This prospect is locality 6 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The Social Security prospect is in the Muskox sequence near a contact between biotite schist and amphibolite (Newberry and others, 1996). Chapman and Foster (1969, p. D19) reported gold in a lode prospect.

Alteration:

Age of mineralization:

Deposit model:
Au-quartz vein(?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

No data on workings.

Production notes:

Reserves:

Additional comments:
Also known as Norris (Cobb, 1976 [OFR 76-662, p. 166]).

References:
Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapman and Foster, 1969

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ready Bullion

Site type: Prospect

ARDF no.: FB029

Latitude: 64.86 **Quadrangle:** FB D-3

Longitude: 148.05

Location description and accuracy:

This prospect is located between Ready Bullion Creek and Moose Gulch in the NE1/4 sec. 1, T. 1 S., R. 3 W., Fairbanks Meridian; it is about one mile northwest of the town of Ester.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Ready Bullion prospect is in the Muskox sequence that consists of metamorphosed andesite, basalt, rhyolite and sandstone that have been subjected to amphibolite-grade metamorphism and have retrograded to greenschist facies (Newberry and others, 1996). In 1998, drilling by Placer Dome Exploration, Inc., determined that the Muskox sequence becomes more mafic, phyllitic, fine-grained, and calcareous at depth (Rogers and others, 1998). The Muskox sequence is bounded to the northwest and southeast by northeast-trending high-angle faults. It has been down-dropped and brought into contact with Fairbanks Schist. The Muskox sequence is itself cut by numerous northeast-trending, high-angle faults. Drilling by Placer Dome Exploration, Inc., determined that these high-angle structures dip steeply to the southeast and northwest.

Primary exploration targets have been these northeast-trending, high-angle faults that contain gold-bearing, altered and mineralized gouge (Rogers and others, 1998). Pervasive oxidation, attributed to weathering is prevalent to depths of as much as approximately 50 to 75 meters (Rogers and others, 1998). Fine-grained, botryoidal, chalcedonic quartz coated with magnesium oxide is associated with the oxidation. The rocks have been subjected to pervasive sericitic and silicic, hydrothermal alteration, and silicic and stockwork quartz-sericite-sulfide veins (Rogers and others, 1998).

From 1990 to 1992, American Copper and Nickel Co. collected soil samples that contained gold values in excess of 500 ppb gold from the prospect (Rogers and others, 1998).

Placer Dome conducted trench sampling in 1998 to follow up targets identified by Silverado Gold Mines, Ltd. Silverado's trenching program totalled 7,600 feet of channel samples that had a weighted average grade of 0.041 ounce per ton gold (Rogers and others, 1998). Placer Dome's work found that ore-grade material (greater than 1 ppm gold) was restricted to fault zones containing sericitically altered and silicified gouge with arsenopyrite mineralization. The surrounding host rock typically contained less than 100 ppb gold (Rogers and others, 1998).

Alteration:

Pervasive oxidation, attributed to weathering, is prevalent to depths of as much as approximately 50 to 75 meters (Rogers and others, 1998). Fine-grained, botryoidal, chalcedonic quartz coated with magnesium oxide is associated with the oxidation. The rocks have been subjected to pervasive sericitic and silicic, hydrothermal alteration, and contain silicic and stockwork quartz-sericite-sulfide veins (Rogers and others, 1998).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz veins associated with northeast-trending high-angle faults.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

From 1990 to 1992, American Copper and Nickel Co. (ACNC) collected soil samples from the prospect (Rogers and others, 1998). Airborne geophysical surveys were conducted by the State of Alaska and a more detailed ground VLF survey was performed by ACNC. Placer Dome Exploration, Inc., conducted trench sampling and drilling in 1998. Prior to Placer Dome's work, Silverado Gold Mines, Ltd. also conducted trenching and drilling.

Production notes:

Reserves:

Additional comments:

References:

Newberry and others, 1996; Rogers and others, 1998.

Primary reference: Rogers and others, 1998

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ready Bullion Creek

Site type: Mine

ARDF no.: FB030

Latitude: 64.858 **Quadrangle:** FB D-3

Longitude: 148.037

Location description and accuracy:

The Ready Bullion Creek mine is located in the W1/2 sec. 6, and N1/2 sec. 6, T. 1 S., R. 2 W., Fairbanks Meridian. The coordinates given are for the mine marked along Ready Bullion Creek on the Fairbanks (D-3) SE topographic map, the site of recent mining. However, Ready Bullion Creek has been extensively mined from its mouth for at least a mile upstream. This mine is locality 44 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Ready Bullion Creek drains an area underlain by quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist and amphibolite and biotite schist of the Muskox sequence (Newberry and others, 1996). Placer gravels were reported to be as much as 80 feet deep (Prindle and Katz, 1913, p. 110). The creek was mined from 1907 to 1914 with production well over 25,000 ounces of gold (Cobb, 1976 [OFR 76-662]). Ready Bullion Creek has been mined to the present however there is little record of the details. Recent mining has been concentrated on upper Ready Bullion Creek, notably at the site shown on the current Fairbanks (D-3) SE topographic map.

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; medium

Site Status: Active

Workings/exploration:
The creek was placer mined from 1907 to 1914 (Cobb, 1976 [OFR 76-662]), and more recently, as indicated by workings marked on the Fairbanks (D-3) SE topographic map. In 1996, R.B. Gravel Co. (Jerry Hassel) mined a paystreak along Ready Bullion Creek (Swainbank and others, 1997, p. 26).

Production notes:
The creek was mined from 1907 to 1914 with production well over 25,000 fine ounces (Cobb, 1976, OFR 76-662). There is no production information available for more recent mining which has continued inermittently to the present.

Reserves:

Additional comments:

References:
Prindle, 1908; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Chapin, 1914 (B 592-J, p. 3537-362); Eakin, 1915; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996; Swainbank and others, 1997.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Hess and Thomas

Site type: Prospect

ARDF no.: FB031

Latitude: 64.859 **Quadrangle:** FB D-3

Longitude: 148.025

Location description and accuracy:
The Hess and Thomas prospect is located on the ridge between Ready Bullion Creek and Eva Creek, at an elevation of about 1,500 feet. It is about 0.9 mile north-northwest of the town of Ester in the NE1/4 sec. 6, T. 1 S., R. 2 W., Fairbanks Meridian.

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:
The country rock is dark, greasy-looking chloritic schist cut by small quartz veins (Smith, 1913 [B 525, p. 208]). Bedrock in the area has been mapped as biotite schist and amphibolite of the Muskox sequence (Newberry and others, 1996). In 1912, Smith (1913 [B 525, p. 208]) noted an inactive prospect pit at this site.

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

In 1912, Smith (1913 [B 525, p. 208]) noted an inactive prospect pit at this site.

Production notes:

Reserves:

Additional comments:

References:
Smith, 1913 (B 525); Chapman and Foster, 1969; Newberry and others, 1996.

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Tyndall and Finn

Site type: Prospect

ARDF no.: FB032

Latitude: 64.853 **Quadrangle:** FB D-3

Longitude: 148.028

Location description and accuracy:
The Tyndall and Finn prospect is located in the SE1/4SW1/4 sec. 6, T. 1 S., R. 2 W., Fairbanks Meridian. This prospect is east of Ready Bullion Creek at an elevation of about 800 feet; it is approximately 0.5 mile northwest of the town of Ester. The prospect is included in locality 11 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Prior to WW I, several lode claims were explored by many openings, including a 60-foot adit and a 50-foot adit (Smith, 1913 [B 525, p. 208]). A small, well-defined quartz vein was exposed in one adit, where all the gold appeared to be contained within the vein. The bedrock at this prospect is Fairbanks Schist, which is composed of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

Several lode claims were explored by many openings, including a 60-foot adit and a 50-foot adit (Smith, 1913 [B 525, p. 208]).

Production notes:

No record of production.

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Vuyovich

Site type: Mine

ARDF no.: FB033

Latitude: 64.853 **Quadrangle:** FB D-3

Longitude: 148.024

Location description and accuracy:

The Vuyovich mine is located in the SW1/4SE1/4 sec. 6, T. 1 S., R. 2 W., Fairbanks Meridian. This prospect is on the ridge between Ready Bullion Creek and Eva Creek. It is about 0.5 mile northwest of the town of Ester. There are four adits and trenches of varyious elevations between 760 and 890 feet. This mine is included in locality 11of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Gold, stibnite

Gangue minerals:

Geologic description:

When visited by Hill in 1931, a tunnel trending N. 20 E. had been driven about 100 feet along a crushed, iron-stained zone in schist (Hill, 1933, p. 128). This zone had a dip of 85 E. and contained numerous quartz veinlets. Some of the quartz carried lenses of arsenopyrite or stibnite or a mixture of the two. Hill (1933, p. 128), reported that free gold could be panned from oxidized material near the face of the tunnel. In 1953, surface trenches and prospect adits revealed two gold-bearing quartz veins (Saunders, 1953, rev. 1964). One vein averaged one inch in width, and a shipment of ore from that vein averaged $419 in gold per ton (about 11.97 ounces of gold per ton). The other vein varied in width from 6 to 18 inches, and a mill run of ore believed to have been mined from that vein averaged $40 in gold per ton (about 1.14 ounces of gold per ton). When the property was examined in 1953, there were four prospect adits on the five lode claims that made up the Vuyovich property (Saunders, 1953, rev. 1964). A grab sample of greenish-yellow quartz from the dump near the adit at the 810-foot elevation assayed 0.84 ounces of gold per ton. In the adit at the 890-foot elevation, the vein appeared to be cut off by the shear zone a few feet north of a winze. Samples taken from two open cuts in 1956 ranged in value from 0.02 to 12.26 ounces of gold per ton. In 1963, assays from the open-cut at the 760-foot elevation returned values of a trace to 0.74 ounce of gold per ton from the lower

drift and the lower part of the adit, and one sample from the top of the winze assayed 7.44 ounces of gold per ton (Saunders, 1953, rev. 1964).

Alteration:

Antimony and arsenic oxides are abundant on the dump material, and the schist is iron stained (Saunders, 1953, rev. 1964).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

By 1931, a 100-foot-long tunnel had been driven on an ore zone (Hill, 1933, p. 128). When the property was examined in 1953, there were four adits on the five lode claims that made up the Vuyovich property (Saunders, 1953, rev. 1964). There were also a number of old, hand-dug pits that had been partly filled. An adit had been driven at an elevation of 815 feet beside the road that goes up Ready Bullion Creek; the adit was driven about 50 feet at N. 80 E. The adit at the 810-foot elevation level was caved 40 feet from the portal, but it appeared to trend N. 30 E. An attempt had been made at retimbering the adit, but caving prevented any progress. The adit at the 760-foot elevation had been reopened by 1953. Initially it trends N. 10 E.; 125 feet in from the portal, it turns to N. 15 W. and continues for 25 feet to the face. There was another adit 50 feet higher and directly above this one, but it was destroyed by bulldozer trenching during the summer of 1953. During the summers of 1954, 1955, and 1956, additional prospecting work was done on the property (Saunders, 1953, rev. 1964). Most of the prospecting consisted of excavating by bulldozer. The open cut over the adit at the 760-foot elevation had been enlarged and deepened, and samples were taken for assay. A large, open cut was excavated near the 890-foot adit, and additional samples were taken from this cut. In 1957, a small mill was built on the property, and a test-run was made on ore mined from the narrow vein near the cabin; this mill was dismantled the same year (Saunders, 1953, rev. 1964). In 1963, the open cut at the 760-foot elevation adit was deepened, and more samples were taken (Saunders, 1953, rev. 1964).

Production notes:

Thirty tons of vein quartz was milled in 1950 (Saunders, 1953, rev. 1964), but there is no record of the amount of production prior to this.

Reserves:

Additional comments:

There are two Vuyovich mines in the Fairbanks quadrangle. This one, FB033, is located south of Vuyovich mine, FB019, and was the site of Mr. Vuyovich's cabin (Hill, 1933, p. 128).

References:

Hill, 1933; Killeen and Mertie, 1951; Saunders, 1953; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Saunders, 1953

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ester Creek

Site type: Mine

ARDF no.: FB034

Latitude: 64.846 **Quadrangle:** FB D-2,3

Longitude: 148.029

Location description and accuracy:

Extensive placer mining took place on Ester Creek in the northern portions of sections 7 and 8, T. 1 S., R. 2 W., and section 12, T. 1 S., R. 3 W., Fairbanks Meridian. The coordinates given are for the approximate center of placered ground that is shown on the Fairbanks D-2 and D-3 topographic maps. Ester Creek is just south of the town of Ester, and the creek has been mined for at least 3 miles by drift mining, surface open pits, and dredge from 1905 well into the 1990's. This mine is included in locality 44 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb, W

Ore minerals: Gold, scheelite, stibnite

Gangue minerals:

Geologic description:

Ester Creek produced placer gold almost continuously from 1905 well into the 1990's. The Ester Creek placer gold is deeply buried; the depth to bedrock was originally nearly 170 feet near its mouth, although much of the material over bedrock has since been stripped away (Prindle and Katz, 1913, p.110). Productive gravels average 300 feet wide and 8 feet thick (Prindle and Katz, 1913). United States Smelting, Refining & Mining Co. Dredge no. 6 worked on Ester Creek from 1929 to 1942 and from 1946 to 1950 (R.M. Chapman, USGS unpublished memorandum, 1978). Early in 1951, the dredge moved from near the mouth of Eva Creek to Gold Hill (FB155) through a canal. Prior to dredging, most work on the creek was by drift mines through deep shafts in the frozen, reworked loess or the co-called muck that blanketed the gravel, or from surface workings after stipping away the muck with hydraulic monitors (Wimmler, 1922, p. 20; Wimmler,1924, p. 67-68; Wimmler, 1925, p. 46; Wimmler, 1926 [ATDM MR 195-11, p. 58]; Wimmler, 1929, p. 191). In addition to gold, scheelite and stibnite were found in placer concentrates (Brooks, 1907; Joesting, 1942 [ATDM Pamph. 1]). Mining, prior to 1961, produced more than $4,000,000 worth of gold (Cobb, 1973 [B 1374]). Also see the

Yellow Eagle mine (FB152) that recently worked on ground south of Eva Creek that may in part be in the Ester Creek drainage.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au(Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Ester Creek produced placer gold almost continuously from 1905 well into the 1990's. The Ester Creek placer gold is deeply buried; the depth to bedrock was originally nearly 170 feet near its mouth, although much of the material over bedrock has since been stripped away (Prindle and Katz, 1913, p.110). Productive gravels average 300 feet wide and 8 feet thick (Prindle and Katz, 1913). United States Smelting, Refining & Mining Co. Dredge no. 6 worked on Ester Creek from 1929 to 1942 and from 1946 to 1950 (R.M. Chapman, USGS unpublished memorandum, 1978). Early in 1951, the dredge moved from near the mouth of Eva Creek to Gold Hill (FB155) through a manmade canal. Prior to dredging, most work on the creek was by drift mines through deep shafts in the frozen, reworked loess or so-called muck that blanketed the gravel, or from surface workings after stipping away the muck with hydraulic monitors (Wimmler, 1922, p. 20; Wimmler,1924, p. 67-68; Wimmler, 1925, p. 46; Wimmler, 1926 [ATDM MR 195-11, p. 58]; Wimmler, 1929, p. 191). In addition to gold, scheelite and stibnite were found in placer concentrates (Brooks, 1907; Joesting, 1942 [ATDM Pamph. 1]). Mining, prior to 1961, produced more than $4,000,000 worth of gold (Cobb, 1973, B 1374). Also see the Yellow Eagle mine (FB152) that recently worked on ground south of Eva Creek that may in part be in the Ester Creek drainage.

Production notes:
Prior to 1961, Ester Creek produced more than $4,000,000 worth of gold (Cobb, 1973 [B 1374]). Placer operations were active through the 1990's; however, the amount 0f gold produced in recent years has not been reported (Szumigala and Swainbank, 1999).

Reserves:

Additional comments:

References:

Prindle, 1906; Brooks, 1907; Brooks, 1908; Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Brooks, 1911 (P 70); Brooks, 1911 (B 480); Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Brooks, 1914; Chapin, 1914 (B 592-J, p. 357-352); Brooks, 1915; Eakin, 1915; Brooks, 1916 (B 642-A); Smith, 1917 (BMB 142); Smith, 1917 (BMB 153); Brooks, 1918; Martin, 1919; Martin, 1920; Brooks and Martin, 1921; Brooks, 1922; Wimmler, 1922; Brooks, 1923; Brooks and Capps, 1924; Capps, 1924; Wimmler, 1924; Brooks, 1925; Wimmler, 1925 (ATDM MR 195-8); Smith, 1926; Wimmler, 1926 (ATDM MR 195-11); Wimmler, 1929; Moffit, 1927; Smith, 1929; Smith, 1930 (B 810-A); Smith, 1930 (B 813-A); Smith, 1932; Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936 (B 868-A); Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Killeen and Mertie, 1951; Wedow and others, 1954; Byers, 1957; Burand, 1966 (GR 10); Koschmann and Bergendahl, 1968; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Boswell, 1979; Swainbank and others, 1997; Swainbank and Clautice, 1998; Szumigala and Swainbank, 1999; Swainbank and others, 2000.

Primary reference: Cobb, 1976 (B 1374)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (head of Eva Creek)

Site type: Prospect

ARDF no.: FB035

Latitude: 64.872 **Quadrangle:** FB D-2

Longitude: 148.019

Location description and accuracy:
This prospect is near the head of Eva Creek at an elevation of about 1,600 feet in the SE1/4 NE1/4 sec. 31, T. 1 N., R. 2 W., Fairbanks Meridian. The prospect is about 1.7 miles north of the town of Ester.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
A 60-foot shaft was sunk on a quartz vein carrying considerable stibnite and disseminated sulfides (Smith, 1913 [B 525, p. 208]). The quartz is fine-grained, granular, and has a grayish color; visible gold was reported to be fairly common. Bedrock in the area was mapped as biotite schist of the Muskox sequence by Newberry and others (1996). Thomas (1947) reported that approximately 1,500 feet of surface trenching has been done on the property but that no veins or mineralized zones were discovered. They did discover four flat-lying faults in mica schist. These faults were filled with white talc gouge. All underground workings on the property are caved and inaccessible.

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
A 60-foot shaft was sunk on a quartz vein (Smith, 1913 [B 525, p. 208]).

Production notes:
About 1,000 tons of gold ore was mined from this property (Thomas, 1947).

Reserves:

Additional comments:

References:
Smith, 1913 (B 525); Thomas, 1947; Newberry and others, 1996.

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): St. Paul; McCann, Thomas, Mickley, and Hagel

Site type: Mine

ARDF no.: FB036

Latitude: 64.868 **Quadrangle:** FB D-3

Longitude: 148.017

Location description and accuracy:

The Saint (St.) Paul mine is located in the SE1/4 sec. 31, T. 1 N., R. 2 W., Fairbanks Meridian. This mine is on the west fork of Eva Creek, about 1.3 miles southeast of the top of Ester Dome. The coordinates given are for the mill and lower tunnel that are at an elevation of 1,150 feet. The upper tunnel and surface workings are at an elevation of about 1,500 feet. This is locality 15 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Arsenopyrite, gold, pyrite, stibnite

Gangue minerals:

Geologic description:

An auriferous vein of massive, vitreous quartz, about 3 feet thick, strikes N. 40 E. and dips 38 NW. (Mertie, 1917, p. 409-410). The quartz and the schist country rock are decayed, shattered, and iron-stained. Stibnite and its alteration products are found along the footwall; the gold content is lower where stibnite is present. The mine and a mill with a capacity of 20 tons per day operated throughout 1917 (Chapin, 1919, p. 323). In 1918, 150 feet of tunnel was driven. However, none of the ore was milled; the the mill operated on ore from the Billy Sunday and Mohawk mines (FB064 and FB061, respectively) (Martin, 1920, p. 40). A little mining also took place in 1919 (Brooks and Martin, 1921, p. 81). By 1931, the lower tunnel near the mill was about 300 feet long and trended north-northeast (Hill, 1933, p. 129). Material on the dump consisted entirely of quartz-mica schist. The upper tunnel, caved by 1931, was about a quarter of a mile north of the lower tunnel, and was driven 250 feet on a vein that ranged in thickness from 3 to 4 feet. The vein above the tunnel has a dip of 45 W., but it steepens to 70 degrees in a winze below the tunnel. All the ore above the tunnel level for its full length had been stoped; it produced about 1,000 tons of ore with an average value of $30 in gold per ton (about 1.45 ounces of gold per ton). The dump from the upper tunnel is composed largely of iron-stained biotite schist with a considerable amount of clay gouge and quartz. There were

also some large pieces of stibnite-arsenopyrite-quartz ore and a few pieces of high-grade gold quartz. A grab sample from crushed material on this dump that presumably came from the vein assayed 72 cents in gold per ton (about 0.03 ounce of gold per ton (Hill, 1933, p. 129). Glover (1950) reported that the gold is 806 fine.

Alteration:

The quartz and the schist country rock is decayed, shattered, and iron-stained and stibnite and its alteration products are found along the footwall of th evein (Mertie, 1917).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

A mine and a mill with a capacity of 20 tons per day operated in 1917 (Chapin, 1919, p. 323). In 1918, 150 feet of tunnel was driven. None of the ore was milled and the operated on ore from the Billy Sunday and Mohawk mines (Martin, 1920, p. 40). A little mining also took place in 1919 (Brooks and Martin, 1921, p. 81). By 1931, the lower tunnel near the mill was about 300 feet long and trended north-northeast (Hill, 1933, p. 129). The upper tunnel, caved by 1931, was about a quarter of a mile north of the lower tunnel, and was driven 250 feet on a vein that ranged in thickness from 3 to 4 feet. In 1997, Silverado Gold Mines, Ltd., drilled and trenched the St. Paul zone (Swainbank and Clautice, 1998, p. 8).

Production notes:

A mine operated thoughout 1917, and the ore was processed in a mill with a capacity of 20 tons per day (Chapin, 1919, p. 323). In 1918, one hundred fifty feet of tunnel was driven, but none of the ore was milled; the mill operated on ore from the Billy Sunday and Mohawk mines (FB064 and FB061, respectively) (Martin, 1920, p. 40). A little mining also took place in 1919 (Brooks and Martin, 1921, p. 81). By 1931, all the ore above the lower tunnel level, for its full length, had been stoped; it produced about 1,000 tons of ore with an average value of $30 in gold per ton (about 1.45 ounces of gold per ton) (Hill, 1933, p. 129).

Reserves:

In February, 2000, Silverado Gold Mines, Ltd., reported that the property contained a resource of 359,992 ounces of gold: 16,338 ounces proven, 81,354 ounces probable, and 262,300 ounces possible (Silverado Gold Mines, Ltd., Ester Dome project web site, February 17, 2000; http://www.silverado.com).

Additional comments:

References:

Mertie, 1917; Chapin, 1919; Martin, 1920; Brooks and Martin, 1921; Hill, 1933; Glover, 1950; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Lincoln

Site type: Mine

ARDF no.: FB037

Latitude: 64.878 **Quadrangle:** FB D-3

Longitude: 148.006

Location description and accuracy:
The exact location of the Lincoln mine is not known, but it was reported to be at the head of Happy Creek on the right limit (Reed, 1938, p. 15). The location is only known to within about one-half mile; it is probably in the NW1/4 sec. 32, T. 1 N. R. 2 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
In 1938, an 8-inch vein, oriented N. 30 E., dipping 75 W., was exposed by a 37-foot shaft (Reed, 1938, p. 15). About 8 tons of ore were mined but not milled from this shaft. Grab samples of the ore had a value of $160 in gold per ton (about 4.57 ounces of gold per ton) (Reed, 1938, p. 15). This prospect is in quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist; biotite schist of the Muskox sequence lays to the northwest (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1938, a 37-foot shaft was sunk (Reed, 1938, p. 15).

Production notes:
By 1938, about 8 tons of ore were mined but not milled (Reed, 1938, p. 15).

Reserves:

Additional comments:

References:
Reed, 1938; Chapman and Foster, 1969; Newberry and others, 1996.

Primary reference: Reed, 1938

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Bondholder

Site type: Mine

ARDF no.: FB038

Latitude: 64.876 **Quadrangle:** FB D-3

Longitude: 148.003

Location description and accuracy:

The Bondholder mine is at the head of the north fork of Saint Patrick Creek at an elevation of about 1,250 feet. It is about 1.5 miles east of the top of Ester Dome. The Bondholder workings are at the north end of the Mohawk group of claims (FB061). The mine is locality 156 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Bondholder vein was opened by at least two shafts and several pits (Hill, 1933, p. 146). About 200 feet north of these shafts, an opening exposed a 4.5-foot-wide vein in mica schist that was oriented N. 24 E., dipping 45 NW. The vein contained iron- and arsenic-oxide stained quartz, a sample of which assayed $10.29 gold per ton (0.5 ounce of gold per ton) (Hill, 1933, p. 146). The vein averaged 6 feet in thickness in a 142-foot shaft. By 1931, five hundred tons of ore had been mined from the Bondholder vein.

Alteration:

Quartz is iron- and arsenic-oxide stained (Hill, 1933).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The Bondholder vein was opened by at least two shafts, one 142 feet deep, and several pits (Hill, 1933, p. 146).

Production notes:
By 1931, five hundred tons of ore had been mined from the Bondholder vein (Hill, 1933).

Reserves:

Additional comments:

References:
Hill, 1933; Chapman and Foster, 1969.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Big Blue

Site type: Prospect

ARDF no.: FB039

Latitude: 64.875 **Quadrangle:** FB D-3

Longitude: 148.008

Location description and accuracy:
The Big Blue prospect is located west of Henderson Road, just west of the Prometheus shaft (FB041), at an elevation of approximately 1,550 feet (Hill, 1933, p. 148). It is about 1.3 miles east-southeast of the top of Ester Dome, in the NW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Material on the dump suggests the ore zone consisted of a fault zone of crushed schist, quartz, and gouge (Hill, 1933, p. 148). The vein strikes N. 27 E., but a dip could not be determined at the time of Hill's visit in 1931, due to the collapse of the prospect pits. The bedrock is mainly biotite schist; many pieces of quart-mica schist are on several of the dumps. The Big Blue prospect is in a unit of quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist as mapped by Newberry and others (1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
In 1931, the Big Blue lead consisted of a number of shallow shafts and pits (Hill, 1933, p. 148).

Production notes:

Reserves:

Additional comments:

References:
Hill, 1933; Chapman and Foster, 1969.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): First Chance

Site type: Mine

ARDF no.: FB040

Latitude: 64.875 **Quadrangle:** FB D-2

Longitude: 148

Location description and accuracy:

The First Chance mine is located in the NE1/4 NW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. The mine lies just north of the Wandering Jew mine (FB042). It is at the head of Saint Patrick Creek at an elevation of 1,325 feet, about 1.6 miles east-southeast of the top of Ester Dome. The mine is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Gold occurs in a 6-inch- to 4-foot-wide quartz vein that strikes N. 10 E. and dips 44 W. as seen at the surface (Hill, 1933, p. 148). The richest ore was found where the vein was narrow. The quartz vein occurs in schist that strikes north and dips 16 to 20 degrees east. By 1931, 520 tons of ore were mined from a 120-foot shaft (Hill, 1933, p. 148). All of the ore above the 100-foot level from the portal to a fault 70 feet north of it had been stoped. South of the shaft, the ore was stoped from the surface to a depth of 70 feet. A crosscut in the gulch to the north and 100 feet below the collar of the shaft was driven S. 70 W.; by 1931, this crosscut was caved 75 feet from the mouth. The gold varies from 904 to 923 fine (Glover, 1950).

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Ore was mined from crosscuts in a 120-foot shaft, and from surface workings as much as 70 feet deep (Hill, 1933, p. 148).

Production notes:

By 1931, 520 tons of ore were mined from a 120-foot shaft (Hill, 1933, p. 148).

Reserves:

Additional comments:

References:

Smith, 1926; Moffit, 1927; Smith, 1930 (B 813-A); Hill, 1933; Glover, 1950; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Prometheus

Site type: Prospect

ARDF no.: FB041

Latitude: 64.8744 **Quadrangle:** FB D-2

Longitude: 148.005

Location description and accuracy:

The Prometheus prospect is located in the NW1/4 sec. 32, T. 1 N., R. 2 W, Fairbanks Meridian. The Prometheus shaft is at an elevation of approximately 1,500 feet, just northwest of the Wandering Jew mine (FB042). The exact location is uncertain, but it is about 1.5 miles east-southeast of the top of Ester Dome on the basis of the description by Hill (1933, p. 121,148). The prospect is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Ag, Cu, Sb

Ore minerals: Arsenopyrite, chalcopyrite, covellite, gold, jamesonite, stibnite, tetrahedrite

Gangue minerals:

Geologic description:

By 1913, a 60-foot shaft was sunk on an 8-foot-wide quartz vein that carried stibnite and disseminated sulfides; visible gold was reported to be fairly common (Smith, 1913 [B 525, p. 208]; Hill, 1933, p. 148). Samples from the dump contained two generations of quartz cut by fine veinlets of stibnite; some rocks have the greenish-yellow antimony-oxide stain (Chapin, 1914, p. 355). When visited in 1931, the Prometheus shaft was filled with water (Hill, 1933, p. 148). Surface exposures of the vein indicated that it trended N. 40 E. The ore on the dump consisted of white quartz cut by later veinlets of gray quartz with sulfides (Hill, 1933, p. 148). A grab sample from this ore pile assayed $9.52 in gold and silver and contained 6.4 ounces of silver per ton (Hill, 1933, p. 148). The sulfides include arsenopyrite, jamesonite, covellite, chalcopyrite, and tetrahedrite (Hill, 1933, p. 148; Chapman and Foster, 1969, p. D18).

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
By 1913, a 60-foot shaft had been sunk on an auriferous quartz vein (Smith, 1913, p. 208).

Production notes:
No information is available.

Reserves:

Additional comments:

References:
Smith, 1913 (B 525); Smith, 1913 (B 542-F); Chapin, 1914 (B 592-J, p. 321-355); Hill, 1933; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Wandering Jew

Site type: Mine

ARDF no.: FB042

Latitude: 64.873 **Quadrangle:** FB D-3

Longitude: 148.001

Location description and accuracy:

The Wandering Jew mine is located in the SE1/4 NW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. This mine is in upper Saint Patrick Creek at an elevation of about 1,400 feet; it is approximately 0.5 mile west of the Mohawk mine (FB061) and about 1.7 miles east-southeast of the top of Ester Dome. The mine is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Wandering Jew mine lies within a unit of the Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Gold ore was mined from a 4- to 18-inch- wide, sulfide-bearing, white quartz vein (Hill, 1933, p. 147). This vein strikes north and dips 75-80 E. The vein is not as crushed as others in the area, but it does contain iron- and arsenic-oxide staining. A vertical shaft 50 feet deep was still accessible when visited by Hill in 1931 (Hill, 1933, p. 147). In 1930-31, 75 tons of ore, worth $21 in gold per ton (about 0.97 ounce of gold per ton), and 45 tons of ore, worth $10 in gold per ton (about 0.48 ounce of gold per ton), was recovered above a depth of 50 feet in a stope about 50 feet long. A sample taken at the 30-foot level of the workings assayed $25.35 in gold per ton (1.23 ounces of gold per ton). Glover (1950) reported the gold was 762 fine.

Alteration:

Patches of vein quartz are stained with iron and arsenic oxides.

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
A vertical shaft 50 feet deep was still accessible when visited by Hill in 1931 (Hill, 1933, p. 147). At the 30-foot level, a drift was driven south for 50 feet to a fault that strikes east and dips 37 N. In the north drift on the 30-foot level, a fault that strikes N. 30 W. and dips 35-40 NE cuts off the vein about 25 feet north of the shaft. All the ore up to the fault had been mined out. The vein was also explored on the surface by pits for about 400 feet south of the shaft (Hill, 1933, p. 147).

Production notes:
In 1930 and 1931, 75 tons of ore, worth $21 in gold per ton (0.97 ounce of gold per ton), and 45 tons of ore, worth $10 in gold per ton (0.48 ounce of gold per ton), was mined from the Wandering Jew mine (Hill, 1933, p. 147). No other production records are available.

Reserves:

Additional comments:

References:
Hill, 1933; Glover, 1950; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Killarney

Site type: Mine

ARDF no.: FB043

Latitude: 64.872 **Quadrangle:** FB D-2

Longitude: 148

Location description and accuracy:

The Killarney mine is located in the SE1/4 NW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. This mine is at the head of Saint Patrick Creek at an elevation of about 1,340 feet; it is about 1.8 miles east-southeast of the top of Ester Dome. The mine is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

About 180 tons of gold was produced from the Killarney mine, which consists of fractured and re-cemented gold-bearing quartz veins in micaceous schist (Chapman and Foster, 1969, p. D18; Stewart, 1933, p. 140-141). The veins are oriented N. 5 E., 75 W. and are intersected at intervals by faults that trend at a shallow angle to the strike and dip of the veins (Stewart, 1933, p. 141). Two types of quartz were observed in the vein (Stewart, 1933, p. 141). One type is low-grade ore, has a sugary texture, and is unfractured. The other is somewhat translucent, grayish quartz that has been fractured into segments from one-quarter inch to one-half inch in length that were was subsequently recemented. In the second type of quartz, free gold is visible in particles as large as a pinhead. Workings consisted of a 94-foot shaft with three drifts (Stewart, 1933, p. 140-141).

Alteration:

The vein quartz is oxidized and iron-stained (Stewart, 1933, p. 141).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

In January of 1932, a vertical shaft was started that eventually reached a depth of 94 feet by 1933 (Stewart, 1933, p. 140). At the 90-foot level, drifts were extended both north and south along the vein. The north drift was driven a distance of about 60 feet from the shaft where it encountered a fault. The south drift was driven for about 165 feet from the shaft. Another drift at the 30-foot level was driven northward toward the fault (Stewart, 1933, p. 140-141).

Production notes:

About 180 tons of ore was mined from the Killarney workings during 1932; the ore was processed at the Saint (St.) Paul mill (Stewart, 1933, p. 141).

Reserves:

Additional comments:

References:

Stewart, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Stewart, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Stibnite

Site type: Mine

ARDF no.: FB044

Latitude: 64.87 **Quadrangle:** FB D-3

Longitude: 148.006

Location description and accuracy:

The Stibnite mine is located in the NW1/4SW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. The Stibnite mine is near the head of the east fork of Eva Creek at an elevation of about 1,300 feet. It is about 1.6 miles north-northeast of the town of Ester. It is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other:

Ore minerals: Stibnite

Gangue minerals:

Geologic description:

The Stibnite mine began producing ore as early as 1915 (Brooks, 1916 [B 642-A, p. 29]). Stibnite occurs in a shear zone as lenses, kidneys, and in granulary aggregates with some columnar masses; it is associated with iron-stained quartz veins and fragments of schist (Brooks, 1916 [B 649, p. 38-39]; Killeen and Mertie, 1951, p. 14-15). The shear zone trends N. 17 W. and dips 70-89 S.; the stibnite lenses pitch north (Killeen and Mertie, 1951). The largest lens of stibnite reported was 100 feet long, 7 feet wide, and 4 feet thick (Killeen and Mertie, 1951). In 1915 and 1926, about 300 tons of ore were produced from these large stibnite masses (Ebbley and Wright, 1948, p. 38; Killeen and Mertie, 1951). Shipments in 1915 contained 51.5 percent antimony (Killeen and Mertie, 1951). Killeen and Mertie considered the deposit to be mined out in 1951.

Alteration:

Iron-stained quartz veins form the hanging wall (Brooks, 1916 [B 649]).

Age of mineralization:

Deposit model:

Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Ore was mined from open cuts and pits (Brooks, 1916 [B 649, p. 17]).

Production notes:
In 1915 and 1926, about 300 tons of ore were produced from large stibnite masses (Ebbley and Wright, 1948, p. 38; Killeen and Mertie, 1951).

Reserves:

Additional comments:

References:
Brooks, 1916 (B 642-A); Brooks, 1916 (B 649); Joesting, 1942 (ATDM Pamph. 1); Ebbly and Wright, 1948; Killeen and Mertie, 1951; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Killeen and Mertie, 1951

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Irad

Site type: Prospect

ARDF no.: FB045

Latitude: 64.869 **Quadrangle:** FB D-3

Longitude: 148.006

Location description and accuracy:

The Irad prospect is near the head of the east fork of Eva Creek at an elevation of about 1,000 feet. It is about 1.5 miles north-northeast of the town of Ester in the SW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The rocks in the vicinity have been mapped as a bleached feldspathic schist unit of the Fairbanks Schist by Newberry and others (1996). However, this rock type was not seen in a trench excavated by Placer Dome Exploration in 1997; the rock exposed in these trenches appears to be more similar to the Fairbanks Schist described elsewhere as quartz-muscovite schist (Rogers and others, 1998). In 1990 to 1992, American Copper and Nickel Co. (ACNC) collected soil samples from the surrounding area. In 1998, Placer Dome Exploration conducted a soil program that identified a 300-meter by 100-meter soil anomaly of gold with upper values that varied from 500 to 1,000 ppb gold (Roger and others, 1998). The anomalous soils occur near the intersection of a northeast and northwest trend of anomalous soils that cross Ester Dome. The northeast trend has been interpreted to be related to a high-angle fault that transects the McQueen and Rhyolite prospects (FB011 and FB016, respectively) (Rogers and others, 1998). Follow-up trenching produced discouraging results; no sample containing more than 0.4 ppm gold. A magnetic high was identified over the prospect in both State of Alaska and ACNC airborne geophysical surveys. A ground-based geophysical survey conducted by Placer Dome Exploration gave similar results (Rogers and others, 1998).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
Several old prospect pits were identified in the area. In 1990 to 1992, American Copper and Nickel Co. (ACNC) collected soil samples from the surrounding area. In 1998, Placer Dome Exploration conducted a soil program that identified a 300-meter by 100-meter anomaly in gold. Follow up work consisted of trench excavation. The prospect was then covered with a ground-based magnetic geophysical survey (Rogers and others, 1998). Airborne geophysics were conducted both by the State of Alaska and ACNC.

Production notes:

Reserves:

Additional comments:

References:
Newberry and others, 1996; Rogers and others, 1998.

Primary reference: Rogers and others,1998

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Camp Bird

Site type: Prospect

ARDF no.: FB046

Latitude: 64.867 **Quadrangle:** FB D-3

Longitude: 148.009

Location description and accuracy:
The Camp Bird prospect is on the right limit of Eva Creek at an elevation of about 1,100 feet in the SW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian; it is across the creek from the Clipper Mine (FB047) and about 100 feet in elevation above the creek bed (Reed, 1938, p. 10). It is about 1.5 miles north of the town of Ester. The prospect is locality 149 of Chapman and Foster (1969).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The only information reported for the Camp Bird prospect was that two shafts and a tunnel were sunk on a vein (Reed, 1938, p. 10).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein(?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

A tunnel and two shafts were driven on a vein (Reed, 1938, p. 10). The tunnel was driven 90 feet and a 20-foot winze was sunk about 30 feet from the portal. In the summer of 1938, a 28-foot shaft and a 60-foot shaft were sunk on the prospect.

Production notes:

Reserves:

Additional comments:

In 1938, the property was owned by Patrick McLaughlin and G. B. Stark and was under lease to Bill Stark and Mike Yakopatz (Reed, 1938, p. 10).

References:

Reed, 1938; Chapman and Foster, 1969.

Primary reference: Reed, 1938

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Clipper; Lounsbury

Site type: Mine

ARDF no.: FB047

Latitude: 64.867 **Quadrangle:** FB D-3

Longitude: 148.004

Location description and accuracy:

The Clipper mine is located in the SE1/4SW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian, near the head of Eva Creek. It is approximately 1.4 miles north-northeast of the town of Ester at an elevation of about 1,100 feet. It is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Arsenopyrite, gold, stibnite

Gangue minerals:

Geologic description:

The Clipper mine consists of gold-bearing quartz-sulfide zones along a north-northwest-trending, nearly vertical fracture that cuts foliation and compositional banding in polymetamorphic schist and quartzite (Bundtzen and others, 1982 [OFR 157]). The 1- to 2-inch wide vein is laterally displaced 2 to 11 feet by seven cross-cutting faults that strike N. 50-85 E. and dip 35-65 N.

In 1982, Bundtzen and others (1982 [OFR 157]) spent seven days mapping approximately 800 feet of underground workings at the Clipper gold mine, and the following is a summary of their findings. Bedrock in the area is Fairbanks Schist that consists of four lithologic units: chlorite-muscovite schist, quartz-mica schist with quartzite bands, a porphyroblastic felsdpathic schist, and a bleached, garnetiferous biotite-muscovite schist. The more quartzose rocks form blocky, resistant walls in mine workings, whereas the more micaceous rocks form irregular walls, cavities, and open spaces. In thin section, the schist is composed of as much as 50 percent white mica, 30 to 65 percent interlocking quartz grains, minor albitized plagioclase, chlorite and very minor garnet. tourmaline, sphene and zoisite inclusions. The mineral assemblages suggest that a prograde, upper greenschist facies metamophic event (garnet plus plagioclase plus biotite plus white mica) has been overprinted by a lower grade metamorphic event (chlorite plus albite plus zoisite).

Structurally, an early crenulation-kink-band deformation (F1) consistently records a northwest-southeast stress field that plunges to the northeast. During a later F2 event, the rocks were gently folded into synclines and anticlines with amplitudes ranging from 6 to 50 feet. A major, north-northwest-trending, steeply dipping, joint set cuts the layered rocks underground. These structural features apparently served as primary channels for ore fluids; the majority of veins in the drift and stopes are parallel to these joint sets. A few prominent, but unmineralized, steeply dipping joints and fractures strike N. 25-35 W.

The fault above the Clipper vein varies from N. 5 E. to N. 25 W. and generally trends N. 5-10 W., almost normal to regional structure. The mineralized shears dip from 65 SW. to vertical, and only rarely does the fault system associated with the veins dip steeply to the northeast. The vein system south of an old seismograph station consists of thin, gold-bearing veinlets, 1 to 3 inches wide in 2- to 4-foot-wide, horse-like stockwork zones. Within these zones, handsorting produced very high grade ore; one 3-inch channel sampled from the Bonanza winze assayed 26.09 ounces of gold per ton. North of the seismograph station, the vein occupies a significantly wider (4 to 24 inches) zone in single or multiple splays. Assays from eight channel samples along two major sections of ore averaged 0.87 ounce of gold per ton over an average width of 12 inches. The last structural event in the Clipper mine is represented by a series of faults that trend N. 50-85 E. and dip 35-55 N.; they offset the Clipper vein system laterally from 2 to 11 feet.

This deposit is a hydrothermal vein; massive, fractured to euhedral, crystalline quartz constitutes greater than 95 percent of the vein material. Wall-rock silicification was followed by at least two stages of silica vein injection; the last was accompanied by free gold and disseminated to rare massive arsenopyrite, stibnite, and boulangerite. In one specimen, free gold is intimately associated with fine needles of boulangerite that apparently intrude arsenopyrite. Free gold observed in hand specimens occurs as small angular segregations or thin plates averaging about 0.5 mm in length. Select samples showed masses of free gold as much as a quarter of an inch in diameter. One sample of gold was 768 fine and had silver as the major impurity. Other samples analyzed ranged from 682.9 to790.4 fine (Glover, 1950).

According to G.P. Lounsbury, the mine owner at the time of Bundtzen's visit in 1982, the most productive years were 1937-42 when approximately 1,400 ounces of gold worth about $50,000 were recovered from an unknown amount of high-grade, hand-sorted ore (Bundtzen and others, 1982 [OFR 157, p. 3]). Investigations by Hill (1933) and Pilgrim (1931, 1932, 1933) indicated that by 1932, a 235- to 250-foot drift had been driven to explore a 1- to 8-inch-thick, steeply dipping vein trending N. 10-15 E. Most of these workings were mined by hand by the owner, Lloyd Lounsbury (D. Wietchy, oral commun., 2000). By 1982, there was at least 800 feet of underground workings but there is no record of recent production (Bundtzen and others, 1982 [OFR 157]).

Alteration:

Wall-rock silicification extends at least 10 inches into both the footwall and hanging wall of the vein (Bundtzen and others, 1982 [OFR 157]). Later hydrothermal silica vein injection was accompanied by the emplacement of free gold with arsenopyrite, stibnite, and boulangerite.

Age of mineralization:

Auriferous quartz veins cut Fairbanks Schist; these are considered to be pre-Devonian and probably Proterozoic in age (Newberry and others, 1996).

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Investigations by Hill (1933) and Pilgrim (1930, 1931, 1932 indicate that by 1932, a 235- to 250-foot drift had been driven to explore a 1- to 8-inch thick, steeply dipping vein trending N. 10-15 E. Most of these workings were mined by hand by the owner at that time, Lloyd Lounsbury (D. Wietchy, oral commun., 2000). In 1982, Bundtzen and others (1982 [OFR 157]) spent seven days mapping approximately 800 feet of underground workings at the mine. It was unclear to Bundtzen and his colleagues if the early work reported by Hill and Pilgrim were part of the workings accessible to them or were part of older, caved workings on the hillside about 60 vertical feet above the portal open to them.

Production notes:
There is no record of production prior to 1932. In 1937, nineteen tons of ore averaging 0.8 ounce of gold per ton was milled, and in 1938, twenty-five tons of ore of the same grade was milled (Reed, 1938). According to G.P. Lounsbury, the mine owner at the time of Bundtzen's visit in 1982, the most productive years were 1937-42, when approximately 1,400 ounces of gold worth $50,000 were recovered from an unknown amount of high-grade, hand-sorted ore (Bundtzen and others, 1982 [OFR 157, p. 3]).

Reserves:

Additional comments:

References:
Pilgrim, 1930; Pilgrim, 1931; Hill, 1933; Pilgrim, 1932; Reed, 1938; Glover, 1950; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1982 (OFR 157); Newberry and others, 1996.

Primary reference: Bundtzen and others, 1982 (OFR 157)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Little Flower; Flower; McCann and Olsen

Site type: Mine

ARDF no.: FB048

Latitude: 64.866 **Quadrangle:** FB D-3

Longitude: 148.01

Location description and accuracy:

The Little Flower mine is located in the SW1/4SW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. This deposit is on the ridge between the two forks of Eva Creek at an elevation of approximately 1,030 feet; it is about 1.3 miles north of the town of Ester. This mine is locality 15 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Gold was produced from a 24-inch vein that trends north and dips 70 E. (Chapman and Foster, 1969, p. D17; Reed, 1938, p. 11). Work was started on the Little Flower mine in January of 1938. The tunnel was driven on the vein for 450 feet; a 50-foot winze was sunk 400 feet from the portal (Reed, 1938, p. 11). In 1938, about 680 tons of ore were produced with an average value of $25 in gold per ton (about 0.71 ounce of gold per ton) (Reed, 1938, p. 12). The gold was reported to be between 773 and 800 fine (Glover, 1950).

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Work was started on the Little Flower mine in January of 1938. The tunnel was driven on the vein for 450 feet; a 50-foot winze was sunk 400 feet from the portal (Reed, 1938, p. 11). In 1938, four men were employed at the mine, using two jackhammers and one stoper (Reed, 1938, p. 12).

Production notes:

In 1938, about 680 tons of ore were produced with an average value of $25 in gold per ton (about 1.21 ounces of gold per ton) (Reed, 1938, p. 12).

Reserves:

Additional comments:

References:

Reed, 1938; Glover, 1950; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Reed, 1938

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Hegan and Lefebre

Site type: Prospect

ARDF no.: FB049

Latitude: 64.861 **Quadrangle:** FB D-3

Longitude: 148.003

Location description and accuracy:
The Hegan and Lefebre prospect is located in the NW1/4NW1/4 sec. 5, T. 1 S., R. 2 W., Fairbanks Meridian. This prospect is about 25 feet east of Eva Creek, approximately 1 mile upstream fromt its mouth; the prospect is about 1 mile north-northeast of the town of Ester.

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:
A tunnel was driven on a north-trending vein that exposed quartz and a cross-cutting fracture zone in fractured country rock (Smith, 1913 [B 525, p. 207]). There is no data on ore grade,although it is assumed that this was a gold prospect (Cobb, 1976 [OFR 76-662, p. 44]).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

A tunnel driven on a north-trending vein exposed quartz and a cross-cutting fracture zone in fractured country rock (Smith, 1913 [B 525, p. 207]).

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542-F); Cobb, 1976 (OFR 76-662).

Primary reference: Smith, 1913 (B 525)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Eva Creek

Site type: Mine

ARDF no.: FB050

Latitude: 64.85 **Quadrangle:** FB D-2,3

Longitude: 148

Location description and accuracy:

The Eva Creek mine is located in secs. 5 and 8, T. 1 S., R. 2 W., Fairbanks Meridian. Eva Creek, which joins Ester Creek about a half-mile east of the town of Ester, has been mined for at least a half-mile above its mouth, and its lower workings merge into the working on Ester Creek (FB034). The mine is locality 44 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

In 1911, rich gravel was found on Eva Creek (Ellsworth, 1912, p. 243). In 1912, the creek had produced about one-half million dollars worth of gold or 24,000 fine ounces, mostly from drift mines (Ellsworth and Davenport, 1913, p. 209). Mining continued in 1913 and 1915 (Chapin, 1914, p. 359; Brooks, 1916 [B 642, p. 59]). A gold fineness value of 795.4 was reported (Glover, 1950). Although there is little detailed record of mining on Eva Creek after 1915, it has been mined periodically since, notably in the lower half-mile where a wide swath of the valley has been mined with mechanical equipment from the surface in recent years (J.R. Guidetti Schaefer, personal observation, 2000).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; medium

Site Status: Active?

Workings/exploration:
Placer mining took place in 1911-13 and 1915 (Ellsworth, 1912, p. 243; Chapin, 1914, p. 359; Brooks, 1916 [B 642, p. 59]). In 1929, a drift operation was reported (Wimmler, 1929, p. 191). Although there is little detailed information recorded of mining on Eva Creek after 1915, it has been mined periodically since, notably in the lower half-mile where a wide swath of the valley has been mined from the surface in recent years with mechanical equipment (J.R. Guidetti Schaefer, personal observation, 2000).

Production notes:
By 1912, a year after gold was discovered, the creek had produced about one-half million dollars worth of gold, or 24,000 fine ounces (Ellsworth and Davenport, 1913, p. 209). There has undoubtedly been production since, but there is no information available of the amount.

Reserves:

Additional comments:

References:
Ellsworth, 1912; Ellsworth and Davenport, 1913; Chapin, 1914 (B 592); Eakin, 1915; Brooks, 1916 (B 642); Wimmler, 1929; Glover, 1950; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Little Nugget Creek

Site type: Mine

ARDF no.: FB051

Latitude: 64.914 **Quadrangle:** FB D-2

Longitude: 147.993

Location description and accuracy:
The Little Nugget Creek mine is located in the SE1/4 sec. 17, T. 1 N., R. 2 W., Fairbanks Meridian. This open-pit placer mine is just east of Little Nugget Creek near the confluence with Goldstream Creek. It is approximately 3 miles northeast of the top of Ester Dome. The mine is included in locality 47 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The area shows evidence of placer mining, but it is probably part of the same operation as the adjacent Sheep Creek placer mine (FB052).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

An open pit placer mine is indicated on the Fairbanks (D-2) NW quadrangle along Goldstream Creek between Little Nugget Creek and Sheep Creek.

Production notes:

Reserves:

Additional comments:

References:

Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Chapman and Foster, 1969

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Sheep Creek

Site type: Mine

ARDF no.: FB052

Latitude: 64.906 **Quadrangle:** FB D-2

Longitude: 147.995

Location description and accuracy:

The Sheep Creek mine is located in the NE1/4NE1/4 sec. 20, T. 1 N., R. 2 W., Fairbanks Meridian. The placer mine (open-pit mine) is marked on the Fairbanks (D-2) NW topographic map, approximately 2.7 miles northeast of the top of Ester Dome. Sheep Creek is a tributary of Goldstream Creek that drains the northeast side of Ester Dome, and the mining took place on the lower half-mile of the creek upstream of where it flows onto the flats of Goldstream Creek. The mine is included in locality 47 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Sheep Creek is a tributary of Goldstream Creek that drains the northeast side of Ester Dome. Bedrock in the drainage is Fairbanks Schist that consists of quartz-muscovite schist, quartzite, chlorite-quartz schist, and bleached feldspathic quartzose schist (Newberry and others, 1996). The area that has been mined, about a half-mile in the lower part of the creek, consists predominantly of frozen ground with a few scattered, thawed bog holes and a thawed area running the length of the old F.E. Co. stripping drain (May and Bundtzen, 1996). The depth to bedrock ranges from 30 to 100 feet and averages around 70 feet (May and Bundtzen, 1996). Within the mine section, 20-25 feet of frozen muck overlies the gravels (May and Bundtzen, 1996). In the early to mid-1950's, the F.E. Co. began hydraulic stripping of the 80-100 feet of muck overlying the thawed gravels of the Sheep Creek channel (May and Bundtzen, 1996). Dredge no. 6 began working the Sheep Creek channel in 1958 and continued until it was shut down in 1962 (May and Bundtzen, 1996).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
There was probably earlier drift mining and prospecting, but in 1952, the F.E. Co. prepared a half-mile section of lower Sheep Creek channel for dredging after drilling approximately 200 to 300 prospect holes (May and Bundtzen, 1996). In the early to mid-1950's, the F.E. Co. began hydraulic stripping of the 80-100 feet of muck overlying the thawed gravels of the Sheep Creek channel (May and Bundtzen, 1996). In the fall of 1957, Dredge no. 6, which had just finished mining at Gold Hill (FB155) was hauled overland to Sheep Creek. The dredge began working the Sheep Creek channel in 1958 and continued until it was shut down in 1962 (May and Bundtzen, 1996).

Production notes:
There is no information available on the amount of production but it must have been substantial, considering that it was dredged from 1958 to 1962.

Reserves:

Additional comments:

References:
Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1988; Green and others, 1989; May and Bundtzen, 1996; Newberry and others, 1996.

Primary reference: May and Bundtzen, 1996

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Macomb

Site type: Prospect

ARDF no.: FB053

Latitude: 64.893 **Quadrangle:** FB D-2

Longitude: 147.972

Location description and accuracy:
The Macomb prospect is located in the SW1/4SW1/4 sec. 21, T. 1 N, R. 2 W. Fairbanks Meridian. This prospect consists of several claims that were staked on a vein on the north side of Saint Patrick Creek; it is approximately 2.5 miles east-northeast of the top of Ester Dome.

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:
Hill (1933, p. 152) reported that several claims had been staked on a vein that strikes northeast and dips 60 SE. Two shafts were sunk, one 30 and the other 50 feet deep, but they were caved by 1931. Ore on the dump is crushed schist, gouge, and quartz. There is no information on its metal content.

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

Two shafts were sunk, one to a depth of 30 feet and the other to 50 feet, but they were caved by 1931 (Hill, 1933).

Production notes:

There is no information on production, if any.

Reserves:

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Royal Flush; Adler

Site type: Mine

ARDF no.: FB054

Latitude: 64.885 **Quadrangle:** FB D-2

Longitude: 147.986

Location description and accuracy:

The Royal FLush mine is located in the NE1/4SE1/4 sec. 29, T. 1 N., R. 2 W., Fairbanks Meridian. This mine is located in the Happy Creek Valley at an elevation of about 870 feet; it is about 2 miles east-northeast of the top of Ester Dome. This mine is locality 16 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Prior to 1969, 208 tons of ore averaging $47.50 of gold per ton was produced from a 3-foot-wide vein that strikes N. 42 E. and dips 70 W. (Chapman and Foster, 1969, p. D18). In 1987, a 350-foot-long section of the Adler vein was excavated to a depth of approximately 27 feet, and 5,000 tons of ore with assays ranging from 0.005 to 3.5 ounces of gold per ton were stockpiled for future crushing and leaching (Bundtzen and others, 1988, p. 20). The gold was reported to be between 774 and 830 fine (Glover, 1950). Although a description of the ore is not given in any references to the Adler property, it is assumed that the Adler vein is a schist-hosted gold quartz vein, as are the other prospects in the area.

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

In 1987, a 350-foot-long section of the Adler vein was excavated to a depth of approximately 27 feet, and 5,000 tons of ore with assays ranging from 0.005 to 3.5 ounces of gold per ton were stockpiled for future crushing and leaching (Bundtzen and others, 1988, p. 20). Two thousand feet of 3-inch blast hole drilling was also completed in 1987.

Production notes:

Prior to 1969, 208 tons of ore averaging $47.50 in gold per ton was produced from a 3-foot-wide vein that strikes N. 42 E. and dips 70 W. (Chapman and Foster, 1969, p. D18). In 1987, five thousand tons of ore with assays ranging from 0.005 to 3.5 ounces of gold per ton were stockpiled for future crushing and leaching (Bundtzen and others, 1988, p. 20).

Reserves:

Additional comments:

References:

Smith, 1939 (B 910-A); Glover, 1950; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1988.

Primary reference: Chapman and Foster, 1969

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Happy Creek

Site type: Mine

ARDF no.: FB055

Latitude: 64.886 **Quadrangle:** FB D-2

Longitude: 147.975

Location description and accuracy:
Happy Creek has been placer mined in its headwaters in the SW1/4NW1/4 sec. 28, T. 1 N., R. 2 W., Fairbanks Meridian. The mine is locality 48 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Gold placers were mined from 1913 to 1916 and from 1938 to 1940 (Cobb, 1976 [OFR 76-662, p. 44]). Some mineable ground was found as deep as 140 feet (Smith, 1917 [BMB 142 and B 153]). The gold varied from 820 to 825 fine (Glover, 1950).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Gold placers were mined from 1913 to 1916 and from 1938 to 1940 (Cobb, 1976 [OFR 76-662, p. 44]).

Production notes:

There is no record of the amount of gold produced from mining that took place from 1913 to 1916 and from 1938 to 1940 (Cobb, 1976 [OFR 76-662, p. 44]).

Reserves:

Additional comments:

References:

Brooks, 1914; Chapin, 1914 (B 592-J, p. 357-362); Eakin, 1915; Brooks, 1916 (B 642-A); Smith, 1917 (BMB 153); Wimmler, 1926 (ATDM PE 58-2); Smith, 1939 (B 917-A); Smith, 1941; Smith, 1942; Glover, 1950; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Wimmler, 1926 (ATDM PE 58-2); Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Elmes; Ethel; Nickaloff

Site type: Mine

ARDF no.: FB056

Latitude: 64.886 **Quadrangle:** FB D-2

Longitude: 147.97

Location description and accuracy:

The Elmes mine is located in the SE1/4NW1/4 sec. 28, T. 1 N., R. 2 W., Fairbanks Meridian. The Elmes mill was on the south side of Happy Creek at an elevation of about 900 feet. It is about 2.5 miles east-northeast of the top of Ester Dome and 0.5 mile southeast of the junction of Ester Dome and Saint Patrick roads. The mine is locality 20 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Exploratory work began in 1926 on the Elmes gold-quartz veins which strike N. 25-30 E. (Wimmler, 1926 [ATDM PE 58-2]; Smith, 1929; Hill, 1933, p. 150). Wimmler described the lode as having a width of 5 to 7 feet; it consists of quartz, mica schist and clay, and has fairly well defined schist walls. The quartz, which contains arsenopyrite, pyrite, and stibnite, generally holds to the footwall portion of the lode and ranges from a few inches to 2.5 feet in width. The higher grade ore is confined to the quartz and gold is occasionally visible in some specimens (Wimmler, 1926 [ATDM PE 58-2]). The clay and schist also carry some gold. The highest assay obtained from quartz ore from these early workings was $142.00 of gold per ton (about 6.89 ounces of gold per ton) (Wimmler, 1926 [ATDM PE 58-2]). It was estimated that main ore shoot that was mined between the two shafts on the property averaged $30 to $40 in gold per ton (1.46 to 1.94 ounces of gold per ton). Production began in 1928, was also reported from 1937 to 1939, and possibly took place in 1940 (Cobb, 1976 [OFR 76-662, p. 37]).

The Elmes vein is the lateral equivalent of the Ethel shear zone, discovered by TriCon Mining, Inc., during exploration and development work of the Grant mine (FB058) in 1987 (Bundtzen and others, 1988, p. 30-31). One rotary drill hole intersected a 100-foot zone that assayed 0.12 ounce of gold per ton, and another cut a 35-foot section that aver-

aged 0.18 ounce of gold per ton. Drilling indicated a strike length of 250 feet, an average width of 30 feet, and an average grade of 0.16 ounce of gold per ton. The Ethel shear zone consists of gray schist with disseminated sulfides, including lead-antimony sulfosalts and free gold (Bundtzen and others, 1988, p. 31).

Alteration:

All of the lode material was highly oxidized (Wimmler, 1926 [ATDM PE 58-2]).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

In 1926, the Elmes lode had been traced by a series of open cuts for a distance of about 2000 feet (Wimmler, 1926 [ATDMPE 58-2]). The main underground workings were done on the Principal claim where two shafts 350 feet apart were sunk on the lode (Wimmler, 1926 [ADTM PE 58-2]). Shaft No. 1 was 110 feet deep, and two 10-foot drifts were driven at the bottom. Shaft No. 2 was 66 feet deep; at the 41-foot level, one drift was driven 21 feet to the south, and another drift was driven 23 feet to the north. The Elmes vein is the lateral equivalent of the Ethel shear zone, discovered by TriCon Mining, Inc., during exploration and development work of the Grant mine (FB058) in 1987 (Bundtzen and others, 1988, p. 30-31). In 1990, American Copper and Nickel Company drilled 17,434 feet of core in the O'Dea vein system and on the Ethel vein system (Swainbank and others, 1991).

Production notes:

Production at the Elmes mill began in 1928, was also reported from 1937 to 1939, and possibly took place in 1940 (Cobb, 1976 [OFR 76-662, p. 37]). In the late 1980's, with the development of the Grant gold mine (FB058), the ore from the Elmes vein and Ethel shear zone was sent to the Grant mill (Green and others, 1989, p. 38).

Reserves:

Silverado Gold Mines, Ltd., reported a possible resource of 18,000 ounces of gold at the Ethel-Elmes property (Silverado Gold Mines, Ltd., Ester Dome project web site, www.silverado.com, February 17, 2000).

Additional comments:

References:

Wimmler, 1926 (ATDM PE 58-2); Smith, 1929; Smith, 1930 (B 810); Smith, 1930 (B 813-A); Smith, 1932; Hill, 1933; Smith, 1933 (B 836-A); Smith, 1934 (B 864-A); Smith, 1938; Smith, 1939 (B 910-A); Smith, 1941; Smith, 1942; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1988; Green and others, 1989; Swainbank and others, 1991.

Primary reference: Wimmler, 1926 (ATDM PE 58-2)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Irishman

Site type: Mine

ARDF no.: FB057

Latitude: 64.882 **Quadrangle:** FB D-2

Longitude: 147.961

Location description and accuracy:

The Irishman mine is located in the SE1/4 sec. 28, T. 1 N., R. 2 W., Fairbanks Meridian. The Irishman vein system of the Grant mine is located across the Saint Patrick road from the Grant mill. (See FB058.) It is about 2.6 miles east of the top of Ester Dome. The mine is locality 21 of CObb (1972 [MF 410]).

Commodities:

Main: Au

Other: Ag, Pb, Sb, W

Ore minerals: Arsenopyrite, galena, gold, scheelite

Gangue minerals: Goethite, muscovite

Geologic description:

The Irishman deposit is one of two structurally controlled, auriferous vein-fault deposits at the Grant mine; these deposits are hosted in polymetamorphic schist and quartzite. The O'Dea is the other vein-fault system and is described under the Grant gold mine (FB058). From December 1980 to June 1981, Bundtzen and Kline (1981), spent 25 days mapping the underground workings at the Grant mine, and the following is a summary of their findings. At the Irishman vein, late-stage, silica injection was accompanied by free gold, arsenopyrite, lead-antimony sulfosalts, and rare scheelite. Ore fluids were emplaced along a fault zone trending sinuously N. 20-40 E. and dipping steeply to the southeast. On the 150-foot and 200-foot levels, the vein dips from 58 to 72 degrees, but flattens out to 15 to 35 degrees in raises above the 100-foot level where it intersects incompetent graphite-muscovite schist. Vein widths vary from 3 to more than 22 inches and average about 13 inches wide on the 100-foot and 150-foot levels. By 1982, underground exploration and development had shown that the Irishman vein was more than 400 feet long and had not yet bottomed out at depth. The southwest end of the system probably continues past the known ore body, but the northeast end is cut by a north-northwest-striking fracture system.

The first recorded exploration occurred in 1929, when lode gold mineralization was found at the bottom of an old shaft that was sunk for placer prospecting. The shaft was

sunk through muck and gravel to bedrock thatdipped east at a steep angle (Hill, 1933, p. 150). The original shaft was continued in bedrock to a depth of 240 feet, with 280 feet of drifts on the 200-foot and 240-foot levels. The 5- to 6-foot-wide quartz vein was said to strike N. 40 E. and dip 65 E. (Hill, 1933). Before 1931, approximately 500 to 600 tons of ore was milled from this vein. Exploration and development at the mine has been intermittent since the 1920's. Prior to 1950, about 6,000 tons of ore were mined from the Irishman vein (Eakins and others, 1985, p. 16).

From 1979 to 1981, Tri-Con Mining, operator for Silverado Gold Mines, Ltd., at the Grant gold mine, engaged in an aggressive exploration and development program on the Irishman, O'Dea, and other gold-bearing shear zones on the Grant property (Eakins and others, 1985, p. 16). Underground workings consisted of 3,600 feet of drifts, crosscuts and raises on and above the 200-foot level of the O'Dea zone (Bundtzen and Kline, 1981). During 1984, a $1.9 million exploration program was completed at the Grant mine (Eakins and others, 1985, p. 16). The drilling program defined an ore body on the O'Dea zone that extends 4,000 feet on strike and is as much as 1,000 feet deep. In 1985, the Grant mine recovered 1,563 ounces of gold and 1,178 ounces of silver from 5,036 tons of ore (Bundtzen and others, 1986, p. 26). During the seven weeks of mine production in 1989, the mill processed 8,000 tons of material that yielded 732 ounces of gold and 138 ounces of silver. From December 1987 to February 1989 when the mine closed, the Grant mine produced a total of 9,454 ounces of gold and 3,658 ounces of silver from 96,555 tons of ore at an average grade of 0.098 ounce of gold per ton (Bundtzen and others, 1990, p. 36-37). The gold ranges from 744 to 776 fine (Glover, 1950).

Alteration:

Silicification of the vein-fault system.

Age of mineralization:

The auriferous quartz veins cut Fairbanks Schist host rocks that are considered to be pre-Devonian and probably Proterozoic in age (Newberry and others, 1996).

Deposit model:

Structurally controlled, auriferous vein-fault deposit in polymetamorphic schist and quartzite.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; medium

Site Status: Active

Workings/exploration:

The first recorded exploration at this site occurred in 1929, when lode gold mineralization was found at the bottom of an old shaft that was sunk for placer prospecting. The shaft was sunk through muck and gravel to bedrock, which dipped east at a steep angle (Hill, 1933, p. 150). This original shaft was continued in bedrock to a depth of 240 feet, with 280 feet of drifts on the 200-foot and 240-foot levels. Exploration and development

at the mine has been intermittent since the 1920's.

From 1979 to 1981, Tri-Con Mining, operator for Silverado Gold Mines, Ltd., at the Grant gold mine, engaged in an aggressive exploration and development program on the Irishman, O'Dea and other gold-bearing shear zones on the Grant property (Eakins and others, 1985, p. 16). Principal levels at the Irishman vein were at the 100-foot, 150-foot and 200-foot levels (Bundtzen and Kline, 1981). During 1984, a $1.9 million exploration program was completed at the Grant mine (Eakins and others, 1985, p. 16). Late in 1989, Silverado signed an option agreement with American Copper and Nickel to explore and develop Silverado mining properties on Ester Dome, including the Grant mine (Bundtzen and others, 1990, p. 37). Most of the work in the 1980's and 1990's was done on the O'Dea vein system. (See also the Grant mine, FB058.)

Production notes:

Prior to 1950, about 6,000 tons of ore were mined from the Irishman vein (Eakins and others, 1985, p. 16). In 1985, the Grant mine recovered 1,563 ounces of gold and 1,178 ounces of silver from 5,036 tons of ore (Bundtzen and others, 1986, p. 26). During the seven weeks of mine production in 1989, the mill processed 8,000 tons of ore that yielded 732 ounces of gold and 138 ounces of silver. From December 1987 to February 1989 when the mine closed, the Grant mine produced a total of 9,454 ounces of gold and 3,658 ounces of silver from 96,555 tons of ore, at an average grade of 0.098 ounce of gold per ton (Bundtzen and others, 1990, p. 36-37).

Reserves:

Additional comments:

References:

Smith, 1932; Hill, 1933; Smith, 1933 (B 836-A); Smith, 1939 (B 910-A); Glover, 1950; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and Kline, 1981; Eakins and others, 1985; Bundtzen and others, 1990; Swainbank and others, 1991; Bundtzen and others, 1991; Newberry and others, 1996.

Primary reference: Bundtzen and Kline, 1981

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Grant

Site type: Mine

ARDF no.: FB058

Latitude: 64.882 **Quadrangle:** FB D-2

Longitude: 147.957

Location description and accuracy:

The Grant mine is located in the SE1/4 sec. 28, T. 1 N., R. 2 W., Fairbanks Meridian. The Grant mine is marked on the Fairbanks D-2 topographic map on the southeast side of Ester Dome on the east side of Saint Patrick road. It is about 2.6 miles east of the top of Ester Dome and about three-quarters of a mile from the junction of the Saint Patrick road and the Ester Dome road. This mine is locality 21 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Ag, Pb, Sb, W

Ore minerals: Arsenic and antimony oxides, arsenopyrite, galena, gold, scheelite

Gangue minerals: Goethite, muscovite

Geologic description:

The Grant mine consists of two, structurally controlled, gold-bearing vein-fault deposits, hosted in polymetamorphic schist and quartzite: the Irishman zone (FB057) and the O'Dea zone. From December 1980 to June 1981, Bundtzen and Kline (1981) spent 25 days mapping the underground workings at the Grant mine, and the following is a summary of their work. At the Irishman vein-fault system, late-stage silica injection was accompanied by free gold, arsenopyrite, lead-antimony sulfosalts and rare scheelite. Ore fluids were emplaced along a fault zone trending sinuously N. 20-40 E. and dipping steeply to the southeast. On the 150-foot and 200-foot levels, the vein-fault dips from 58 to 72 degrees, but it flattens out to 15 to 35 degrees in raises above the 100-foot level, where it intersects incompetent graphite-muscovite schist. Vein widths vary from 3 to more than 22 inches and average about 13 inches wide on the 100-foot and 150-foot levels. By 1982, underground exploration and development had shown that the Irishman vein was more than 400 feet long and had not bottomed out in the lowest workings. The deposit probably continues beyond the southwest end of the ore body that has been explored, but the northeast end is cut by a north-northwest-striking joint-fault system.

The O'Dea breccia zone consists of auriferous quartz breccia cemented by iron, arsenic, and antimony oxides, broken schist fragments, mylonite, and minor sulfides. The width

of the vein-fault system varies from 6 inches to more than 6 feet. Multiple injections of silica also occurred along the O'Dea breccia zone, but unlike the Irishman system, recurrent movement along the vein-fault zone resulted in heavily oxidized, broken, and brecciated zones.

The first recorded exploration at this site occurred in 1929, when lode gold mineralization was found at the bottom of an old shaft that was sunk for placer prospecting. The shaft was sunk through muck and gravel to bedrock which dipped east at a steep angle (Hill, 1933, p. 150). This original shaft was continued in bedrock to a depth of 240 feet and had 280 feet of drifts on the 200-foot and 240-foot levels. The 5- to 6-foot-wide quartz vein was said to strike N. 40 E. and dip 65 E. (Hill, 1933). Before 1931, approximately 500 to 600 tons of ore was milled from this vein. Exploration and development at the mine has been intermittent since the 1920's. Prior to 1950, about 6,000 tons of ore were mined from the Irishman vein (Eakins and others, 1985, p. 16).

From 1979 to 1981, Tri-Con Mining, operator for Silverado Gold Mines, Ltd., at the Grant gold mine, engaged in an aggressive exploration and development program on the Irishman, O'Dea, and other gold-bearing shear zones on the Grant property (Eakins and others, 1985, p. 16). Underground workings consisted of 3,600 feet of drifts, crosscuts, and raises on and above the 200-foot level of the O'Dea zone (Bundtzen and Kline, 1981). During 1984, a $1.9 million exploration program was completed at the Grant mine (Eakins and others, 1985, p. 16). The drilling program defined an ore system on the O'Dea zone that extends 4,000 feet on strike and is as much as 1,000 feet deep. In 1985, the Grant mine recovered 1,563 ounces of gold and 1,178 ounces of silver from 5,036 tons of ore (Bundtzen and others, 1986, p. 26). During the seven weeks of mine production in 1989, the mill processed 8,000 tons which yielded 732 ounces of gold and 138 ounces of silver. From December 1987 to February 1989 when the mine closed, the Grant mine produced a total of 9,454 ounces of gold and 3,658 ounces of silver from 96,555 tons of ore at an average grade of 0.098 ounce of gold per ton (Bundtzen and others, 1990, p. 36-37).

Alteration:

The O'Dea vein-fault zone is heavily oxidized; it consists of gold-bearing quartz breccia cemented by iron, arsenic and antimony oxides, broken schist fragments, mylonite, and minor sulfides (Bundtzen and Kline, 1981).

Age of mineralization:

Gold-bearing quartz veins cut Fairbanks Schist host rocks that are considered to be pre-Devonian and probably Proterozoic in age (Newberry and others, 1996).

Deposit model:

Structurally controlled, auriferous vein-fault deposit hosted in polymetamorphic schist and quartzite.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; medium

Site Status: Inactive

Workings/exploration:

The first recorded exploration at this site occurred in 1929, when lode gold mineralization was found at the bottom of an old shaft that was sunk for placer prospecting. The shaft was sunk through muck and gravel to bedrock, which dipped east at a steep angle (Hill, 1933, p. 150). This original shaft was continued in bedrock to a depth of 240 feet and had 280 feet of drifts on the 200-foot and 240-foot levels. Exploration and development at the mine has been intermittent since the 1920's.

From 1979 to 1981, Tri-Con Mining, operator for Silverado Gold Mines, Ltd., at the Grant gold mine, engaged in an aggressive exploration and development program on the Irishman, O'Dea, and other gold-bearing shear zones on the Grant property (Eakins and others, 1985, p. 16). Underground workings consisted of 3,600 feet of drifts and crosscuts and raises on and above the 200-foot level of the O'Dea zone (Bundtzen and Kline, 1981). The principal levels at the Irishman vein were at the 100-foot, 150-foot and 200-foot levels (Bundtzen and Kline, 1981). During 1984, a $1.9 million dollar exploration program was completed at the Grant mine (Eakins and others, 1985, p. 16). The drilling program defined an ore system on the O'Dea zone that extends 4,000 feet along strike and is as much as 1,000 feet deep. Late in 1989, Silverado Gold Mines, Ltd., signed an option agreement with American Copper and Nickel (ACNC) to explore and develop Silverado mining properties on Ester Dome, including the Grant mine property (Bundtzen and others, 1990, p. 37). In 1990, ACNC drilled 17,434 feet of core in the O'Dea vein system and on the Ethel vein system 2,000 feet to the north (Swainbank and others, 1991). ACNC also conducted an aerial geophysical survey of the area that same year (Bundtzen and others, 1991).

Production notes:

Prior to 1950, about 6,000 tons of ore were mined from the Irishman vein (Eakins and others, 1985, p. 16). In 1985, the Grant mine recovered 1,563 ounces of gold and 1,178 ounces of silver from 5,036 tons of ore (Bundtzen and others, 1986, p. 26). During the seven weeks of mine production in 1989, the mill processed 8,000 tons, which yielded 732 ounces of gold and 138 ounces of silver. From December 1987 to February 1989 when the mine closed, the Grant mine produced a total of 9,454 ounces of gold and 3,658 ounces of silver from 96,555 tons of ore at an average grade of 0.098 ounce of gold per ton (Bundtzen and others, 1990, p. 36-37).

In early 1989, after the 100,000-ton tailings pond filled up at the Grant mine, the company decided that the costs for construction and permitting of a new tailings facility was prohibitive, and mining was shut down (Bundtzen and others, 1990, p. 37).

Reserves:

The results of the 1990 ACNC drilling on a portion of the O'Dea vein system show a resource of 212,000 tons of material that contains 0.36 ounce of gold per ton (Swainbank and others, 1991, p. 11).

Additional comments:

References:

Smith, 1932; Hill, 1933; Smith, 1933 (B 836-A); Smith, 1939 (B 910-A); Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and Kline, 1981; Conwell, 1982; Eakins and others, 1985; Bundtzen and others, 1990; Swainbank and others, 1991; Bundtzen and others, 1991; Newberry and others, 1996.

Primary reference: Bundtzen and Kline, 1981

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Dorothy and Dorice; Cosgrove and Krutsch

Site type: Prospect

ARDF no.: FB059

Latitude: 64.88 **Quadrangle:** FB D-3

Longitude: 147.992

Location description and accuracy:
The Dorothy and Dorice prospect is located in the SW1/4SE1/4 sec. 29, T. 1 N., R. 2 W., Fairbanks Meridian. This prospect is on the ridge south of Happy Creek at an elevation of about 1,180 feet. It is about 1.8 miles east of the top of Ester Dome. This prospect is included in locality 14 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other: Au

Ore minerals: Gold, stibnite

Gangue minerals:

Geologic description:
This prospect consists of a vein striking N. 40 E. which has been explored by a shaft of unknown depth (Chapin, 1914 [B 592-J, p. 321-355]). Coarse grained, bladed stibnite occurs in float; some pieces are as much as 2 feet thick. (Joesting, 1942 [ATDM Pamph. 1]). Several trenches were bulldozed but the bedrock source of the stibnite was not found.

Alteration:

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: None

Site Status: Inactive

Workings/exploration:

The prospect has been explored by trenches and a shaft of unknown depth (Chapin, 1914 [B 592-J, p. 321-355]; Joesting, 1942 [ATDM Pamph. 1]).

Production notes:

Reserves:

Additional comments:

References:

Chapin, 1914 (B 592-J, p. 321-355); Joesting, 1942 (ATDM Pamph. 1); Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Joesting, 1942 (ATDM Pamph. 1)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Last Chance

Site type: Mine

ARDF no.: FB060

Latitude: 64.875 **Quadrangle:** FB D-2

Longitude: 147.992

Location description and accuracy:
The Last Chance mine is located in the NW1/4NE1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. This deposit is near the head of Saint Patrick Creek at an elevation of about 1,000 feet. It is about 1.8 miles east-southeast of the top of Ester Dome. This mine is included in locality 17 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Arsenopyrite, gold, stibnite

Gangue minerals:

Geologic description:
Gold has been produced from a steeply dipping quartz vein that is two feet thick and contains arsenopyrite, stibnite, and visible gold. The vein strikes northeast and dips steeply northward (Davis, 1922, p. 59; Chapman and Foster, 1969, p. D18). One hundred and twenty-five tons of ore were mined from short drifts off a 60-foot shaft; the ore reportedly ran $30 in gold per ton (about 0.048 ounce of gold per ton) (Davis, 1922, p. 59-60).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

One hundred twenty-five tons of ore were mined from short drifts off a 60-foot shaft (Davis, 1922, p. 59-60).

Production notes:

One hundred twenty-five tons of ore were mined from short drifts from a 60-foot shaft; the ore reportedly assayed $30 in gold per ton (about 1.45 ounces of gold per ton) (Davis, 1922, p. 59-60).

Reserves:

Additional comments:

References:

Davis, 1922; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Davis, 1922

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Mohawk; Bondholder; Bondholder Extension; Peg Leg; Yellow Jacket; Mohawk #2; Mohawk #3; Liberty; Spite Fraction

Site type: Mine

ARDF no.: FB061

Latitude: 64.873 **Quadrangle:** FB D-3

Longitude: 147.985

Location description and accuracy:

The Mohawk mine is located in the NE1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. The Mohawk mine is near the head of Saint Patrick Creek. The mine and mill are along Saint Patrick road about 0.8 mile by road north of the junction of Saint Patrick Road and Henderson Road. Workings extend from an elevation of about 900 feet to 1,250 feet. The mine is included in locality 17 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Pb, Sb, Zn

Ore minerals: Galena, gold, sphalerite, stibnite

Gangue minerals:

Geologic description:

The Mohawk mine consists of a group of claims including the Bondholder (FB038), Bondholder Extension, Peg Leg, Yellow Jacket, Mohawk, Mohawk No. 2, Mohawk No. 3, and Liberty and Spite Fraction. By 1931, the property reportedly produced more than $200,000 in gold (about 9,676 ounces of gold), most from the Mohawk vein, in the southern part of the group of claims (Hill, 1933, p. 143). Free gold, arsenopyrite, stibnite, galena, and sphalerite occur in quartz veins with schist inclusions. The gold varies from 766 to 818 fine (Glover, 1950).

The main workings are on the Mohawk vein, which generally strikes N. 30 E. and dips 40-70 east-southeast (Hill, 1933, p. 143). In 1931, the underground workings included more than 2,900 feet of drift and 1,800 feet of raises and winzes that developed the vein over a total length of 1,300 feet to a vertical depth of 232 feet (Hill, 1933, p. 143). The ore averaged more than $20 in gold per ton (0.97 ounce of gold per ton).

The Bondholder vein is at the north end of the Mohawk group of claims. It was opened by at least two shafts and several pits (Hill, 1933, p. 146). About 200 feet north of these shafts, an opening exposed a 4.5-foot-wide vein that trends N. 24 E., 45 NW in mica-quartz schist. The vein contains iron- and arsenic-stained quartz, a sample of which as-

sayed $10.29 in gold per ton (about 0.5 ounce of gold per ton) (Hill, 1933, p. 146). In another 142-foot shaft, the vein averages 6 feet in width. By 1931, five hundred tons of ore were mined from the Bondholder vein. This group of claims was mined intermittently from 1914 to 1940 (Cobb, 1976 [OFR 76-662, p. 98-99]).

Alteration:
The Bondholder vein contains iron- and arsenic-stained quartz (Hill, 1933).

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The Mohawk mine consists of a group of claims including the Bondholder (FB038), Bondholder Extension, Peg Leg, Yellow Jacket, Mohawk, Mohawk No. 2, Mohawk No. 3, and Liberty and Spite Fraction. The main workings are on the Mohawk vein, and in 1931, the underground workings included more than 2,900 feet of drifts and 1,800 feet of raises and winzes that developed the vein over a total length of 1,300 feet to a vertical depth of 232 feet (Hill, 1933, p. 143). The Bondholder vein is at the north end of the Mohawk group of claims. It was opened by at least two shafts and several pits (Hill, 1933, p. 146).

Production notes:
This group of claims was mined intermittently from 1914 to 1940 (Cobb, 1976 [OFR 76-662, p. 98-99]). By 1931, five hundred tons of ore were mined from the Bondholder vein. The main workings were on the Mohawk vein but the amount of gold that was produced was not reported (Hill, 1933, p. 146).

Reserves:

Additional comments:

References:
Smith, 1913 (B 525); Smith, 1913 (B 542-F); Chapin, 1914 (B 592-J, p. 321-355); Eakin, 1915; Brooks, 1916 (B 642-A); Smith, 1917 (BMB 142); Mertie, 1917; Martin, 1920; Brooks and Martin, 1921; Brooks and Capps, 1924; Brooks, 1925; Smith, 1926; Moffit, 1927; Smith, 1929; Smith, 1930 (B 813-A); Smith, 1930 (B 810); Smith, 1932; Hill, 1933; Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1934 (B 864-A); Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1941; Joesting, 1942 (ATDM MR

194-11); Smith, 1942; Joesting, 1943 (ATDM Pamph. 2); Glover, 1950; Killeen and Mertie, 1951; Saunders, 1956; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Saint (St.) Patrick Creek

Site type: Mine

ARDF no.: FB062

Latitude: 64.873 **Quadrangle:** FB D-2

Longitude: 147.967

Location description and accuracy:
The Saint Patrick mine is located in the SE1/4 NW1/4 sec. 33, T. 1 N., R. 2 W., Fairbanks Meridian. The exact location of placer mining activity along Saint Patrick Creek is unknown. The placer is about 2.8 miles east-southeast of the top of Ester Dome. The mine is locality 49 of CObb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Placer mining and prospecting took place along St. Patrick Creek between 1909 and 1916 (Cobb, 1976 [OFR 76-662, p. 128]). Prindle and Katz (1913) reported that in 1910 $17,000 of gold was produced with the gold valued at $17.50 per ounce. This does not agree with Ellsworth and Parker (1911, p. 158), who reported that very little actual mining took place in 1910.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au(Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Placer mining and prospecting took place along St. Patrick Creek between 1909 and 1916 (Cobb, 1976 [OFR 76-662, p. 128]). In 1925, churn drills were in operation to prospect suitable ground for dredging but no dredging resulted (Wimmler, 1925 [ATDM MR 195-8, p. 54]).

Production notes:

Prindle and Katz (1913) reported that in 1910 $17,000 of gold was produced (gold valued at $17.50 per ounce) This does not agree with Ellsworth and Parker (1911, p. 158), who reported that very little mining took place in 1910.

Reserves:

Additional comments:

References:

Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Prindle and Katz, 1913; Eakin, 1915; Smith, 1917 (BMB 142); Smith, 1917 (BMB 153); Wimmler, 1925 (ATDM MR 195-8); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Fair Chance; Frisco; McGlove; Miller and O'Connor; Star Crystal; Stay and Company

Site type: Mine

ARDF no.: FB063

Latitude: 64.872 **Quadrangle:** FB D-2

Longitude: 147.994

Location description and accuracy:

The Fair Chance mine is located in the SW1/4NE1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. This deposit is near the head of Saint Patrick Creek at an elevation of about 1,100 feet. It is about 2 miles east-southeast of the top of Ester Dome. The mine is included in locality 17 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Considerable free gold is found at the Fair Chance mine n a mineralized zone that consists of crushed quartz mixed with blue gouge, crushed schist, and crushed quartzite (Chapin, 1914 [B 592-J, p. 3321-355]). This mineralized zone was opened by a shaft with drifts at the 18-foot and 40-foot levels. On the 40-foot level, the main mineralized zone is cut off by a fault that is oriented N. 30 E., 70 SE. Initial reports described the mineralized zone as dipping steeply to the southeast (Chapin, 1914B 592-J, p. 321-355]); however, later reports indicate the zone was oriented N. 20 E. with a dip of 60 degreess to the west (Hill, 1933, p. 139). By 1931, three shafts, about 50 feet apart, were reported (Hill, 1933, p. 139). Forty tons of ore were mined and milled in 1930, with disappointing results (Hill, 1933, p. 139). One grab sample assayed $5.95 in gold per ton (about 0.29 ounce of gold per ton) (Hill, 1933, p. 139). In 1931, on the nearby Blue Bird claim, a tunnel was driven to intersect what is probably the same zone as is found at the Fair Chance mine (Hill, 1933, p. 139).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
In 1914, the mineralized zone was opened by a shaft with drifts at the 18-foot and 40-foot levels (Chapin, 1914 [B 592-J, p. 321-355]). By 1931, three shafts about 50 feet apart were reported (Hill, 1933, p. 139).

Production notes:
In 1930, forty tons of ore were mined and milled, with disappointing results (Hill, 1933, p. 139).

Reserves:

Additional comments:

References:
Chapin, 1914 (B 592-J, p. 321-355); Eakin, 1915; Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Billy Sunday; Leah Fraction; Smith and McGlone; Smith and McGonnigle; Smith Bros.

Site type: Mine

ARDF no.: FB064

Latitude: 64.867 **Quadrangle:** FB D-2

Longitude: 147.997

Location description and accuracy:

The Billy Sunday mine is located in the SE1/4SW1/4 sec. 32, T. 1 N., R. 2 W., Fairbanks Meridian. This mine is at the head of the south fork of Saint Patrick Creek, on the southeast side of Ester Dome at an elevation of about 1,250 feet. It is about 2 miles east-southeast of the top of Ester Dome. The Billy Sunday mine is a patented fractional claim, containing about 7.33 acres (Hill, 1933, p. 139). The mine is included in locality 18 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Pb, Sb, Zn

Ore minerals: Arsenopyrite, cervantite, galena, gold, sphalerite, stibnite

Gangue minerals:

Geologic description:

A gold-bearing quartz vein, 2 to 3 feet thick, lies within and parallel to a 3- to 11-foot-wide mineralized zone (Mertie, 1917, p. 412-413). The quartz is broken and shattered and contains stibnite and a little sphalerite. Shattered rock next to the quartz vein is filled with gold-quartz stringers. The schist near the veins contains gold, cervantite, stibnite, and arsenopyrite, with some galena (Chapin, 1919; Hill, 1933; Chapman and Foster, 1969). The quartz vein, known as the Leah fraction, is oriented N. 45 E., 55 SE. By 1918, work on the Leah fraction consisted of a 95-foot shaft (Mertie, 1917). On the Billy Sunday fraction, the vein strikes N. 25 E. and dips 70 SE. to nearly vertical; it is 3 feet wide at the surface and widens downward (Chapin, 1919). Ore was mined from 1918 to 1923; the total production was 1,900 tons of ore mined from stopes above the 120-foot level (Hill, 1933).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
In 1931, development consisted of an inclined shaft with crosscuts at the 25-foot, 60-foot, 120-foot, and 200-foot levels (Hill, 1933, p. 141).

Production notes:
Ore was mined from 1918 to 1923, and production totaled $50,000 (about 2,419 ounces of gold) from 1,900 tons of ore mined from stopes mainly above the 120-foot level (Hill, 1933).

Reserves:

Additional comments:

References:
Mertie, 1917; Chapin, 1919; Martin, 1920; Brooks and Martin, 1921; Brooks, 1922; Brooks, 1923; Brooks and Capps, 1924; Brooks, 1925; Hill, 1933; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ryan Lode

Site type: Mine

ARDF no.: FB065

Latitude: 64.863 **Quadrangle:** FB D-2

Longitude: 147.99

Location description and accuracy:

The Ryan mine is on the ridge between Eva Creek and Saint Patrick Creek, on the southeast side of Ester Dome. The mine workings are marked on the Fairbanks D-2 topographic map in the NW1/4NE1/4 sec. 5, T. 1 S., R. 2 W. The property can be reached from the Parks Highway by turning east on Gold Hill Road for about a quarter of a mile, then north and then west on Saint Patrick Road for about 2 miles. The extensive workings can be seen on both sides of the road. The mine is included in locality 18 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb

Ore minerals: Arsenopyrite, gold, jamesonite, stibnite

Gangue minerals:

Geologic description:

The following is a summary of the Ryan Lode property prepared Ryan Lode Mines, Inc. (Ryan Lode Mines, Inc., unpublished report, 1996). The Ryan lode is underlain by the Fairbanks Schist that consists of quartz-mica schist, mica schist, and calcareous schist. A small quartz monzonite intrusion is located in the southeast portion of the property. Prior to the intrusion, the rocks underwent several episodes of regional deformation. Post-intrusive brittle deformation resulted in pervasive near-vertical faulting. The dominant structural trend on the property parallels the regional trend of about N. 45 E.

The ore reserves occur in two shear zones: the Ryan shear and the Curlew shear, which is just south of the Ryan shear. Both deposits are shist-hosted and structurally controlled. However, the Curlew shear is partially in a small quartz monzonite intrusion. A surface oxidation zone is present at both sites and varies in depth from 150 feet to more than 300 feet. Quartz veins in the shear zones contain gold, arsenopyrite, and minor pyrite and stibnite. The Ryan shear is of varied thickness and has an average strike of N. 30 E. Where the the shear zone trends N. 35 E. to N. 55 E., secondary splays diverge from the main trunk at regular intervals along the shear. The dip of the Ryan shear varies between

50 and 80 degrees east. High-grade ore is found in pods which form at deflection points in the shear zone. As in the Ryan shear, the gold and sulfides in the Curlew shear are associated with quartz-filled voids in highly fractured rock. The intrusion (90 to 93 m.y. old) that hosts part of the Curlew shear appears to be sill-like, and in some places it is in fault contact with the surrounding schist. It has a core of quartz monzonite surrounded by a border of granodiorite to quartz diorite. There has been extensive sericitic alteration along shears and fractures within the intrusion. At least three alteration assemblages have been identified: quartz-muscovite-siderite, quartz-muscovite-chlorite, and silicification. White mica in the hydrothermal stockwork has been dated at 89.1 +/- 0.3 Ma (McCoy and others, 1997).

Gold ore was discovered at the Ryan lode in the early 1900's; the first production was recorded in 1911(Brooks, 1912, p. 33). Work continued intermittently from 1911 to 1958. The gold varies from 814 to 834 fine (Glover, 1950). Between 1938 and 1942, more than 1,500 feet of shafts, 2,000 feet of drifts, adits and crosscuts, and more than 2,800 feet of trenching was completed (Warfield and Thomas, 1972). From 1987 to 1989, approximately 320,000 tons of ore were mined from an open pit (R. Hughes, written commun., 1996). In recent years, sampling of the Ryan and Curlew ore bodies has been accomplished by both reverse circulation and core drilling that began in 1990 and continued until 1993 (Ryan Lode Mines, Inc., unpublished report, 1996). From this drilling, a reserve of 8.27 million tons of material grading 0.077 ounce of gold per ton has been defined (Masterman and Campbell, 1993).

Alteration:

A surface oxidation zone is present at both the Ryan and Curlew shears and varies in depth from 150 feet to more than 300 feet. There has been extensive sericitic alteration along shears and fractures within the quartz monzonite intrusion. At least three alteration assemblages have been identified: quartz-muscovite-siderite, quartz-muscovite-chlorite, and silicification (Ryan Lode Mines, Inc., unpublished report, 1996).

Age of mineralization:

McCoy and others (1997) dated both hydrothermal and intrusion-related minerals using the 40Ar/39Ar method. At the Ryan lode, hydrothermal white mica has been dated at 89.1 +/- 0.3 Ma, and white mica from hydrothermally altered schist has been dated at 87.6 +/- 0.3 Ma. The quartz diorite hornblende was dated at 90.6 +/- 0.3 Ma, and the quartz diorite biotite was dated at 90.2 +/- 0.3 Ma; both are cut by mineralized shear zones and thus are earlier than the mineralization.

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Work was reported on the property as early as 1911(Brooks, 1912, p. 33). In 1913, a shaft was reported to be 90 feet deep (Smith, 1913 [B 525, p. 207]). By 1931, the workings consisted of shallow shafts and pits, a tunnel 300 feet long, and a shaft 200 feet deep (Hill, 1933, p. 135-138). In 1938, Bartholomae Oil Co. had control of the property and cleaned out the old shaft to a depth of 160 feet and drove 330 feet of drift and several hundred feet of crosscuts and raises (Smith, 1939 [B 917-A, p. 26]). In 1940, a large amount of development work was reported including trenching and geophysical work (Smith, 1942, p. 23). Between 1938 and 1942, more than 1,500 feet of shafts, 2,000 feet of drifts, adits and crosscuts, and more than 2,800 feet of trenching was completed (Warfield and Thomas, 1972). From 1954 to 1958, there was minor trenching and drlling (Warfield and Thomas, 1972). In 1969-70, the U.S. Bureau of Mines conducted a drilling program that was a pilot study to compare the cost and environmental damage of rotary drilling versus bulldozer trenching (Warfield and Thomas, 1972). Citigold Mining Company Ltd. acquired the project in 1985 and began a test heap leach, which was unsuccessful (Ryan Lode Mines, unpublished report, 1996). In 1986, La Teko Resources merged with Citigold, and a small, more successful heap leach test was conducted. Full scale production began in 1987. From 1987 to 1989, approximately 320,000 tons of ore were mined from the property by open pit methods (Rich Hughes, written commun., 1996). In recent years, sampling of the Ryan and Curlew ore bodies has been accomplished by both reverse circulation and core drilling, which began in 1990 and continued until 1993 (Ryan Lode Mines, Inc., unpublished report, 1996). In 1993, Citigold Alaska, Inc. was renamed Ryan Lode Mines, Inc. Exploration activity was suspended at the project at the end of 1993, although heap reclamation and detoxification efforts continue at the project site (Ryan Lode Mines, Inc., unpublished report, 1996). In 1997, over 8,000 feet of reverse-circulation holes were drilled on the Ryan Lode (Swainbank and Clautice, 1998, p. 8). In 1999, the property was acquired by Kinross Gold Corporation. The deposit is currently idle while geology and development teams evaluate recent drilling and metallurgical studies (Kinross Gold Corporation web site, 2001, http://www.kinross.com/op/expdev/ala.htm)

Production notes:

The first shipment of ore was reported in 1911 (Brooks, 1912, p. 33). In 1938, Bartholomae Oil Co. cleaned out the old shaft and ore was taken out and milled (Smith, 1939 [B 917-A, p. 26]). There is no further production until the late 1980's when La Teko Resources mined approximately 320,000 tons of ore from a pit on the property from 1987 to 1989. This ore contained 19,220 ounces of gold and 14,330 ounces of silver (R. Hughes, written commun., 1996).

Reserves:

Based on a 0.015-ounce-per-ton cutoff grade, the total reserves in the Ryan Lode and the Curlew Shear are 822,200 ounces of gold in 14.6 million tons of rock. There is a total geologic resource of about 2.4 million ounces of gold (Swainbank and Szumigala, 2000, p. 4).

Additional comments:

References:

Brooks, 1912; Smith, 1913 (B 525); Smith, 1913 (B 542-F); Mertie, 1917; Chapin, 1919; Moffit, 1927; Smith, 1930 (B 810); Smith, 1930 (B 813-A); Smith, 1932; Hill, 1933; Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1936; Smith, 1939 (B 917-A); Joesting, 1940; Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Glover, 1950; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Warfield and Thomas, 1972; Cobb, 1976 (OFR 76-662); Masterman and Campbell, 1993; McCoy and others, 1997; Swainbank and Szumigala, 2000.

Primary reference: Ryan Lode Mines, Inc., unpublished report, 1996

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): McDonald; Morton; Blue Bird; Blue Bird Fraction; Combination

Site type: Mine

ARDF no.: FB066

Latitude: 64.859 **Quadrangle:** FB D-2

Longitude: 147.993

Location description and accuracy:

The McDonald mine is located in the SW1/4NE1/4 sec. 5, T. 1 S., R. 2 W., Fairbanks Meridain. This mine is on the ridge east of Eva Creek, about 1 mile northeast of the town of Ester. The mine is included in locality 19 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Arsenopyrite, cervantite, gold, scorodite, stibnite

Gangue minerals:

Geologic description:

In 1917, a few shallow pits exposed a quartz vein with arsenopyrite scattered through it and coatings of scorodite and cervantite (Chapin, 1919, p. 323). By 1927, a shaft was sunk that exposed visible gold in schist-hosted quartz veins (Moffit, 1927, p. 12). By 1931, there were several groups of workings on four claims (Hill, 1933, p. 133-135). The Blue Bird incline was 80 feet deep with three levels of drifting on a vein that was oriented N. 35 W., 65 NE; the vein was terminated by a fault on all three levels. The Blue Bird workings produced 240 tons of ore averaging $19 in gold per ton (0.92 ounce of gold per ton). The Combination shaft consisted of a 100-foot incline that followed a vein that was oriented N. 20 W., 45 E. The vein had an average width of 3 feet, and ore from it was rich in sulfides, averaging $25 to $40 in gold per ton (1.21 to 1.94 ounces of gold per ton). Large boulders of stibnite-arsenopyrite ore were found on the dump. On the McDonald claim, four, subparallel, nearly vertical veins strike N. 40 E; the ore consists of arsenopyrite and stibnite. Mining was reported from this group of claims in 1931 and 1937 (Hill, 1933; Smith, 1939 [B 910-A]). The gold is 810 to 846 fine (Glover, 1950).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The Blue Bird claim was located September 28, 1924, by John McDonald (Kukkola, 1939). The adjoining Blue Bird fraction was located on July 5, 1924, also by John McDonald (Kukkola, 1939). By 1931, there were several groups of workings on four claims (Hill, 1933, p. 133-135). Mining was reported from this group of claims in the 1930's (Hill, 1933; Smith, 1939 [B 910-A]). The Blue Bird incline was 80 feet deep with three levels of drift on a vein that was oriented N. 35 W., 65 NE; the vein was terminated by a fault on all three levels. The Combination shaft consisted of a 100-foot incline that followed a vein that was oriented N. 20 W., 45 E. (Hill, 1933). Kukkola (1939) reported that a shaft was sunk 125 feet to the northwest of the old shaft, but it is unclear if this was the Combination shaft reported by Hill (1933) or another. Mining on this 'new' shaft was carried on to a depth of 210 feet.

Production notes:
Prior to 1931, the Blue Bird workings produced 240 tons of ore averaging $19 in gold per ton (0.92 ounce of gold per ton) (Hill, 1933, p. 134). The Combination shaft ore averaged $25 to $40 in gold per ton (1.21 to 1.94 ounces of gold per ton), but the amount produced was not reported. Mine production from 1932 to 1938 was 4,000 tons or ore that netted $80,000 (Kukkola, 1939). No mill was erected on the property; the ore was hauled to the Mohawk mill.

Reserves:

Additional comments:

References:
Chapin, 1919; Moffit, 1927; Hill, 1933; Kukkola, 1939; Smith, 1939 (B 910-A); Joesting, 1942 (ATDM Pamph. 1); Glover, 1950; Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Crown Point; Comstock

Site type: Prospect

ARDF no.: FB067

Latitude: 64.858 **Quadrangle:** FB D-2

Longitude: 147.999

Location description and accuracy:

The Crown Point prospect is located in the SE1/4NW1/4 sec. 5, T. 1 S., R. 2 W., Fairbanks Meridian. The prospect is on the east slope of Eva Creek, about three-quarters of a mile north of Ester Creek and about 0.9 mile northeast of the town of Ester. The mine is included in locality 19 of CObb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

An inclined shaft was driven 20 feet along two narrow quartz veins that were parallel to joints in schist (Chapin, 1914 [B 592-J, p. 353]). The two veins, 2 inches and 0.5 inch thick, respectively, are oriented N. 40 W., dip 65 SW., and are separated by 4 feet of chloritic schist. The adjoining schist is altered to clay. Specks of visible gold were found in the quartz and the wall rock was said to contain a little gold (Chapin, 1914 [B 592-J, p. 353]).

Alteration:

The schist next to the veins has been altered to clay.

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
Two thin gold-quartz veins were explored by a 20-foot inclined shaft (Chapin, 1914 [B 592-J, p. 353]).

Production notes:
There is no information available on production.

Reserves:

Additional comments:

References:
Chapin, 1914 (B 592-J, p. 353); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Chapin, 1914 (B 592)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Stay; Little Eva; Eva No. 2; Curlew No. 1; Comet No 2; Rose; Comet

Site type: Mine

ARDF no.: FB068

Latitude: 64.855 **Quadrangle:** FB D-2

Longitude: 147.994

Location description and accuracy:

The Stay mine is located in the SE1/4 sec. 5, T. 1 S., R. 2 W., Fairbanks Meridian. In 1933, the Stay property consisted of six claims covering 115 acres; these were the Little Eva, Eva No. 2, Curlew No. 1, Curlew No. 2, Rose, and Comet. The property is on the ridge east of Eva Creek, about 0.5 mile above its mouth and about 0.7 mile northeast of the town of Ester. The mine is included in locality 19 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sb(?)

Ore minerals: Gold, stibnite(?)

Gangue minerals:

Geologic description:

The Stay property is in schist, slate, phyllite, tuff, and quartzite that is cut by Cretaceous quartz porphyry dikes that are exposed along the ridge east of Eva Creek(Newberry and others, 1996). Gold-quartz veins are found within the schist. Hill (1933, p. 129-133) visited the Stay property in 1931, and the following is a summary of his observations. During 1930 and 1931, about 700 tons of ore were produced from an adit and the Stay shafts that yielded $16,000 in gold (about 774 ounces). Most of this ore had an average grade of a little more than an ounce of gold per ton. Several shafts on the Little Eva and Eva No. 2 claims carried as much as $60 to $70 per ton in gold (about 2.9 to 3.4 ounces of gold per ton). Most of the development work was in the Little Eva adit near the mouth of Eva Creek. By 1931, this adit was 570 feet long. The adit followed a badly faulted, 6- to 8-inch-wide, vertical vein striking N. 27 W. The vein was continually offset to the west by a series of faults that had a strike of N. 10-51 E. and a 30 to 70 degrees, north to northwest dip. Below the tunnel, the vein was developed by several winzes; the vein exposed in them was 8 to 11inches wide. In some places the schist wall rock east of the main vein was cut by numerous stringers of quartz that followed the nearly horizontal planes of schistosity. The schist contained from 23 cents to as much as $1 in gold per ton

(about 0.01 to 0.05 ounce of gold per ton). Considerable work was also done near the northwest corner of the Little Eva claim and the northwestern part of the Eva No. 2 claim. Several shafts from 12 to 60 feet deep were scattered over an area of about 200 square feet. The Eva No. 2 shaft was 60 feet deep and had about 40 feet of drifting at the 40-foot level. The shaft was sunk on a short segment of the vein between two parallel faults. The vein was from 4 to 6 inches wide and trended N. 50 W.; it was high grade, and the schist on both sides was mineralized. Samples of gold are 778, 811, and 831 fine (Glover, 1950).

Alteration:

The porphyry dikes are altered and iron stained.

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

In 1931, the Stay property consisted of six claims that had been explored by several adits and shallow shafts (Hill, 1933, p. 129-133). Most of the development work was done in the Little Eva adit near the mouth of Eva Creek. By 1931, this adit was 570 feet long. Below the adit, the vein was developed by several winzes. Considerable work had also been done near the northwest corner of the Little Eva claim and the northwestern part of the Eva No. 2 claim; several shafts from 12 to 60 feet deep were scattered over an area of about 200 square feet. The Eva No. 2 shaft was 60 feet deep and had about 40 feet of drift at the 40-foot level.

Production notes:

During 1930 and 1931, about 700 tons of ore were produced from the adit and two shafts; the ore contained about $16,000 in gold (about 774 ounces) (Hill, 1933, p. 129).

Reserves:

Additional comments:

References:

Brooks, 1912; Smith, 1913 (B 525); Smith, 1913 (B 542-F); Hill, 1933; Smith, 1934 (B 864-A); Smith, 1938; Smith, 1939 (B 910-A); Glover, 1950; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ace Creek

Site type: Prospect

ARDF no.: FB069

Latitude: 64.86 **Quadrangle:** FB D-2

Longitude: 147.94

Location description and accuracy:

Ace Creek is an approximately 2.5-mile-long southern tributary to Saint Patrick Creek; it is about 2.3 miles northeast of the town of Ester on the north side of Gold Hill road. The location of the prospect shafts is unknown; the only description is that of Wimmler (1926 [ATDM MR 195-11, p. 59]): 'a number of shafts were sunk on Ace Creek near Ester'. The coordinates given are on the west side of Ace Lake in about the center of the creek. The shafts could be anywhere within a mile or more from this location.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Wimmler (1926 [ATDM MR 195-11, p. 59]) reported that during the winter of 1925-26 a number of shafts were sunk on Ace Creek near Ester by Sagan & Campbell, McDaniels & Co., Alvin Martin, and others. Gold was reportedly found in one of the first shafts, although subsequent development disclosed it to be of limited extent and no significant amounts of gold were produced. The exact location of these shafts along Ace Creek is not known.

Alteration:

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1926, a number of shafts were sunk at some unknown location along Ace Creek (Wimmler, 1926 [ATDM MR 195-11, p. 59]).

Production notes:

Reserves:

Additional comments:

References:
Wimmler, 1926 (ATDM MR 195-11).

Primary reference: Wimmler, 1926 (ATDM MR 195-11)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Cripple Creek

Site type: Mine

ARDF no.: FB070

Latitude: 64.833 **Quadrangle:** FB D-2

Longitude: 147.999

Location description and accuracy:

The mining at the Cripple Creek mine covered about one square mile beneath and south-southeast of the town of Ester. The coordinates are the center of this dredge pond near the section line between sections 8 and 17, T. 1 S., R. 2 W., Fairbanks Meridian. The mine is locality 45 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

Boswell (1979) described the Cripple Creek pay channel as an ancient channel of Ester Creek (FB034) which branched from the present course of Ester Creek roughtly opposite the mouth of Ready Bullion Creek. The auriferous gravels at Cripple Creek are very deep; they are overlain by several hundred feet of barren gravel and reworked loess or so-called muck that washed into valley from the surrounding hillsides. Beds of clay several feet thick were found at various elevations. Subsequent to deposition of the gravels there had been considerable faulting and tilting that has resulted in grades of 5 to 8 percent on the surface of the gravel as well as the bedrock The gravels vary in thickness from 60 to 167 feet; these are overlain by muck that varied in thickness from 100 to 187 feet.

There was almost certainly deep, early drift mining on Cripple Creek in the early days of mining in the Fairbanks district but it was probably attributed to Ester Creek mine (FB034) or simply Ester. In the 1930, United States Smelting, Refining, and Mining Company (U.S.S.R.&M) consolidated most of the property in Ester and Cripple Creeks, and this was one of the major centers of placer mining in the Ester area until the dredges stopped mining in the late 1960's. U.S.S.R.&M. began extensive churn drilling on the Cripple Creek pay channel in 1933; they began stripping muck in May 1935 and barren gravel in September 1939. Dredge no. 10 started digging in August 1940 and, except for a closure during World War II, it continued on working Cripple Creek until 1964. It was

the last dredge U.S.S.R.& M. operated in the Fairbanks area and remains in its pond south of Ester.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
There was almost certainly deep drift mining on Cripple Creek in the early days of mining in the Fairbanks district, but it was probably attributed to Ester Creek mine (FB034) or simply Ester. In the 1930's, United States Smelting, Refining, and Mining Company (U.S.S.R.& M) consolidated most of the property in Ester and Cripple Creeks, and this was one of the major centers of placer mining in the Ester area until the dredges stopped mining in the late 1960's. U.S.S.R.&M. began extensive churn drilling on the Cripple Creek pay channel in 1933; they began stripping muck in May 1935 and barren gravel in September 1939. Dredge no. 10 started digging in August 1940 and, except for a closure during World War II, it continued on working Cripple Creek until 1964. It was the last dredge U.S.S.R.& M. operated in the Fairbanks area and remains in its pond south of Ester. Boswell (1979) provided considerable detail on dredging operations on Cripple Creek specifically.

Production notes:
There is no record of the amount of gold produced by dredging on Cripple Creek but it was undoubtedly large. Dredge no. 10 was a large, modern dredge when it was constructed, and it operated every year from 1940 to 1964, except for two years during World War II.

Reserves:

Additional comments:

References:
Brooks, 1907; Brooks, 1908; Prindle, 1908; Ellsworth, 1910; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Chapin, 1914 (B-592-J, p. 357-362); Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Joesting,

1942 (ATDM Pamph. 1); Smith, 1942; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Boswell, 1979.

Primary reference: Boswell, 1979

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (Hattie Creek)

Site type: Prospect

ARDF no.: FB071

Latitude: 64.984 **Quadrangle:** FB D-2

Longitude: 147.879

Location description and accuracy:

The exact location of this prospect in the Hattie Creek drainage is unknown, but it is presumed to be north of the creek where a small igneous body is mapped at the coordinates given. Hattie Creek is a tributary of O'Connor Creek about 7 miles west-northwest of Fox ; the prospect is shown on the south side of the Old Murphy Dome road in the SE1/4 sec. 23, T. 2 N., R. 2 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

This prospect consists of a gold-bearing igneous body that has been mapped by Newberry and others (1996) as a Cretaceous altered dike. This map unit contains altered quartz porphyry, tonalite, granodiorite, and undifferentiated mafic dikes. Grateful Dog Mining investigated this igneous body by drilling and using geochemical and magnetometer techniques (Bundtzen and others, 1990, p. 12). These investigations resulted in the definition of anomalous thorium, niobium, tantalum, and rare-earth elements in stockwork-like fissures in metaplutonic(?) rocks of the area (Bundtzen and others, 1987, p. 8).

Alteration:

Cretaceous dike is altered and iron-stained.

Age of mineralization:

Deposit model:

Gold-bearing intrusive

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

In 1988 and 1989, Grateful Dog Mining investigated an igneous body using geochemical, magnetometer, and electromagnetic techniques, and also dug test pits and drilling it (Bundtzen and others, 1987, p. 8; Bundtzen and others, 1990, p. 12).

Production notes:

Reserves:

Additional comments:

References:

Bundtzen and others, 1987; Bundtzen and others, 1990; Newberry and others, 1996.

Primary reference: Bundtzen and others, 1990

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): O'Connor Creek

Site type: Mine

ARDF no.: FB072

Latitude: 64.969 **Quadrangle:** FB D-2

Longitude: 147.858

Location description and accuracy:

The O'Connor Creek mine is located in the S1/2 sec. 25, T. 2 N., R. 2 W., Fairbanks Meridian. The location given is the approximate center of a placered area one-mile long on O'Connor Creek; the area extends from about 1,800 feet upstream from the mouth of Monte Cristo Creek to about 700 feet below the mouth of Hattie Creek. The mined area south of the Old Murphy Dome Road and 7 miles west-northwest of Fox. The mine is locality 50 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The ridges surrounding O'Connor Creek are composed of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Prospecting was reported as early as 1907, but the auriferous gravel was about 100 to 130 feet deep and not much work was completed (Prindle, 1908). About 55 ounces of gold worth $1,000 was mined in 1907 (Prindle and Katz, 1913, p. 106). There has been mining on the creek in recent years, but there is little record of it.

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Prospecting was reported as early as 1907, but the auriferous gravels were 100 to 130 feet deep and not much work was completed (Prindle, 1908). There has been mining on the creek in recent years, but there is little record of it.

Production notes:

About 55 ounces of gold worth $1,000 was mined in 1907 (Prindle and Katz, 1913, p. 106). There has been mining on the creek in recent years, but there is little record of it.

Reserves:

Additional comments:

References:

Prindle, 1908; Prindle and Katz, 1913; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Treasure Creek

Site type: Prospect

ARDF no.: FB073

Latitude: 64.977 **Quadrangle:** FB D-2

Longitude: 147.799

Location description and accuracy:
The Treasure Creek prospect consists of a 1,500-foot by 1300-foot area of anomalous gold, arsenic, and antimony in soils. The location shown is in NW1/4 sec. 29, T. 2 N., R. 1 W., Fairbanks Meridian, just south of the headwater forks of O'Connor Creek.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company (ACNC) on the Eagle Creek property in the early 1990's. Rock fragments from soil pits indicate the bedrock is quartz-mica schist with abundant quartz veinlets. (This area was mapped by Newberry and others (1996) as Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist). Three lines of soil samples on 400-foot by 100-foot grid defined a 1,500-foot by 1,300-foot area that is anomalous in gold, arsenic, antimony, and contains minor cobalt and cadmium. This prospect occupies a lobe of low magnetic susceptibility detected by an airborne geophysical survey.

Alteration:

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status:

Workings/exploration:

A strong arsenic soil anomaly was identified in soil samples in the 1970's. Follow-up work by American Copper and Nickel Company found other anomalous trace elements and gold in the soils over the area (Dashevsky, 1993).

Production notes:

Reserves:

Additional comments:

References:

Dashevsky, 1993; Newberry and others, 1996.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (in upper Treasure Creek)

Site type: Prospect

ARDF no.: FB074

Latitude: 64.997 **Quadrangle:** FB D-2

Longitude: 147.813

Location description and accuracy:

This prospect is a 1,700-foot by 1,000-foot area on the western side of upper Treasure Creek that is defined by anomalous gold, antimony, arsenic, lead, and silver in soils. It trends southwest toward the saddle along Any Creek Trail (winter) that is 2,500 feet north of Old Murphy Dome Road in the SE1/4 sec. 18, T. 2 N., R. 1 W ., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company on the Eagle Creek property in the early 1990's. In the 1970's, an arsenic soil anomaly was identified in the area, and two samples were identified that contained more than 100 ppb gold. The soil anomaly is approximately 1,700 feet by 1,000 feet in area and contains anomalous levels of gold, antimony, arsenic, lead, and silver with erratic boron, copper and zinc values. The soil anomaly is underlain by quartz-mica schists, minor quartzite, and minor graphitic schist. (This area was mapped by Newberry and others (1996) as Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist). Silicification and quartz veining were noted in approximately half the soil pits. The trace of the anomaly follows the southern contact zone of a feldspar porphyry body. The soil anomaly diminishes over an intrusive. The igneous float in the area is altered to clay and locally silicifiied. A north-dipping fault has been inferred from airphotos and soil geochemistry. An east-northeast trending linear was traced from airphotos; the linear trends from the saddle between the east fork of Any Creek and Treasure Creek through the main body of the geochemical anomaly. Cross-cutting faulting is indicated by a sharp break in slope, suggestive of a fault scarp, that runs north-northeast through the anomalous area. Rock geochemistry on float fragments of the intrusive that were found in the soil pits indicates

as much as 250 ppb gold. In a trench sample, rare quartz-stibnite-veined schist contains 6,050 ppb gold , 4.4 percent antimony, 2 ounces of silver per ton, and 758 ppm arsenic. Another specimen of silicified schist from the same location that is cross-cut by vuggy crustiform quartz veins contains 4,610 ppb gold, 4,601 ppm arsenic, 98 ppm antimony, and 3.5 ppm silver. Silicification and quartz veining are widespread throughout the anomaly. Iron staining, clay alteration, and bleaching of schist are noted in soil pit schist fragments. The quartz porphyry that marks the north edge of the anomaly is silicified and vuggy, and limonite fills vugs locally (Dashevsky, 1993).

Alteration:

Silicification and quartz veining are common in rock fragments found throughout the anomaly, as well as iron staining, clay alteration, and bleaching of schist. The quartz porphyry that marks the north edge of the anomaly is silicified and vuggy, and limonite fills vugs locally (Dashevsky, 1993).

Age of mineralization:

Deposit model:

Schist-hosted gold- and antimony-bearing quartz veins.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

In the 1970's, Cantu Minerals conducted a soil-geochemistry survey of the area. In the 1980's, Tri-Con Mining, Inc. (the operating arm of CAN-EX Resources Inc.) reanalyzed some of the old soil sample pulps for gold and conducted some trenching. In 1990, American Copper and Nickel Company assumed interest in the Eagle Creek properties and sampled existing trenches and check-sampled across the previously defined gold-arsenic soil anomaly (Dashevsky, 1993).

Production notes:

Reserves:

Additional comments:

References:

Dashevsky, 1993; Newberry and others, 1996.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Redline

Site type: Prospect

ARDF no.: FB075

Latitude: 64.997 **Quadrangle:** FB D-2

Longitude: 147.788

Location description and accuracy:

The Redline prospect is a linear 2,000-foot anomaly of gold in soil on the ridge between Treasure Creek and Eagle Creek, about 2,000 feet north of Old Murphy Dome Road. It is in the SE1/4 sec. 17, T. 2 N., R. 1 W., Fairbanks Meridian, at an elevation of about 1400 feet.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company on the Eagle Creek property in the early 1990's. Soil samples anomalous in gold,arsenic,and antimony define a linear trend 2,000 feet long. A 1,000-foot portion near the crest of a loess ridge contains 1,500 ppb gold. The linear gold anomaly coincides with the northern limit of an isolated block of schist. (This area was mapped by Newberry and others (1996) as Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist). Rock fragments in float collected at various sample sites consisted of limonite-stained, altered, quartz-mica schist; chips of vein quartz were also noted. The schist fragments appear to be weakly argillized, are bleached, and contain quartz veins.

A strongly mineralized zone is present on the upper contact of a 25-foot-thick felsic sill; the sill dips shallowly to the north, is fine- to medium-grained, and is equigranular to weakly porphyritic. This upper contact appears to be a fault, the Redline shear, that contains calcite veining and limonite staining. A hornfelsed, 3-foot-thick siliceous schist marks the base of the sill. The mineralized fault contact was sampled and contains 10 feet of rock that assays 0.09 ounce of gold per ton. One hole was drilled on the Redline shear and assays from the samples showed values similar to those found in the soil samples: 120-165 ppb gold , 588-1,148 ppm arsenic, 26-50 ppm antimony. The Redline shear

was recognized in the drill hole as argillized, black, silicified phyllite. The sheared upper inrusive contact is marked by carbonate and limonite alteration.

Alteration:
Schist fragments in soils appear to be weakly argillized, bleached, and veined with quartz. The Redline shear was recognized in the drill hole as argillized, black, silicified phyllite. The sheared upper contact of an intrusive body is marked by carbonate and limonite alteration (Dashevsky, 1993).

Age of mineralization:

Deposit model:
Gold-bearing shear zone at the contact of a felsic sill with schist.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1992, American Copper and Nickel Company conducted reconnaissance soil sampling and drilled one hole (Dashevsky, 1993).

Production notes:

Reserves:

Additional comments:

References:
Dashevsky, 1993;Newberry and others, 1996.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): West Fork

Site type: Prospect

ARDF no.: FB076

Latitude: 64.996 **Quadrangle:** FB D-2

Longitude: 147.775

Location description and accuracy:

The West Fork prospect is a soil anomaly approximately 2,500 feet by 1,500 feet in area. It is centered about 0.3 mile north of Old Murphy Dome Road in the southwest headwater tributary of Eagle Creek; it is in sec. 16, T. 2 N., R. 1 W., Fairbanks Meridian.

Commodities:

Main: Sb

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company on the Eagle Creek property in the early 1990's. Five lines of soil samples spaced 600 feet apart define a 2,500-foot by 1,500-foot area of anomalous antimony; within it there is a 1,000-foot by 1,400-foot zone of weakly elevated silver. Rock fragments in soil are quartz-mica schist that is argillized, bleached, and veined with quartz. (This area was mapped by Newberry and others (1996) as Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist).

Alteration:

Schist fragments are weakly argillized, bleached, and veined with quartz (Dashevsky, 1993).

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1992, American Copper and Nickel Company conducted a soil survey that identified an area with anomalous antimony in the soil (Dashevsky, 1993).

Production notes:

Reserves:

Additional comments:

References:
Dashevsky, 1993; Newberry and others, 1996.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Scrafford

Site type: Mine

ARDF no.: FB077

Latitude: 64.999 **Quadrangle:** FB D-2

Longitude: 147.757

Location description and accuracy:

The Scrafford mine is located in the SE1/4 sec. 16, T. 2 N., R. 1 W., Fairbanks Meridian. This mine is accessible from the Elliott Highway and Old Murphy Dome Road. Approximately 4 miles down Old Murphy Dome Road, a steep, rough road leads 0.5 mile north to the Scrafford mine. The mine is just north of the southeast fork of Eagle Creek, a tributary of Treasure Creek.

Commodities:

Main: Sb

Other: Ag, Au, Pb

Ore minerals: Galena, gold, stibnite

Gangue minerals:

Geologic description:

The Scrafford mine is the largest producer of antimony ore in the Fairbanks mining district; production has been estimated at more than 2,700 tons of ore (Robinson and Bundtzen, 1982). Mining from open cuts took place from 1915 to 1916, in 1926, and from 1968 to 1970 (Cobb, 1976 [OFR 76-662, p. 169-170]). The deposit consists of massive stibnite localized along shear zones associated with stockwork-type quartz veinlets containing disseminated arsenopyrite and stibnite. The stibnite occurs in fibrous and columnar twinned crystals and as fine-grained massive aggregrates (Robinson and Bundtzen, 1982). In 1916, an assay of mineralized rock showed an average grade of $4 in gold (about 0.19 ounce of gold per ton) and 8 ounces of silver per ton (Brooks, 1916 [B 649, p. 29]). Most of the antimony ore that was produced had grades of 56 to 60 percent antimony; ore mined in 1970 and 1971 had a lower grade of 12 to 16 percent antimony (Robinson and Bundtzen, 1982, p. 3).

In 1982, Robinson and Bundtzen (1982) spent three days mapping and sampling several trenches on the Scrafford property and the following is a summary of their findings. Rocks in the trenches include quartz-mica schist, micaceous quartz schist, calc-schist, feldspathic schist, felsic tuff, and graphitic schist. Several felsic dikes are also present. The center of antimony-gold mineralization occurs along an east-west-trending shear zone

that separates a barren hanging-wall sequence of quartz-muscovite schist, micaceous quartzite, and quartz-feldspar schist from a mineralized footwall sequence of feldspathic, micaceous quartzite and minor quartz-mica schist. The footwall rocks are highly oxidized, sheared, and cut by anastomosing quartz-sulfide veinlets. The shear zone in the main open cut is exposed for at least 320 feet; it strikes N. 80-85 E and dips 55-60 S. The stibnite-bearing vein in the shear pinches and swells from a width of 4 to 19 feet and is confined to the footwall side of the shear zone. The shear zone ranges from 6 to 38 feet wide. The hanging wall of the shear zone is dominated by incompetent quartz-mica schist, and the footwall is locally mineralized feldspathic quartzite (metatuff). The footwall quartzite is competent and highly fractured; the result is a favorable site for ore deposition.

In 1991-93, American Copper and Nickel Company drilled three reverse-circulation holes to investigate gold mineralization within the shear zone and in the silicified footwall schist (Dashevsky, 1993). The 1992 core hole was 330 feet deep. Nineteen feet assayed 0.107 ounce of gold per ton; five feet in the Scrafford shear zone assayed 0.026 ounce of gold per ton; and 14 feet in the silicified footwall assayed 0.136 ounce of gold per ton. The drilling program indicated that the footwall mineralization is confined within a narrow, sub-parallel zone beneath the Scrafford shear, and was probably not a viable bulk-minable target (Dashevsky, 1993).

Alteration:

The footwall rocks of the deposit are highly oxidized and contain stibiconite and scorodite (Robinson and Bundtzen, 1982, p. 5). The main shear is filled with black graphitic gouge, bright-orange iron-stained clay, and white clay that supports clasts of schist, stibnite, and stibnite oxidation products (Dashevsky, 1993). Strong clay and sericite alteration is confined to gouge zones within the shear. The schist footwall is silicified and quartz veined (Dashevsky, 1993).

Age of mineralization:

Deposit model:

Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

27d

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Mining from open cuts took place from 1915 to 1916, in 1926, and from 1968 to 1970 (Cobb, 1976 [OFR 76-662, p. 169-170]). The shear-zone system in the main opencut is exposed for at least 320 feet (Robinson and Bundtzen, 1982). In 1982, Robinson and Bundtzen (1982) spent 3 days mapping and sampling several trenches on the Scrafford property. In 1991-93, American Copper and Nickel Company conducted soil sampling

and drilled three reverse-circulation holes, totalling 1295 feet, to pursue the gold potential that was reported by Robinson and Bundtzen (Dashevsky, 1993).

Production notes:

Mining from open cuts took place from 1915 to 1916, in 1926, and from 1968 to 1970 (Cobb, 1976 [OFR 76-662, p. 169-170]). Production has been estimated at over 2,700 tons of ore, much of it from ore that ran 50 to 60 percent antimony (Robinson and Bundtzen, 1982).

Reserves:

Additional comments:

References:

Chapin, 1914 (B592-J); Brooks, 1916 (B 649); Chapin, 1919; Hill, 1933; Killeen and Mertie, 1951; Robinson and Bundtzen, 1982; Dashevsky, 1993.

Primary reference: Robinson and Bundtzen, 1982

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): East Scrafford

Site type: Prospect

ARDF no.: FB078

Latitude: 65 **Quadrangle:** FB D-2

Longitude: 147.746

Location description and accuracy:

The East Scrafford prospect is about 1,900 feet east of the Scrafford mine (FB077); it is located just north of Old Murphy Dome Road in the NE1/4 SE1/4 sec. 16, T. 2 N., R. 1 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company on the Eagle Creek property in the early 1990's. In the shallow subsurface at this prospect, a 30-foot-thick, medium-grained, equigranular granite and quartz porphyry sill intrudes quarz-mica schist and micaceous quartzite. The intrusion is truncated by a major fault, believed to be the eastern extension of the Scrafford shear zone (see FB077). The Scrafford shear trends N. 80-85 E. and dips 55-60 S. (Robinson and Bundtzen,1982). The upper intrusive contact is irregular and sub-horizontal and lies under 10 feet of schist and 4 feet of loess. At the surface, chip samples across the 30-foot exposure of the intrusion, are enriched in gold and arsenic; the samples average 0.024 ounce of gold per ton and 2,060 to 6,490 ppm arsenic. No significant antimony values are reported. Schist in the wallrock is weakly to unmineralized. The Scrafford shear contains as much as 350 ppb gold, 2,480 ppm arsenic, and 102 ppm antimony. Drilling indicated that the quartz porphyry sill does not exceed 210 ppb gold. The deeper intersection of the sill and the shear, which is composed largely of intrusive and quartz clasts in gouge, averages 0.029 ounce of gold per ton over 35 feet and 0.1 to 1.0 percent arsenic. The intrusive at the surface is moderately to strongly silicified, locally bleached, and iron stained. The schist country rock is strongly silicified at the intrusive contact. Downhole, the sill is cut by sparse, hairine quartz veinlets. In the shear zone, intrusive fragments are highly silicified and locally altered to clay.

Alteration:

The intrusive at the surface is moderately to strongly silicified, locally bleached, and iron stained. The schist country rock is strongly silicified at the intrusive contact. Downhole, the sill is cut by sparse hairline quartz veinlets. In the shear zone, intrusive fragments are highly silicified and locally altered to clay (Dashevsky, 1993).

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

In the 1970's, Cantu Minerals Association trenched at the East Scrafford site in pursuit of the eastern extension of the Scrafford shear (FB077). In 1991-93, American Copper and Nickel Company mapped the trench exposure, took soil samples, and drilled two reverse-circulation holes (Dashevsky, 1993). The gold assays of samples did not encourage them to continue.

Production notes:

Reserves:

Additional comments:

References:

Robinson and Bundtzen, 1982; Dashevsky, 1993.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Old No. 2

Site type: Prospect

ARDF no.: FB079

Latitude: 64.992 **Quadrangle:** FB D-2

Longitude: 147.759

Location description and accuracy:

This prospect is on the south side of Old Murphy Dome Road; it is across the road from the western gate to the road down to the Scrafford mine (FB077) in the NE1/4 sec. 21, T. 2 N., R. 1 W., Fairbanks Meridian.

Commodities:

Main: Au, Sb

Other:

Ore minerals: Gold, stibnite

Gangue minerals:

Geologic description:

The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company on the Eagle Creek property in the early 1990's. In 1964, a high-grade antimony shear zone, the No. 2 vein, was discovered by Silver Ridge Mining Co. The shear was explored by minor trenching and a 35-foot shaft. In 1976, high gold values were recognized at the prospect. The prospect is within sub-horizontal, quartz-mica and graphitic phyllitic schists that are cut by a 4.5-foot-wide zone filled with gouge. The fault zone is exposed in one of several sloughed trenches that trend east-northeast across the ridge along Old Murphy Dome road. The fault zone is exposed for 160 feet along strike in trenches; it is 3.5 to 9.5 feet thick and extends beyond the trenches for an unknown distance. Twenty-five feet of schist in the footwall contains 220 to 750 ppb gold and averages 0.01 ouncesof gold per ton. A 4.5-foot-wide fault zone at the southeast end of the trench averages 11,300 ppb gold (0.33 ounce of gold per ton) and 1 to 3 percent antimony. A reverse circulation drill hole intercepted a weakly mineralized zone, 5 feet long of quartz, limonitic schists, and abundant gouge that contained 130 ppb gold, 722 ppm arsenic, and 1,334 ppm anitmony. Limonitic footwall schist persists for 85 feet,and is truncated by a shear zone that runs 0.06 ouncesof gold per ton over 5 feet.

Alteration:

Pervasive iron-staining is found in the footwall schist. Clay-sericite alteration and fault gouge are developed in the shear zone (Dashevsky, 1993).

Age of mineralization:

Deposit model:
Gold-antimony shear zone in quartz-mica and graphitic, phyllitic schists.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
In 1964, a high-grade antimony shear zone, the No. 2 vein, was discovered by Silver Ridge Mining Co. while clearing a turnout beside the road. Minor trenching took place, and a 35-foot shaft was sunk. The original trenches were periodically cleaned out and re-sampled by later operators. In 1991, additional prospecting was conducted by American Copper and Nickel Company and one hole was drilled.

Production notes:

Reserves:

Additional comments:

References:
Dashevsky, 1993.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Antimony Ridge

Site type: Prospect

ARDF no.: FB080

Latitude: 64.99 **Quadrangle:** FB D-2

Longitude: 147.758

Location description and accuracy:
The Antimony Ridge prospect is located in the W1/2NE1/4 sec. 21, T. 2 N., R. 1 W., Fairbanks Meridian. This prospect is near the top of the hill just south of the road at mile 4 on the Old Murphy Dome Road. This prospect is locality 22 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other: Au

Ore minerals: Gold, stibnite

Gangue minerals:

Geologic description:
A shaft was sunk on stibnite-bearing breccia associated with a northeast-trending reverse fault that cuts schistose quartzite and mica schist (Chapman and Foster, 1969, p. D14). The vein trends N. 47 E., dipping 60 SE. (Pilkington and others, 1969). Stibnite occurs as lenses or nodules surrounded by sheared material. Channel samples across the vein range from 3.4 to 69.0 ppm gold with an average value of 16.1 ppm (Pilkington and others, 1969).

Alteration:

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
A shaft of unknown depth was reported (Chapman and Foster, 1969).

Production notes:

Reserves:

Additional comments:

References:
Chapman and Foster, 1969; Pilkington and others, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-622).

Primary reference: Pilkington and others, 1969

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): East Gate

Site type: Prospect

ARDF no.: FB081

Latitude: 64.993 **Quadrangle:** FB D-2

Longitude: 147.733

Location description and accuracy:
The East Gate prospect extends southwest from the headwaters of Independence Creek and the west branch of Wildcat Creek and covers the ridgetop near mile 3 of Old Murphy Dome Road; it is in the NE1/4 NW1/4 sec. 22, T. 2 N., R. 1 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The following geologic description is summarized from a report by Sam Dashevsky (1993) on work done by American Copper and Nickel Company (ACNC) on the Eagle Creek property in the early 1990's. Local zones of anomalous arsenic in soils were first identified on the property in the 1970's by Cantu Minerals Association. In the 1980's, Silverado Gold Mines, Ltd. and Tri-Con Mining delineated a gold anomaly; trenching resulted in the discovery of a narrow, high-grade quartz breccia vein near mile 3 of Old Murphy Dome road. In 1991 and 1992, ACNC conducted a soil sampling program and drilled four reverse circulation holes. Soil sampling identified an irregularly shaped multi-element soil anomaly measuring 5,000 feet long by 500 to 2,500 feet wide that was marked by anomalous arsenic, lead, and bismuth. Three nodes of anomalous gold, antimony, and lead also occur in the area. Silt samples from Independence Creek at the 1,000-, 1,100- and 1,200-foot elevations show anomalous gold. On Wildcat Creek, stream sediment samples contained anomalous gold at the 850-, 900-, 1,000- and 1,150-foot elevations. Drilling and distribution of rock fragments in soil sample pits indicate that the area is predominantly underlain by quartz-mica schist and micaceous quartzite, with subordinate graphitic phyllite and chloritic-biotite schists at depth. Soil samples from the east flank of upper Independence Creek, and several other nearby sites have abundant felsic intrusive rocks mixed with schist chips and regolith. Rock fragments are commonly altered and limonitic, and vein quartz fragments are broadly distributed throughout the

zone. Drilling intersected sporadic pegmatite veinlets. Directly east of the gate to the East Scrafford prospect, limonite-stained finely fractured schist without quartz veining contains 5,000-6,000 ppb gold (0.14-0.18 ounce of gold per ton). Five hundred feet farther east, pieces of quartz-sulfide float as much as 18 inches thick contain 11,000 to 19,000 ppb gold (0.32 to 0.55 ounce of gold per ton). Isolated fragments of silicified felsic intrusive breccia contain 6,850 ppb gold. Four drill holes indicate broad zones of weakly mineralized schist in sparsely veined, weakly pyritic, silicified zones that are at depths exceeding 400 feet. The high-grade veins at the surface were intercepted in the drilling program; one 110-foot intercept ran 0.026 ounce of gold per ton, and one 5-foot interval ran 0.068 ounce of gold per ton. Rock fragments in soils show much evidence of silicification, clay alteration, and limonite. Drilling identified broad zones of pyritic silicification at a depth of more than 400 feet; argillation, patchy silicification, and chloritic alteration were confined to sheared zones at higher levels.

Alteration:

Rock fragments in soils show much evidence of silicification, clay alteration, and limonite. Drilling identified broad zones of pyritic silicification at depths of more than 400 feet; argillation, patchy silicification, and chloritic alteration occured in shallower rocks (Dashevsky, 1993).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status:

Site Status:

Workings/exploration:

In the 1970's, Cantu Minerals Association conducted soil sampling in the area. In the 1980's, Silverado Gold Mines, Ltd. and Tri-Con Mining completed a small soil grid and identified a gold anomaly. In 1991 and 1992, American Copper and Nickel Company conducted silt and soil sampling and in 1993 drilled four holes that totaled 2,335 feet (Dashevsky, 1993).

Production notes:

Reserves:

Additional comments:

References:

Dashevsky, 1993.

Primary reference: Dashevsky, 1993

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Bunker Hill

Site type: Mine

ARDF no.: FB082

Latitude: 64.994 **Quadrangle:** FB D-2

Longitude: 147.699

Location description and accuracy:
The Bunker Hill mine is located in the SW1/4SW1/4 sec. 14, T. 2 N., R. 1 W., Fairbanks Meridian. This mine is on the south side of Old Murphy Dome Road about 2.5 miles west of the Elliott Highway. The mine is location 23 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Eight tons of gold ore with an average grade of 1.625 ounces of gold per ton was milled from a gold-quartz vein at the Bunker Hill mine (Chapin, 1914 [B 592-J, p. 345]; Hill, 1933, p. 154). The vein is oriented N. 15 W., 70 E.; it has an average width of 12 inches at the surface, narrowing to 2 inches at a depth of 50 feet (Hill, 1933, p. 154). A grab sample of ore from the dump assayed $24.06 in gold per ton (1.164 ounces of gold per ton) (Hill, 1933, p. 154). Material on the dump consists of mica schist from the hanging wall and blocky quartz-mica schist from the footwall (Hill, 1933, p. 154). Bedrock in the area is Fairbanks Schist, that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

The Bunker Hill mine consists of a 102-foot-deep shaft with short drifts on the 25-foot and 60-foot levels (Hill, 1933, p. 154).

Production notes:

Eight tons of gold ore with an average grade of 1.625 ounces of gold per ton were milled from a gold-quartz vein at the mine (Chapin, 1914 [B 592-J, p. 345]; Hill, 1933, p. 154).

Reserves:

Additional comments:

References:

Chapin, 1914 (B 592-J, p. 3454); Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Goodwin

Site type: Prospect

ARDF no.: FB083

Latitude: 64.994 **Quadrangle:** FB D-2

Longitude: 147.697

Location description and accuracy:

The Goodwin prospect is located near the south boundary of section 14, T. 2 N., R. 1 W., Fairbanks Meridian. The prospect is high on the slope north of Big Eldorado Creek. A crosscut was located 75 feet below the summit of the ridge, south of Old Murphy Dome road and approximately 2 miles west of the Elliott Highway. It is just east of the Bunker Hill mine (FB082). The prospect is locaity 23 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Goodwin gold prospect consists of a 50-foot-wide zone of brecciated iron-stained schist that strikes N. 70 E. and has a vertical dip (Hill, 1933, p. 153). In 1931, Hill attempted to determine the average value of this zone by taking grab samples from various dumps; these samples assayed only 23 cents in gold per ton (Hill, 1933, p. 153-154). Bedrock in the area is Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Schist is brecciated and iron stained (Hill, 1933).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
A crosscut was caved, but several open cuts and pits were observed when visited by Hill in 1931 (Hill, 1933, p. 153).

Production notes:

Reserves:

Additional comments:

References:
Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Big Eldorado Creek

Site type: Mine

ARDF no.: FB084

Latitude: 64.969 **Quadrangle:** FB D-2

Longitude: 147.757

Location description and accuracy:

The Big Eldorado Creek mine is located in the south half of T. 2 N., R. 1 W., Fairbanks Meridian. Big Eldorado Creek is an approximately 9-mile-long tributary of Goldstream Creek. The location of placered ground is uncertain, but there are several prospects marked on the Fairbanks (D-2) NW and the Fairbanks (D-2) NE topographic maps approximately 3.5 miles upstream from its junction with Goldstream Creek. The mine is locality 51of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Placer gold is found in a narrow paystreak where depth to bedrock is as much as 98 feet (Prindle, 1908; Prindle and Katz, 1909). In the upper part of the valley, gold is found in gravel 50 feet deep and 30 feet wide (Prindle and Katz, 1913). Production through 1910 was worth $50,000 with an average value of gold at $19.38 per ounce (Prindle and Katz, 1913). Mining was reported in 1915 and 1916 (Brooks, 1916 [B 642]; Smith, 1917 [BMB 153]). Small-scale drift mining was reported in 1925 and 1926 (Wimmler, 1925 [ATDM MR 195-8, p. 46]; Wimmler, 1926 [ATDM MR 195-11, p. 58]). The gold is between 941 and 952 fine (Glover, 1950).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Mining began before 1910, and small-scale drift mining was reported in 1925 and 1926 (Wimmler, 1925 [ATDM MR 195-8, p. 46]; Wimmler, 1926 [ATDM MR 195-11, p. 58]).

Production notes:
The creek produced $50,000 through 1910; the average value of the gold was $19.38 per ounce (Prindle and Katz, 1913).

Reserves:

Additional comments:

References:
Brooks, 1908; Prindle, 1908; Prindle and Katz, 1913; Brooks, 1916 (B 642-A); Smith, 1917 (BMB 153); Wimmler, 1925 (ATDM MR 195-8); Wimmler, 1926 (ATDM MR 195-11); Glover, 1950; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Prindle and Katz, 1913

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Goldstream Creek

Site type: Mine

ARDF no.: FB085

Latitude: 64.955 **Quadrangle:** FB D-2

Longitude: 147.623

Location description and accuracy:

More than 5 miles of Goldstream Creek has been mined by suface pits, drift mining, and dredging. The tailings that extend for as much as a mile across Goldstream valley are shown on current topographic maps. The coordinates for this site are located near Fox at about the center of the area that has been mined throughout the 1990's. Most mining has taken place on lower Goldstream Creek north of the mouths of Little Queenie and Calder Creeks in sections 1 and 2, T. 1 N., R. 1 W., Fairbanks Meridian.

Commodities:

Main: Au

Other: Sn, W

Ore minerals: Cassiterite, gold, scheelite

Gangue minerals:

Geologic description:

Goldstream Creek is one of the most productive gold placers in the Fairbanks mining district. The creek has been mined almost continuously from the junction of Gilmore and Pedro Creeks to several miles below Fox, with dredging as much as a mile wide in places. Mining on the creek began in 1903 and is still active today. In 1913, productive ground averages 6 feet thick and 225 feet wide (Prindle and Katz, 1913). United States Smelting, Refining and Mining Company Dredge no. 2 worked on Goldstream Creek from 1928 to 1942 and from 1947 to 1949. Dredge no. 8 was built in 1928 and 1929 on Goldstream Creek and worked there from 1929 to 1942 and from 1946 to 1947 (R.M. Chapman, USGS unpublished memorandum, 1978). Polar Mining Inc., the current operator, operates an open-pit placer mine year-round near Fox (May and Bundtzen, 1996).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Goldstream Creek is one of the most productive placer gold streams in the Fairbanks mining district. Mining on the creek began in 1903 and is still active today. In 1922, a total of 72 men were employed in mining operations on the creek, including a Bagley scraper plant and another pit being worked with a trolley excavator (Wimmler, 1922, p. 17). In 1924, principal workings consisted of five large Bagley scraper operations (Wimmler, 1924, p. 71). Development work in 1925 preparatory to dredging brought a close most of the Bagley scraper operations that had been so typical of placer mining on the creek (Wimmler, 1925, p. 53). This development work consisted of prospecting dredgeable ground by shaft sinking and drilling and ditch construction; summer employment ranged from 300 to 500 people (Wimmler, 1925 [ATDM MR 195-8, p. 54]). United States Smelting, Refining and Mining Company (U.S.S.R. & M.) Dredge no. 2 worked on Goldstream Creek from 1928 to 1942 and from 1947 to 1949. Dredge no. 8 was built in 1928 and 1929 on Goldstream Creek and worked there from 1929 to 1942 and from 1946 to 1947 (R.M. Chapman, USGS unpublished memorandum, 1978). In 1940, U.S.S.R. & M. (F.E. Co.) began hydraulic stripping on the 1,290-acre parcel of patented claims that had once belonged to Alaska Gold; Goldstream Creek was diverted into a 4-mile-long ditch (May and Bundtzen, 1996). These stripping operations were halted by World War II and never restarted in the lower Goldstream valley (May and Bundtzen, 1996).

Polar Mining Inc. (PMI) is the current operator and is running a year-round placer operation that has been active since 1987 when PMI acquired a lease from Alaska Gold Co. and began work on the Sheep Creek property (FB052). During 1991, PMI processed about 600,000 cubic yards during summer workings, and about 1.5 million pounds of explosives were used to blast frozen overburden during the winter months (Bundtzen and others, 1991, p. 32). In 1995, PMI moved 3,600,000 cubic yards and washed 505,000 cubic yards of pay gravel from its lower Goldstream Creek operation (Bundtzen and others, 1996, p. 28). The ore grade from this material was 0.00286 ounce of gold per ton (May and Bundtzen, 1996). In 1996, PMI moved its operation to a large placer gold deposit in lower Goldstream Creek near Fox (Bundtzen and others, 1996, p. 28).

Production notes:

Production from the Goldstream basin between 1903 and 1924 amounted to about $15,520,000 in gold (more than 750,000 ounces of gold) (Smith, 1926, p. 13). Information on the amount of gold produced in recent years is not available, but it is undoubtedly large, considering the many years of dredging and surface mining on Goldstream Creek

since 1924.

Reserves:

Additional comments:

References:

Prindle, 1905; Prindle, 1906; Brooks, 1907; Brooks, 1908; Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Brooks, 1911 (P 70); Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Brooks, 1914; Chapin, 1914; Brooks, 1915; Brooks, 1916 (B 642); Smith, 1917 (BMB 142); Smith, 1917 (BMB 153); Brooks, 1918; Martin, 1919; Martin, 1920; Brooks and Martin, 1921; Brooks, 1922; Wimmler, 1922; Brooks, 1923; Brooks and Capps, 1924; Capps, 1924; Wimmler, 1924; Brooks, 1925; Wimmler, 1925 (ATDM MR 195-8); Smith, 1926; Moffit, 1927; Smith, 1929; Smith, 1930 (B 810); Smith, 1930 (B 813-A); Smith, 1932 (B 842-A); Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936 (B 868-A); Smith, 1937 (B 880-A); Smith, 1938 (B 897-A); Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941 (B 926-A); Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Wedow and others, 1954; Byers, 1957; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Mulligan, 1974; Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Orris and Bliss, 1985; Bundtzen and others, 1991; May and Bundtzen, 1996.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Fox Creek

Site type: Mine

ARDF no.: FB086

Latitude: 64.98 **Quadrangle:** FB D-2

Longitude: 147.63

Location description and accuracy:

The Fox Creek mine is located in the W1/2 sec. 19, T. 2 N., R. 1 E., Fairbanks Meridian. Fox Creek is a south-flowing tributary of Goldstream Creek. Two areas have been placered on Fox Creek in recent years: (1) an area shown on the current D-2 topographic map about 1.6 miles north of the junction of the Steese and Elliott highways, and (2) an extensive area that begins about a mile above (1) and extends about 1.5 miles from the head of Fox Creek. The coordinates given are for the southern most placer. This site is also described in the Livengood quadrangle ARDF records as LG061. This mine is locality 52 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: W

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:

Placer gold was mined from Fox Creek as early as 1908 (Prindle, 1908). Depth to bedrock is approximately 10 to19 feet, and granite is exposed near the head of the creek (Prindle and Katz, 1909, p. 191; Prindle and Katz, 1913). Bedrock in the Fox Creek drainage is quartz-muscovite schist, quartzite, and chlorite-quartz schist; the upper Fox Creek area is intruded by Cretaceous granite, tonalite, and quartz diorite (Newberry and others, 1996). Fox Creek has been placer mined in recent years, possibly in the 1980's and early 1990's, up to the head of the creek (J. Schaefer, 1999, field observation). Placer concentrates near the head of the creek contained an estimated 90 percent scheelite (Joesting, 1943 [ATDM Pamph. 2]; Byers, 1957, p. 210). Production from 1905 to 1910 was about 1,500 ounces (Prindle and Katz, 1913). Production figures are not available for more recent mining.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Placer gold was mined from Fox Creek as early as 1908 (Prindle, 1908). Fox Creek has been placer mined in recent years, possibly in the 1980's and early 1990's, up to the head of the creek (J. Schaefer, 1999, field observation).

Production notes:
Production from 1905 to 1910 was almost 1,500 ounces (Prindle and Katz, 1913). Information on production in more recent years is not available.

Reserves:

Additional comments:
This site is also described in Livengood ARDF records as LG061.

References:
Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Prindle and Katz, 1913; Smith, 1913 (B 525); Smith, 1913 (B 542-F); Smith, 1929; Joesting, 1943 (ATDM Pamph. 2); Thorne and others, 1948; Byers, 1957; Saunders, 1961; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Prindle and Katz, 1913

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Engineer Creek

Site type: Mine

ARDF no.: FB087

Latitude: 64.928 **Quadrangle:** FB D-2

Longitude: 147.621

Location description and accuracy:

The Engineer Creek mine is mostly in sec. 7, T. 1 N., R. 1 E., Fairbanks Meridian. The location given is for the approximate center of placer tailings delineated on the Fairbanks D-2 topographic map. The tailings extend from about 0.6 mile above the mouth of French Gulch to about 0.4 mile below it. Tailings in the lower part of the creek, at and below the mouth of Little Blanche Creek, merge with the tailings from Goldstream Creek (FB085). The mine is included in locality 53 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Early placer mining took place on Engineer Creek from 1907 to 1916 (Cobb, 1976 [OFR 76-662, p. 40]). The depth to bedrock was from about 50 feet to more than 100 feet (Prindle and Katz, 1913). Values in 4 to 7 feet of gravel over widths of 30 to 100 feet were $1 to $6 per square foot of bedrock (Prindle and Katz, 1913). Production from Engineer Creek and its tributaries from 1907 to 1910 was $1,800,000, with gold valued at $18.70 per ounce (Prindle and Katz, 1913). Fairbanks Exploration Company acquired an extensive tract of placer ground in 1931; however, an experiment with underground sluicing was terminated because the floor of the underground workings heaved (Smith, 1933 [B 844-A, p. 33]). United States Smelting, Refining and Mining Co. Dredge no. 8 worked on Engineer Creek from 1948 to 1954, then worked the Dawson Bench near the mouth of Engineer Creek and the left limit bench of Engineer Creek from 1955 to 1959 (R.M. Chapman, USGS unpublished memorandum, 1978). Glover (1950) reported that the gold along Engineer Creek varied from 875 to 918 fine.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; medium

Site Status: Inactive

Workings/exploration:
Placer mining took place on Engineer Creek from 1907 to 1916 (Cobb, 1976 [OFR 76-662, p. 40]). In 1922, drift mining was reported to be continuing (Wimmler, 1922, p. 20). Fairbanks Exploration Company acquired an extensive tract of placer ground in 1931; however, an experiment with underground sluicing was terminated because of the floor of the underground workings and the drifts heaved. (Smith, 1933 [B 844-A, p. 33]). United States Smelting, Refining and Mining Co. Dredge no. 8 worked on Engineer Creek from 1948 to 1954, then worked the Dawson Bench near the mouth of Engineer Creek and the left-limit bench of Engineer Creek from 1955 to 1959 (R.M. Chapman, USGS unpublished memorandum, 1978).

Production notes:
Production from Engineer Creek and its tributaries from 1907 to 1910 was $1,800,000, with gold valued at $18.70 per ounce (Prindle and Katz, 1913). The production figures from the creek since 1910 are unclear because the dredging was part of the Goldstream and Pedro Creek operations; it is probably substantial on the basis of the area of the dredge tailings.

Reserves:

Additional comments:
The Trans-Alaska Pipeline System is now routed along Engineer Creek.

References:
Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Brooks, 1914; Chapin, 1914 (B 592-J, p. 357-362); Eakin, 1915; Smith, 1917 (B 153); Wimmler, 1922; Smith, 1933 (B 844-A); Glover, 1950; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Orris and Bliss, 1985.

Primary reference: Prindle and Katz, 1913

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Engineer

Site type: Prospect

ARDF no.: FB088

Latitude: 64.925 **Quadrangle:** FB D-2

Longitude: 147.626

Location description and accuracy:

The Engineer prospect is located in the SE1/4SW1/4 sec. 7, T. 1 N., R. 1 E., Fairbanks Meridian. The prospect is located on the nose of the ridge between Little Blanche Creek and French Gulch; it is on the southwest side of Engineer Creek and southwest of the Old Steese Highway at an elevation of about 880 feet. The propsect is locality 24 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Arsenopyrite, gold

Gangue minerals:

Geologic description:

The Engineer prospect is located along a ridge composed of Fairbanks Schist, which consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). A grab sample from two, parallel, iron-stained, arsenopyrite-bearing quartz veins oriented N. 70 E., assayed $2.86 per ton or 0.14 ounce of gold per ton (Hill, 1933, p. 153).

Alteration:

White quartz is iron-stained.

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
When visited by Hill in 1931, the few prospect pits were caved (Hill, 1933, p. 153).

Production notes:

Reserves:

Additional comments:

References:
Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): McGrath

Site type: Occurrence

ARDF no.: FB089

Latitude: 64.908 **Quadrangle:** FB D-2

Longitude: 147.608

Location description and accuracy:

The McGrath occurrence is located in the SE1/4SE1/4 sec. 18, T. 1 N., R. 1 E., Fairbanks Meridian. This low-grade gold occurrence is about 0.5 mile east of the intersection of McGrath Road and the Old Steese Highway in a residential area. The occurrence is locality 25 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

This occurrence consists of a 7-inch-wide, low-grade, gold-quartz vein in schist (Chapman and Foster, 1969, p. D16; Saunders, 1963 [ATDM PE 58-13]). Stein (1957) reported that the vein strikes N80E and dips 60S. The upper portion of the vein is well oxidized; it grades into fresh sulfides at depth. The chief mineralization is jamesonite with associated gold and silver (Stein, 1957). A shaft driven to the 80-foot level soon after the vein was discovered caved due to poor bracing. Since then most of the prospecting has been confined to surface work and short shafts (Stein, 1957). There is no record of production.

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

A shaft driven to the 80-foot level soon after the vein was discovered caved in due to poor bracing. Since then, most of the prospecting has been confined to surface work and short shafts (Stein, 1957).

Production notes:

Reserves:

Additional comments:

References:

Stein, 1957; Saunders, 1963 (PE 58-13); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Saunders, 1963

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Janiksela

Site type: Prospect

ARDF no.: FB090

Latitude: 64.974 **Quadrangle:** FB D-2

Longitude: 147.588

Location description and accuracy:
The Janiksela prospect is located in the SW1/4NE1/4 sec. 29, T. 2 N., R. 1 E., Fairbanks Meridian. This prospect is on the north side of Goldstream Creek about 1.3 miles northeast of the junction of the Steese and Elliott highways at Fox. The exact location is uncertain.

Commodities:

Main: Sn(?)

Other: Sn(?)

Ore minerals: Cassiterite(?)

Gangue minerals:

Geologic description:
Cassiterite was reported, but Hill did not find any in the dump material in 1931 (Hill, 1933, p. 154). In 1931, two shafts were noted, but one was flooded and one was caved (Hill, 1933). The lode strikes east and apparently follows a contact between mica schist and black graphite schist. A mixture of quartz, feldspar, and mica on the dump suggests a pegmatite rather than a quartz vein (Hill, 1933, p. 154).

Alteration:

Age of mineralization:

Deposit model:
Tin-bearing pegmatite(?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

The prospect was explored by two shafts (Hill, 1933, p. 154). These workings were flooded or caved when visited in 1931.

Production notes:

Reserves:

Additional comments:

References:

Hill, 1933; Chapman and Foster, 1969; Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): First Chance Creek

Site type: Mine

ARDF no.: FB091

Latitude: 64.953 **Quadrangle:** FB D-2

Longitude: 147.56

Location description and accuracy:

The First Chance mine is mostly in the S1/2 section 33, T. 2 N., R. 1 E., Fairbanks Meridian. Mine tailings are marked on the Fairbanks (D-2) NE topographic map, about 1 mile upstream from the mouth of the creek. The whole lower mile of the creek may have been mined (Chapman and Foster, 1969, map). The placer is about 1.8 miles east of the town of Fox. The mine is included in locality 53 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sn, W

Ore minerals: Cassiterite, gold, scheelite

Gangue minerals:

Geologic description:

Gold mining began on First Chance Creek in 1908 and continued intermittently until 1940 (Cobb, 1976, OFR 76-662, p. 44). In 1914, the depth to bedrock was approximately 42 feet and the paystreak was approximately 4 feet wide (Chapin, 1914 [B 592-J, p. 358]). Placer scheelite is abundant (Joesting, 1942 [ATDM Pamph. 1]). At the head of the creek, scheelite occurs in contact-metamorphosed limestone and in gold-bearing quartz veins near a porphyritic granite intrusive body. On the lower part of the creek, scheelite constitutes the main part of placer concentrates.

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Probably inactive

Workings/exploration:

In 1926, small scale mining by ground sluicing and other methods involving hand labor were reported (Wimmler, 1926 [ATDM MR 195-11, p. 58]).

Production notes:

No information is available, but there was some.

Reserves:

Additional comments:

References:

Prindle and Katz, 1909; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Chapin, 1914 (B 592-J, p. 358); Eakin, 1915; Smith, 1917 (BMB 142); Wimmler, 1926 (ATDM MR 195-11); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Byers, 1957; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Chapman and Foster, 1969.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Ridge; Isaacson

Site type: Prospect

ARDF no.: FB092

Latitude: 64.918 **Quadrangle:** FB D-2

Longitude: 147.567

Location description and accuracy:
The Ridge prospect is located in the NW1/4 sec. 16, T. 1 N., R. 1 E., Fairbanks Meridian. The prospect is along Gilmore Trail about 1.1 miles northeast of the junction of the Gilmore Trail and the Steese Highway. The propsect is included in locality 26 of Cobb (1971 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Two shafts were sunk to a depth of about 15 feet on a 14-inch-thick, gold-bearing quartz vein that strikes N. 50 E. and dips south (Hill, 1933, p. 153). Grab samples of the ore assayed $15.96 in gold per ton (0.77 ounce of gold per ton) (Hill, 1933, p. 153).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

Two shafts, 15 feet deep, were sunk on a 14-inch-thick, gold-bearing quartz vein. When visited in 1931, these shafts were flooded (Hill, 1933, p. 153).

Production notes:

Reserves:

Additional comments:

References:
Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Flume Creek

Site type: Mine

ARDF no.: FB093

Latitude: 64.999 **Quadrangle:** FB D-2

Longitude: 147.533

Location description and accuracy:

The Flume Creek mine is located in the SW1/4 sec. 15, T. 2 N., R. 1 E., Fairbanks Meridian. Flume Creek is a southeast-flowing tributary of Pedro Creek, about 4 miles northeast of Fox. Placer mining occurred approximately 0.5 mile upstream from its mouth on Pedro Creek. The mine is included in locality 54 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Placer mining occurred for approximately 0.5 mile upstream from the mouth of Flume Creek (Chapman and Foster, 1969, plate 1). Most of Flume Creek flows on Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist. The uppermost part of the creek flows through an intrusion of Cretaceous tonalite and quartz diorite (Newberry and others, 1996). Most of the information on placer mining here is probably combined with that of Pedro Creek (FB094).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Placer mining occurred for approximately 0.5 mile upstream from the junction of Flume Creek with Pedro Creek(Chapman and Foster, 1969, plate 1).

Production notes:

Production figures are probably combined with those of Pedro Creek.

Reserves:

Additional comments:

References:

Brooks, 1916 (B 642-A); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Pedro Creek

Site type: Mine

ARDF no.: FB094

Latitude: 64.986 **Quadrangle:** FB D-2

Longitude: 147.538

Location description and accuracy:

The Pedro Creek mine is located in the W1/2 sec. 22, T. 2 N., R. 1 E., Fairbanks Meridian. Mine tailings are marked along Pedro Creek on the Fairbanks D-2 and the Livengood A-1 and A-2 topographic maps; the tailings extend for about 4.5 miles above its mouth. This site is also described in the Livengood ARDF records (LG064). The mine is included in locality 54 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

Felix Pedro discovered gold on Pedro Creek in 1902, the first discovery in what was to become the Fairbanks District. Pedro Creek was a major placer gold producer in the Fairbanks mining district; placered ground extends almost 4.5 miles along the creek, from its mouth at the junction with Twin Creek to the junction of Pedro Creek and Gilmore Creek. Placer gold on Pedro Creek is both very fine and coarse and was found in the bottom 2 to 7 feet of gravel and the top 1 to 5 feet of bedrock (Prindle, 1904; Brooks, 1905). The depth to quartzite schist bedrock is 9 to 35 feet (Prindle, 1904; Prindle and Katz, 1909). Heavy minerals found with the gold are magnetite, garnet, rutile and pyrite (Prindle, 1905). The paystreak is from 4 to over 200 feet wide (Brooks, 1905). Mining was by drifting, open cuts, and dredges (Cobb, 1976 [OFR 76-633]). United Stated Smelting Refining and Mining Co. Dredge no. 4 was built on Pedro Creek in 1939, and the dredge worked there from 1939 to 1942 and from 1952 to 1958 (R.M. Chapman, USGS unpublished memorandum, 1978). The value of gold produced from 1903 to 1910 was $1,250,000 (with the gold valued at $17.68 per ounce) (Prindle and Katz, 1913). More recent production figures are not available.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Felix Pedro discovered gold on Pedro Creek in 1905, the first discovery in what was to become the Fairbanks District. Mining was by drifting, open cuts and dredges (Cobb, 1976 [OFR 76-633]). In 1922, hydraulic operations continued and over 24,000 square feet of ground was worked (Wimmler, 1922, ATDM MR 195-6, p. 17). United Stated Smelting Refining and Mining Co. Dredge no. 4 was built on Pedro Creek in 1939, and the dredge worked there from 1939 to 1942 and from 1952 to 1958 (R.M. Chapman, USGS unpublished memorandum, 1978). In the summer of 1960, Nick Kupoff and Charles Lazeration mined on Pedro Creek near its junction with Twin Creek (Saunders, 1960). Small amounts of placer gold are still being mined at a recreational mining site on upper Pedro Creek near the monument that marks the discovery of gold in the Fairbanks District by Felix Pedro.

Production notes:
The value of gold produced from 1903 to 1910 was $1,250,000 (gold valued at $17.68 per ounce) (Prindle and Katz, 1913). The production for subsequent years is not available but probably is substantial.

Reserves:

Additional comments:

References:
Prindle, 1904; Brooks, 1905; Prindle, 1905; Purington, 1905; Prindle, 1906; Brooks, 1907; Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Brooks, 1914; Chapin, 1914; Eakin, 1915; Brooks, 1916 (B 642); Smith, 1917 (BMB 142); Smith, 1917 (BMB 153); Brooks, 1918; Wimmler, 1922; Smith, 1929; Smith, 1930 (B 810); Smith, 1930 (B 813-A); Smith, 1932; Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1938;

Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Wedow and others, 1954; Saunders, 1959; Saunders, 1960; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1976 (OFR 76-633).

Primary reference: Cobb, 1976 (OFR 76-622)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Tanana; Grant; Hirshberger

Site type: Prospect

ARDF no.: FB095

Latitude: 64.952 **Quadrangle:** FB D-2

Longitude: 147.529

Location description and accuracy:

The Tanana propsect is located in the SE1/4SW1/4 sec. 34, T. 2 N., R. 1 E., Fairbanks Meridian. The Tanana prospect is on the northeast side of Tungsten Gulch, a headwater tributary of First Chance Creek. It is about 3 miles east of the junction of the Steese and Elliott Highways at Fox. The prospect originally consisted of six scheelite lodes on five claims (Mertie, 1917). This prospect is included in locality 27 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: W

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:

The Tanana prospect lies along the western edge of a Cretaceous granite porphyry. Gold and tungsten are found in auriferous quartz-scheelite veinlets that cut decomposed schist (Mertie, 1917). Berg and Cobb (1967, p. 220), reported that the scheelite deposits were found in tactite, silicified limestone, granite dikes, pegmatitic dikes, and in small quartz veins in schist. The schistosity strikes N. 30 E. and dips 35 NW.; one gold-quartz vein strikes N. 8 W. and dips 60 E. (Mertie, 1917). In 1942 and 1943, the only workings that could be found were a caved shaft and several small prospect pits. These workings revealed little geologic information because they had become filled with slope wash and were overgrown with vegetation (Byers, 1957).

Alteration:

Schist is soft, decomposed, and iron stained (Mertie, 1917).

Age of mineralization:

Deposit model:

W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: None

Site Status: Inactive

Workings/exploration:
Prospecting took place on five claims where six scheelite lodes were identified (Mertie, 1917). In 1942 and 1943, the workings included a caved shaft and several small prospect pits (Byers, 1957).

Production notes:

Reserves:

Additional comments:

References:
Mertie, 1917; Capps, 1924; Thorne and others, 1948; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Mertie, 1917; Byers 1957

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Anderson

Site type: Occurrence

ARDF no.: FB096

Latitude: 64.951 **Quadrangle:** FB D-2

Longitude: 147.539

Location description and accuracy:

The Anderson occurrence is located near the southwest corner of sec. 34, T. 2 N., R. 1 W., Fairbanks Meridian, on the south side of Tungsten Gulch. This occurrence is approximately 1 mile southwest of Tungsten Hill and about 2.5 miles east of the town of Fox. This occurrence is included in locality 27 of Cobb (1972 [MF 410]) and is locality 129b of Chapman and Foster (1969).

Commodities:

Main: W

Other: Au

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:

The Anderson prospect is in mica schist of the Fairbanks Schist adjacent to a Cretaceous granite intrusion. Scheelite was found along the outer edge of a quartz vein in the schist; no scheelite was found within the vein or within the schist (Mertie, 1917, p. 424). The quartz vein is oriented N. 50 E., 55 NW.; the foliation of the the schist is N. 60 E., 20 W. (Mertie, 1917, p. 424). White and others (1952) reported sheared quartz veins that contained gold and several common sulfides in the in the granitic rock.

Alteration:

Age of mineralization:

Deposit model:

W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

14a

Production Status: None

Site Status: Inactive

Workings/exploration:
Surface exposure only.

Production notes:

Reserves:

Additional comments:

References:
Mertie, 1917; Thorne and others, 1948; White and others, 1952; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-622).

Primary reference: Mertie, 1917

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Tungsten Hill; Grand Duke Nikolas; Tungsten No. 1; General Joffre

Site type: Prospect

ARDF no.: FB097

Latitude: 64.949 **Quadrangle:** FB D-2

Longitude: 147.533

Location description and accuracy:

The Tungsten Hill propsect is located in the NW1/4 sec. 3, T. 1 N., R. 1 E., Fairbanks Meridian. This prospect is on the southwest side of Tungsten Gulch, a tributary of First Chance Creek. It is about 0.2 mile north of the top of Mount Lulu Fairbanks and about 2.5 miles east of the town of Fox. The prospect is included in locality 27 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other: Au

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:

By 1916, four zones as much as 14 feet wide that contained scheelite had been discovered on the western periphery of a large granite body (Mertie, 1917, p. 422-424). Scheelite occurs in tactite, silicified limestone, granite and pegmatitic dikes, and in small quartz veins in schist (Berg and Cobb, 1967). Samples of high-grade ore on the dump assayed 8percent tungsten trioxide (WO3) (Joesting, 1943 [ATDM Pamph. 2]). This prospect is near the contact of a Cretaceous porphyritic granite and Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chloritic-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:

W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
By 1916, several zones that contained scheelite were located. On the Grand Duke Nikolas claim, a scheelite lode in schist was exposed in an open cut. On the Tungsten No. 1 claim, another open cut had been made in schist and quartzite schist that included a zone with scheelite. The width of the mineralized zone was not apparent. On the General Joffre claim, a lode 14 feet wide with scheelite has been exposed. This deposit as a whole was considered low-grade ore (Mertie, 1917, p. 422-424). In 1943, Joesting (1943 [ATDM Pamph. 2]) reported that little work had been done since 1918.

Production notes:
No record of production.

Reserves:

Additional comments:

References:
Mertie, 1917; Chapin, 1919; Joesting, 1943 (ATDM Pamph. 2); Thorne and others, 1948; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Mertie, 1917

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Blossom; Black Bear; Lundbled and Anderson

Site type: Prospect

ARDF no.: FB098

Latitude: 64.946 **Quadrangle:** FB D-2

Longitude: 147.533

Location description and accuracy:

The Blossom prospect is located in the SW1/4NW1/4 sec. 3, T. 1 N., R. 1 E., Fairbanks Meridian. This prospect is at the head of Engineer Creek on top of Mount Lulu Fairbanks, about 1 mile southwest of Tungsten Hill. The prospect is near a residential area off Gilmore Trail and north of Flat Rabbit Road (which is not shown on the (D-2) NE map). The prospect is included in locality 27 of Cobb (1972 [MF 410]). This prospect is included in locality 27 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals:

Geologic description:

The Blossom tungsten prospect is along the western edge of a large mass of porphyritic granite that intrudes quartz-mica and amphibole schist. By 1918, a quartz stringer rich in scheelite was found in the bottom of a shaft in granite porphyry (Mertie, 1917). Another shaft 20 feet deep, opened a scheelite lode that was 3 to 4 feet thick (Mertie, 1917). Select samples from dumps contained 1.44 percent and 2.02 percent tungsten tri-oxide (WO3) (Byers, 1957). Mulligan (1974) characterized this prospect as containing pegmatite-type quartz-scheelite stringers that cut quartz-biotite schist and porphyritic granite. Workings consisted of two shafts and 23 trenches and pits, all of which were caved by 1942 (Byers, 1957, p. 201). Dozer trenching took place in 1951 in an effort to expose scheelite mineralization (Williams, 1951).

Alteration:

Age of mineralization:

Deposit model:

W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
The workings consisted of two shafts and 23 trenches and pits, all of which were caved by 1942 (Byers, 1957, p. 201). Dozer trenching took place in 1951 in an effort to expose scheelite mineralization (Williams, 1951).

Production notes:

Reserves:

Additional comments:

References:
Smith, 1913 (B 525); Smith, 1913 (B 542-F); Mertie, 1917; Chapin, 1919; Thorne and others, 1948; Williams, 1951; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Rose Creek; New Years Pup

Site type: Mine

ARDF no.: FB099

Latitude: 64.974 **Quadrangle:** FB D-2

Longitude: 147.521

Location description and accuracy:

The Rose Creek prospect is located in the E 1/2 sec. 27, T. 2 N., R. 1 E., Fairbanks Meridian. The coordinates given are for the center of placer tailings marked on the Fairbanks D-2 topographic map near the mouth of Rose Creek. The mine is 4.6 miles west-southwest of Gilmore Dome and about 3 miles northeast of the junction of the Steese and Elliott Highways, which is near the town of Fox. This prospect is included in locality 55 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold, scheelite

Gangue minerals: Scheelite in concentrates

Geologic description:

Coarse gold was mined on New Years Pup in 1913 (Chapin, 1914, B 592-J, p. 359). The gold was worth about $18.00 per ounce (Prindle and Katz, 1913, p. 113). Scheelite was found in concentrates (Byers, 1957, p. 188). In addition, approximately 1,600 feet of placered ground that represent srelatively modern work is shown on the Fairbanks D-2 quadrangle map, which was compiled from aerial photographs taken in 1949. Bedrock in the area is quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Small-scale placer mining was reported in 1913 (Chapin, 1914, B 592-J, p. 359). In addition, approximately 1,600 feet of placered ground that represents relatively modern work is shown on the Fairbanks D-2 quadrangle map, which was compiled from aerial photographs taken in 1949.

Production notes:
No data on production.

Reserves:

Additional comments:

References:
Prindle and Katz, 1913; Chapin, 1914 (B592); Byers, 1957; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Gilmore Creek

Site type: Mine

ARDF no.: FB100

Latitude: 64.978 **Quadrangle:** FB D-1,2

Longitude: 147.5

Location description and accuracy:

The Gilmore Creek mine is located in sec. 26 and 27, T. 2 N, R. 1 E., Fairbanks Meridian. The coordinates given are for the approximate center of a 2.5-mile-long area of tailings that are marked on the Fairbanks D-1 and D-2 topographic maps. The tailings extend from the junction of Gilmore Creek and Pedro Creek upstream to the mouth of Tom Creek. The mouth of Gilmore Creek is about 3 miles northeast of the town of Fox and just east of the Steese Highway. This prospect is included in locality 55 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Bi, W

Ore minerals: Bismuth, gold, scheelite

Gangue minerals:

Geologic description:

Gold, some with intergrown native bismuth, was found before 1906 on bedrock. The gravel was a few feet thick near the head of the creek and as much as 60 feet thick near the mouth. Gravel in the creek is mainly schist, quartz, and granite (Prindle, 1906, 1908). Placer scheelite is common (Joesting, 1942 [ATDM Pamph. 1]). The creek was mined from 1905 to 1940 and mining has been active in recent years as well (Cobb, 1976 [OFR 76-662]). Don Stein and Goldstream Valley Exploration worked a paystreak on Gilmore Creek in 1993 and 1994 (Bundtzen and others, 1994; Swainbank and others, 1995). The gold varies from 808 to 936 fine (Glover, 1950).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The creek was mined from 1905 to 1940 and in recent years as well (Cobb, 1976 [OFR 76-662]). In 1922, a crew of twelve operated a Bagley scraper plant, an old surface cut was completed, and a new, 300 foot by 400 foot, surface cut was opened (Wimmler, 1922, p. 17). Two hydraulic plants were in operation in 1925 (Wimmler, 1925 [ATDM MR 195-8, p. 52]). In 1926, Tom Gilmore mined on a small scale by hand and by ground sluicing (Wimmler, 1926 [ATDM MR 195-11, p. 58]). In 1929, Steve Liedy mined by open cut and by drifting in the winter on upper Gilmore Creek (Wimmler, 1929, p. 166). Don Stein and Goldstream Valley Exploration worked a paystreak on Gilmore Creek in 1993 and 1994 (Bundtzen and others, 1994; Swainbank and others, 1995).

Production notes:
No quantitative information is available, but there was obviously production during the more than 90 years the creek has been placer mined.

Reserves:

Additional comments:

References:
Prindle, 1906; Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Smith, 1913 (B 525); Chapin, 1914 (B 592-J, p. 357-362); Eakin, 1915; Smith, 1917 (BMB 142); Smith, 1917 (BMB 153); Brooks, 1918; Wimmler, 1922; Wimmler, 1925 (ATDM MR 195-8); Wimmler, 1926 (ATDM MR 195-11); Wimmler, 1929; Hill, 1933; Smith, 1938; Smith, 1939 (B 917-A); Smith, 1939 (B 910-A); Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Glover, 1950; Wedow and White, 1954; Wedow and others, 1954; Byers, 1957; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1994; Swainbank and others, 1995.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Spruce Hen

Site type: Mine

ARDF no.: FB101

Latitude: 64.958 **Quadrangle:** FB D-2

Longitude: 147.517

Location description and accuracy:

The Spruce Hen mine is located in the SW1/4NE1/4 sec. 34, T. 2 N., R. 1 E., Fairbanks Meridian. This prospect is located on the west side of the top of Tungsten Hill between the headwaters of Steele Creek and First Chance Creek. It is about 2.5 miles east of the junction of the Steese and Elliott Highways. This mine is included in locality 29 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other: Mo

Ore minerals: Molybdenite, scheelite

Gangue minerals: Calcite, clinozoisite, diopside, fluorite, garnet, hornblende, vesuvianite

Geologic description:

The Spruce Hen mine is along the western contact of a large body of Cretaceous, porphyritic granite. Limestone has been replaced by scheelite, fluorite, garnet, and other typical contact-metamorphic minerals (Byers, 1957). Concentrations of scheelite were found in zones as much as 6 inches wide in blocks of fine-grained, altered igneous rock (Byers, 1957). Berg and Cobb (1967, p. 220) reported that scheelite deposits were found in tactite, silicified limestone, granite, and pegmatitic dikes and in small quartz veins in schist. In 1951, a sample of tungsten ore was submitted for testing at the metallurgical division of the Bureau of Mines (Saunders, 1958). A petrographic examination of the sample revealed it to be a contact metamorphic rock; it consists predominantly of idocrase and pyroxene, with some quartz, fluorite, garnet, wollastonite, and small amounts of scheelite, chlorite and epidote. Traces of limonite and calcite were present. This study showed that most of the scheelite is unlocked by grinding the ore to a minus 65 mesh, but grinding to minus 100 mesh was required to effect maximum liberation.

By 1918, five lode prospects were being explored by trenches (Mertie, 1917). One lode was 3 to 4 feet wide, made up of schist and metamorphosed basic rock and averaged 1-2 percent scheelite with no gold. A similar lode was 4 feet wide and trended N. 33 E., with a 45 NW dip. Development work from 1916 to 1918 consisted of two shafts and many

pits and trenches (Byers, 1957). An inclined shaft reportedly was sunk 70 feet on a 3-foot-thick, northwest-dipping ore body. In 1943, a pit and a trench exposed a badly weathered lode about 3 feet thick. Samples from this trench averaged 0.44percent tungsten tri-oxide (WO3). In 1957, one ton of ore was milled from this prospect (Saunders, 1958).

Alteration:
Oxidation of scheelite in weathered zone may have occured (Byers, 1957, p. 188).

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
Development work from 1916 to 1918 consisted of two shafts and many pits and trenches (Byers, 1957). An inclined shaft reportedly was sunk 70 feet on a 3-foot-thick, northwest-dipping ore body. In 1943, a pit and a trench exposed a badly weathered lode about 3 feet thick. When visited by Saunders in 1957, two buildings remained and a headframe had been built over the shaft (Saunders, 1958).

Production notes:
One ton of ore was milled from this property (Saunders, 1958).

Reserves:

Additional comments:

References:
Mertie, 1917; Chapin, 1919; Martin, 1920; Smith, 1942; Thorne and others, 1948; Byers, 1957; Saunders, 1958; Berg and Cobb, 1967; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Byers, 1957

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Columbia; Meier

Site type: Prospect

ARDF no.: FB102

Latitude: 64.956 **Quadrangle:** FB D-2

Longitude: 147.508

Location description and accuracy:
The Columbia prospect is located in the NE1/4SE1/4 sec. 34, T. 2 N., R. 1 E., Fairbanks Meridian. This prospect is at an elevation of about 1770 feet on the south flank of Tungsten Hill at the head of Steele Creek. It is just southeast of the Spruce Hen group (FB101), approximately 3.2 miles east of the junction of the Steese and Elliott Highways. The prospect is included in locality 29 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals:

Geologic description:
The Columbia tungsten deposit consists of quartz-mica schist cut by quartz-scheelite stringers, under a hanging wall of porphyritic granite (Byers, 1957; Mertie, 1917). Workings in 1932 consisted of two adits, two shafts, a pit, and four trenches, all of which were caved by the 1950's (Byers, 1957).

Alteration:

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

The workings in 1932 consisted of two adits, two shafts, a pit, and four trenches, all of which were caved by the 1950's (Byers, 1957).

Production notes:

Reserves:

Additional comments:

References:

Mertie, 1917; Chapin, 1919; Thorne and others, 1948; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1976 (OFR 76-662).

Primary reference: Byers, 1957

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Green Mountain

Site type: Prospect

ARDF no.: FB103

Latitude: 64.967 **Quadrangle:** FB D-1

Longitude: 147.5

Location description and accuracy:
The Green Mountain prospect is located in the SW1/4SW1/4 sec. 26, T. 2 N., R. 1 E., Fairbanks Meridian. This deposit is on the west side of Rose Creek, about 1,000 feet west of the mouth of Evening Star Creek. It is about 4.1 miles west-southwest of the top of Gilmore Dome. The prospect is included in locality 30 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
A small open cut exposes a 15-foot-wide quartz vein (Chapin, 1914, B 592-J, p. 321-355). An adit driven to crosscut the vein intersected a brecciated mass of schist with small quartz veins; free gold was panned here from crushed rock (Chapin, 1914, B 592-J, p. 321-355). This prospect lies on the western edge of a Cretaceous granite that intrudes two units of the Fairbanks Schist that are composed of (1) quartz-muscovite schist, quartzite, and chlorite-quartz schist, and (2) amphibolite, magnetite-rich biotite schist, quartz schist, and marble (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
Workings consisted of a small open cut and an adit (Chapin, 1914, B 592-J, p. 321-355).

Production notes:

Reserves:

Additional comments:

References:
Chapin, 1914 (B 592-J, p. 321-355); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapin, 1914 (B 592-J, p. 321-355)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Woodpecker

Site type: Prospect

ARDF no.: FB104

Latitude: 64.965 **Quadrangle:** FB D-1

Longitude: 147.497

Location description and accuracy:

The Woodpecker prospect is located in the SW1/4SW1/4 sec. 26, T. 2 N., R. 1 E., Fairbanks Meridian. This prospect is on the west side of Rose Creek about one-quarter of a mile above the mouth of Evening Star Creek; it is about 1.4 miles east-southeast of the junction of the Steese Highway and the Gilmore Creek road. The prospect is included in locality 30 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Small quantities of gold were found in weathered granite (Chapin, 1914 [B 592-J, p. 346]). Seams of quartz and quartz-feldspar rock within the granite were reported; however, it is unclear whether the gold was associated with the quartz. This prospect lies on the western edge of a Cretaceous granite that intrudes two units of the Fairbanks Schist that are composed of (1) quartz-muscovite schist, quartzite, and chlorite-quartz schist, and (2) amphibolite, magnetite-rich biotite schist, quartz schist, and marble (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:

Gold in porphyritic granite

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:
There is no report on the extent of workings or exploration, if any.

Production notes:

Reserves:

Additional comments:

References:
Chapin, 1914 (B 592-J, p. 321-355); Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapin, 1914 (B 592-J, p. 321-355)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Rose Creek; Ogram

Site type: Prospect

ARDF no.: FB105

Latitude: 64.967 **Quadrangle:** FB D-1

Longitude: 147.483

Location description and accuracy:
The Rose Creek prospect is located in the NW1/4SE1/4 sec. 26, T. 2 N., R. 1 E., Fairbanks Meridian. This prospect is at an elevation of approximately 1,800 feet, about 0.4 mile southeast of the junction of Rose Creek and Evening Star Creek, and about one mile east-northeast of Tungsten Hill. This prospect is locality 28 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other:

Ore minerals: Stibnite

Gangue minerals: Feldspar

Geologic description:
Tiny veinlets of stibnite are found in a 6- to 8-inch-wide quartz-feldspar vein that strikes N. 30 E. and dips 70 NW. One vein was opened by a 15-foot shaft and an incline; parallel veins were opened by small prospect pits (Chapin, 1914 [B 592-J, p. 346]). This prospect lies on the western edge of a Cretaceous granite that intrudes two units of the Fairbanks Schist that are composed of (1) quartz-muscovite schist, quartzite, and chlorite-quartz schist, and (2) amphibolite, magnetite-rich biotite schist, quartz schist, and marble (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: None

Site Status: Inactive

Workings/exploration:

One vein was opened by a 15-foot shaft and an incline; parallel veins were opened by small prospect pits (Chapin, 1914 [B 592-J, p. 346]).

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542-F); Chapin, 1914 (B 592-J, p. 346); Brooks, 1916 (B 649); Killeen and Mertie, 1951; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Mulligan, 1974; Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapin, 1914 (B 592-J, p. 346)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Steele Creek

Site type: Mine

ARDF no.: FB106

Latitude: 64.919 **Quadrangle:** FB D-1

Longitude: 147.493

Location description and accuracy:
This mine is near the landing strip marked on the Fairbanks D-1 topographic map, but it may be a mile or more from it. The airstrip (not shown in the (D-1) NW map) is 1.8 miles up Steele Creek from about mile 4 on the Chena Hot Springs Road, in the NW1/4 sec. 14, T. 1 N., R. 1 E., Fairbanks Meridian. The exact location and extent of this deeply buried, frozen placer is uncertain.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Unprofitable drift mining was reported in deeply buried, frozen placer ground (Mulligan, 1974, p. 14).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Drift mining was reported in deeply buried, frozen placer ground on patented claims (Mulligan, 1974, p. 14).

Production notes:

Production figures are not available although the drift mining that took place was reportedly unprofitable (Mulligan, 1974, p. 14).

Reserves:

Additional comments:

References:

Mulligan, 1974; Cobb, 1976 (OFR 76-662).

Primary reference: Mulligan, 1974

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Leidy

Site type: Prospect

ARDF no.: FB107

Latitude: 64.984 **Quadrangle:** FB D-1

Longitude: 147.46

Location description and accuracy:
The Leidy prospect, in the NE1/4, SW1/4, sec. 24, T. 2 N., R. 1 E., Fairbanks Meridian, is beside the road on the north side of Gilmore Creek, about a quarter of a mile west of the mouth of Tom Creek.

Commodities:

Main: Au(?)

Other:

Ore minerals: Gold(?)

Gangue minerals:

Geologic description:
A shaft was sunk 40 feet on a glassy quartz vein. The vein strikes N. 70 W. and dips 50 N. The bedrock is schist with a thin covering of placer gravel. The ground had been sluiced and it is possible that gold was from a placer rather than a lode deposit (Hill, 1933, p. 155).

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein(?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

A shaft was sunk 40 feet on a glassy quartz vein that was found when the ground was sluiced during placer mining (Hill, 1933, p. 155).

Production notes:

Reserves:

Additional comments:

References:
Hill, 1933; Cobb, 1976 (OFR 76-662).

Primary reference: Hill, 1933

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (in the headwaters of Steele Creek)

Site type: Occurrence

ARDF no.: FB108

Latitude: 64.944 **Quadrangle:** FB D-1

Longitude: 147.456

Location description and accuracy:
The exact location of this lode prospect is uncertain; however, it is assumed that it is somewhere in the headwaters of Steele Creek where bedrock is exposed. This location is arbitrarily placed in the center of sec. 1, T. 1N., R. 1E., Fairbanks Meridian, but it could be miles away.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Mulligan (1974, p.13) reported that the Steele Creek lode prospect consisted of a quartz vein with sparse gold. There are no other references, and the exact location was not given. It is assumed that it is somewhere in the headwaters of Steele Creek where bedrock is exposed.

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542); Chapman and Foster, 1969; Mulligan, 1974; Cobb, 1976 (OFR 76-662).

Primary reference: Mulligan, 1974

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Hill Creek

Site type: Mine

ARDF no.: FB109

Latitude: 64.973 **Quadrangle:** FB D-1

Longitude: 147.43

Location description and accuracy:
The Hill Creek mine is located in sec. 30, T. 2 N., R. 2 E., Fairbanks Meridian. The location given is the approximate center of placer workings that extend from about 1,000 feet to 2,500 feet upstream from the junction of Hill Creek and Gilmore Creek. The mine is locality 56 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
This placer deposit is developed on weathered, coarse-grained, porphyritic biotite granite (Brooks, 1925, p. 19; Prindle, 1908, p. 40). Gold is derived from a mineralized zone near a contact between Cretaceous granite and schist (Brooks, 1911 [B 480, p. 69]). The paystreak was said to be narrrow (Prindle, 1908, p. 40). The alluvium consists of granitic sand about 8 feet deep (Prindle, 1908, p. 40). The gold varies from from 750 to 934 fine (Glover, 1950).

Alteration:
The bedrock of biotite granite is deeply weathered and stained with iron (Prindle, 1908, p. 40).

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Open-cut mining took place in the valley floor sometime before 1908 (Prindle, 1908, p. 40). Evidence for more recent mining is the placer tailings and a mine marked on the Fairbanks (D-1) NW topographic map on Hill Creek ,but no other information is available.

Production notes:

There probably was some minor production before 1908, and relatively modern tailings along the creek indicate some production in recent years.

Reserves:

Additional comments:

References:

Prindle, 1908; Brooks, 1911 (B 480); Brooks, 1925; Glover, 1950; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Nugget Creek

Site type: Mine

ARDF no.: FB110

Latitude: 64.956 **Quadrangle:** FB D-1

Longitude: 147.427

Location description and accuracy:
The Nugget Creek mine is located in sec. 31, T. 2 N., R. 2 E., Fairbanks Meridian. The area that has been placered is in the headwater section of Nugget Creek, a tributary of Smallwood Creek. The mine as marked on the Fairbanks D-1 topographic map and identified by Chapman and Foster (1969) is approximately 2.5 miles southwest of Gilmore Dome. The mine is locality 57 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Nugget Creek was placer mined above Dark Hollow Creek, where the creek drains an area of Cretaceous granite. The bedrock along the rest of the creek is quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Placer mine tailings are shown on the Fairbanks D-1 topographic map, but there is no further information.

Production notes:

No information is available, but there was probably some production in recent years.

Reserves:

Additional comments:

References:

Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapman and Foster, 1969

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Schubert

Site type: Prospect

ARDF no.: FB111

Latitude: 64.975 **Quadrangle:** FB D-1

Longitude: 147.392

Location description and accuracy:
The Schubert mine is located in the SE1/4NW1/4 sec. 29, T. 2 N., R. 2 E., Fairbanks Meridian. This prospect is on the divide betwee Johnson Creek and Gilmore Creek, about 1 mile west-southwest of Gilmore Dome. The prospect is locality 31 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals:

Geologic description:
A 35-foot trench exposes a granite-schist contact (Byers, 1957). The schistocity is vertical and trends N. 35-40 E. At the bottom of the trench, there was 20 feet of porphyritic granite, 0.5 feet of glassy quartz, 7.5 feet of hornsfelsed mica schist, 7 feet of scheelite-bearing silicified limestone, and limestone. Scheelite occurs as sparsely scattered grains in a 2-inch band in silicified limestone.

Alteration:

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: None

Site Status: Inactive

Workings/exploration:

In 1957, there was a 35-foot trench that exposed a granite-schist contact (Byers, 1957, p. 189).

Production notes:

Reserves:

Additional comments:

References:

Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Byers, 1957

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Franklin; Ptarmigan; Zimmerman

Site type: Prospect

ARDF no.: FB112

Latitude: 64.981 **Quadrangle:** FB D-1

Longitude: 147.376

Location description and accuracy:
The Franklin prospect is located in the SE1/4SE1/4 sec. 20, T. 2 N., R. 2 E., Fairbanks Meridian. This prospect is at the head of Gilmore Creek, about 0.4 mile west of the top of Gilmore Dome. The prospect is included in locality 32 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals:

Geologic description:
Surface trenches across the Franklin and Ptarmigan claims uncovered several mineralized zones approximately 15 to 20 feet wide that consist of quartz and silicates with scheelite (Chapin, 1919, p. 327). The lode strikes N. 40 E. and dips northwest. This prospect lies on the periphery of a Cretaceous granite and granodiorite that intrudes two units of the Fairbanks Schist that are composed of (1) quartz-muscovite schist, quartzite, and chlorite-quartz schist, and (2) amphibolite, magnetite-rich biotite schist, quartzose schist, and marble (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: None

Site Status: Inactive

Workings/exploration:
Surface trenches across the Ptarmigan and Franklin claims uncovered several mineralized zones (Chapin, 1919, p. 327).

Production notes:

Reserves:

Additional comments:

References:
Chapin, 1919; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Chapin, 1919

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Stepovich

Site type: Mine

ARDF no.: FB113

Latitude: 64.981 **Quadrangle:** FB D-1

Longitude: 147.367

Location description and accuracy:

The Stepovich mine is located in the SW1/4SW1/4 sec. 21, T. 2 N., T. 2 E., Fairbanks Meridian. The Stepovich mine is located just west of the summit of Gilmore Dome and is accessible by a road from the Steese Highway up Gilmore Creek. The prospect is included in locality 32 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other: Be, Mo, Sb

Ore minerals: Meliphanite, molybdenite, scheelite, stibnite

Gangue minerals:

Geologic description:

In 1915, Johnson discovered a scheelite-bearing lode in a crystalline marble bed in schist. The marble has intervals that consist of calcite, pyroxenite, hornblende, and quartz associated with granular scheelite ore, quartz pegmatite, and silicified mica schist (Mertie, 1917; Byers, 1957). The crystalline marble is in discontinuous, irregular bodies roughly parallel to the foliation of the schist. Various descriptions indicate that the limestone may occur as an impure, thin beds, interlayered with other sedimentary rock, or as irregularly shaped, lens-like bodies of relatively pure limestone found at irregular intervals (Gebhardt, 1942).The average thickness of the marble is 2 feet, but it may be as much as 10 feet thick in troughs and crests of folds. Granular scheelite is localized at the intersections of limestone [marble] and scheelite-bearing quartz pegmatite. Typical contact-metamorphic minerals are present, including the beryllium mineral, meliphanite. Green amphibolite forms the footwall of the lode below the 50-foot level of the shaft. The lode generally strikes about N. 70 W. and dips about 35 NW (Byers, 1957). It is offset as much as several tens of feet along steep, northward-striking faults. The weighted average of 32 channel samples in the ore zones was 6.1 percent tungsten tri-oxide, and the average of the ore that was mined was less than 5 percent (Byers, 1957). The richest ore shoots are at the intersections of marble and pegmatite dikes (Berg and Cobb, 1967, p. 220).

Alteration:
Silicified layers in the marble contain pyroxene, hornblende, and quartz (Mertie, 1917).

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
During the period 1915-18, inclined shafts were driven down the dip of the lode. In 1942-44, Cleary Hill Mines Co. sank a 170-foot inclined shaft with levels at 50 feet and 150 feet. Gabhardt (1942) reported shafts 50 and 190 feet deep and about 300 feet apart and a 100-foot tunnel. By 1957, there were 2,000 feet of underground workings (Byers, 1957).

Production notes:
From 1915 to 1916, the Tungsten claim produced 210 tons of ore. During World War I, the production was 10 tons of concentrates thst contained about 65 percent tungsten tri-oxide; 300 tons of sorted ore contained 8 percent tungsten tri-oxide, but only 2 percent was recoverable. Production from 1942 to 1944 was about 98.4 tons of ore (Byers, 1957). There was as small mill on the property that recovered the scheelite concentrate on a Wilfley table.

Reserves:

Additional comments:

References:
Brooks, 1916 (B 642); Mertie, 1917; Chapin, 1919; Alaska Territorial Department of Mines staff, 1919; Martin, 1920; Capps, 1924; Gabhardt, 1942; Hill, 1933; Joesting, 1943 (ATDM Pamph. 2); Joesting, 1943 (ATDM PE 58-4); Joesting, 1943 (ATDM MI 58-1); Bain, 1946; Thorne and others, 1948; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Allegro, 1987.

Primary reference: Byers, 1957

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Colbert; Big Chief; Pearl; Triangle

Site type: Prospect

ARDF no.: FB114

Latitude: 64.981 **Quadrangle:** FB D-1

Longitude: 147.361

Location description and accuracy:
The Colbert prospect is located in the SW1/4SW1/4 sec. 21, T. 2 N., R. 2 E., Fairbanks Meridian. The Colbert deposit is located at the top of Gilmore Dome. The prospect is included in locality 32 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals:

Geologic description:
The Colbert tungsten deposit consists of scheelite in and parallel to metasedimentary rocks that are intruded by porphyritic granite (Thorne and others, 1948, p. 4). Small amounts of scheelite are also disseminated in the granite. The ore lenses occupy parts of a 30-foot-thick calcareous bed in schist. The lode has been traced for approximately 2,000 feet; it varies in thickness. The mineralization pinches out in some places, but a zone as much as 50 feet wide was observed in one trench (Byers, 1957). The tungsten content of the ore shoots is 1.3 percent tungsten tri-oxide over an average width of 1.6 feet (Byers, 1957). This tungsten deposit is 1,000 feet south of and parallel to the Stepovich lode (FB113) (Berg and Cobb, 1967, p. 220).

Alteration:

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: None

Site Status: Inactive

Workings/exploration:
This prospect has been explored by trenches (Byers, 1957).

Production notes:

Reserves:

Additional comments:

References:
Joesting, 1943 (ATDM Pamph. 2); Thorne and others, 1948; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Byers, 1957

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Fort Knox

Site type: Mine

ARDF no.: FB115

Latitude: 64.992 **Quadrangle:** FB D-1

Longitude: 147.359

Location description and accuracy:

The Fort Knox gold mine is located northeast of Fairbanks on the north flank of Gilmore Dome between Monte Cristo and Melba Creeks. The mine is accessible from the Steese Highway. To reach it, from Cleary Summit, go east on the Fairbanks Creek road; at approximately 2 miles on the Fairbanks Creek road, turn south on the Fort Knox mine road (not shown on the (D-2) NW map) and continue about 3.5 miles to the Fort Knox mill, which is just south of the open pit of the mine.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Currently, the Fort Knox mine is the largest gold mine in Alaska, producing about 1,000 ounces of gold per day from 36,000 to 44,000 tons of ore (Szumigala and Swainbank, 1999). The most recent figures indicate a resource of 186 million tons of ore at a grade of 0.027 ounce of gold per ton, or a total resource of 5.04 million ounces of gold (J. Odden, written commun., 2000). The gold varies from 940-990 fine (Bakke, 1994).

The Fort Knox gold deposit occurs in a granite body, now commonly referred to as the Fort Knox pluton (Bakke, 1992). This pluton has been dated at 92 Ma by the U/Pb method (Bakke, 1994). Gold occurs along margins of stockworks quartz veins and veinlets, on quartz-filled shear zones, and along fractures within the granite. In the ore zones, the sulfide content is low, less than 0.5 percent. There are only minor amounts of arsenopyrite (McCoy and others, 1997). The dominant sulfide is bismuthinite (J. Odden, oral commun., 2000). The pluton has been subdivided into three phases, primarily on on the basis of texture: (1) fine-grained, biotite- and hornblende-rich granite, (2) medium- to coarse-grained, seriate, porphyritic granite (the youngest phase), and (3) a hybrid, biotite- and hornblende-rich phase with relict texture similar to the porphyritic granite, formed by local contact metamorphism of impermeable country rocks (Bakke, 1992; J. Odden, writ-

ten commun., 2000). The most significant gold mineralization is found within milky-white, quartz-stockwork veining and shear zones (Bakke, 1992). The stockwork veins dominantly strike E-W and have no consistent dip. The gold distribution within the stockwork veins is highly erratic; some ore grades as high as 7.0 ounces of gold per ton in grains ranging in size from less than 0.1 to 2 mm. In contrast, the quartz-filled shear zones contain evenly distributed, micron-size gold. White mica from the stockworks has been dated by the 40Ar/39Ar method at 86.2 to 89.3 Ma (McCoy and other, 1997, p. 207). Alteration consists of vein-controlled phyllic, potassic, albitic, and argillic alteration (Bakke, 1992). A late, low-temperature, thermal alteration event has produced an assemblage of calcite, zeolite (stilbite), chalcedony, and clay in breccia zones, on joint surfaces, and in fractures within the granite (Bakke, 1992).

Alteration:

Alteration consists of vein-controlled phyllic, potassic, albitic, and argillic alteration (Bakke, 1992). A late, low-temperature, thermal alteration event has resulted in an assemblage of calcite, zeolite (stilbite), chalcedony and clay in breccia zones, on joint surfaces, and in fractures within the granite (Bakke, 1992).

Age of mineralization:

Stockwork white mica which is probably contemporaneous with the mineralization has been dated by the 40Ar/39Ar method at 86.2 to 89.3 Ma (McCoy and others, 1997, p. 207).

Deposit model:

Gold occurs along margins of stockwork quartz veins and veinlets, quartz-filled shear zones, and along fractures within granite; commonly called a Fort Knox type porphyry gold deposit.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; large

Site Status: Active

Workings/exploration:

In 1913, a bismuth-bearing, gold-quartz vein was prospected on the ridge between Melba and Monte Cristo Creeks by Edward Voght (see FB116) (Chapin, 1914 [B 592-J, p. 330]). When visited in July of 1949, the workings were completely caved, and all that remained was almost completely disintegrated rock on dumps around an old filled shaft and the ruins of a small mill (Wedow and White, 1954). In 1987, a geologist walking behind a bulldozer on the Fort Knox claims picked up a piece of granite containing visible gold; this discovery was followed by an extensive exploration program. By 1989, Fairbanks Gold Ltd. and its joint venture partners had spent $4.5 million on exploration at the Fort Knox deposit. More than 72,000 feet of drilling and 5 miles of trenching outlined an area predicted to contain 4 million ounces of gold. In 1990, five drill rigs were operating 24 hours a day, drilling almost 60,000 feet in 104 drill holes, and a 170,000-ton bulk sam-

ple was taken. In 1990, the Fort Knox property was the largest exploration project outside of southeast Alaska (Swainbank and others, 1991, p. 11). Exploration consisted of 46,300 feet of diamond drilling and 62,600 feet of reverse circulation drilling. The 170,000-ton bulk sample was reduced to 45 tons; seven tons of this sample was split for metallurgical testing. In 1991, another 32,600 feet of reverse circulation drilling was completed (Bundtzen and others, 1991, p. 20). Geotechnical work consisted mainly of condemnation drilling to determine where to put the mill, tailings pond, and other mine support facilities (Bundtzen and others, 1991, p. 20). Late in 1991, Amax Gold Inc. announced its intention to purchase all assets of Fairbanks Gold Ltd. (Bundtzen and others, 1991, p. 20). By 1996, as many as 800 workers had completed a power line to the site, the freshwater dam and tailings dam, the primary crusher, a coarse-ore conveyor, apron feeders, and all components of the mill (Swainbank and others, 1997, p. 12). From mid-November to the end of December 1996, Fairbanks Gold Mining, Inc., the operating subsidiary of Amax Gold, Inc., mined and milled 769,728 tons of ore and recovered 16,085 ounces of gold from a large open pit (Swainbank and others, 1997, p. 24). The first gold bars were poured on December 20, 1996 (Swainbank and others, 1997, p. 12). In June 1998, Kinross Gold merged with Amax Gold, Inc., and added a 120-ton SAG mill to increase mill throughput by about 10 percent to 45,000 tons per day (Szumigala and Swainbank, 1999, p. 14). In the mine pit, 10,000 feet of reverse circulation drilling and 22,000 feet of core drilling were completed. Other projects in 1998 consisted of dewatering of tailings and increasing the height of the tailings dam. In 1999, resource drilling consisted of 2,503 feet of reverse circulation drilling and 5,768 feet of core drilling; the open pit was approximately 3,000 feet by 5,500 feet in area (J. Odden, oral commun., 2000).

Production notes:

The first gold bars were poured on December 20, 1996 (Swainbank and others, 1997, p. 12). From mid-November to the end of December 1996, Fairbanks Gold Mining, Inc., the operating subsidiary of Amax Gold, Inc., mined and milled 769,728 tons of ore and recovered 16,085 ounces of refined gold (Swainbank and others, 1997, p. 24). Gold production in 1999 was 351,120 ounces (Kinross Gold Corporation, press release, Feb. 3, 2000). The grade of gold produced in 1999 was 0.95 grams of gold per tonne (0.0277 ounce of gold per ton) (Kinross Gold Corporation, press release, Feb. 3, 2000). Total gold recovered as of January 31, 2000, was 1,113,137 ounces (J. Odden, oral commun., 2000).

Reserves:

Recent calculations indicate a resource of 186 million tons of ore with a grade of 0.027 ounce of gold per ton, or a total resource of 5.04 million ounces of gold (J. Odden, written commun., 2000).

Additional comments:

References:

Chapin, 1914 (B 592-J, p. 321-355); Wedow and White, 1954; Swainbank and others, 1991; Bakke, 1992; Bundtzen and others, 1991; Bakke, 1994; McCoy and others, 1997; Swainbank and others, 1997; Szumigala and Swainbank, 1999.

Primary reference: Bakke, 1992

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Voght; Melba Creek; Monte Cristo; Granite Hill

Site type: Prospect

ARDF no.: FB116

Latitude: 64.993 **Quadrangle:** FB D-1

Longitude: 147.352

Location description and accuracy:

The Voght propspect is located in the NW1/4NE1/4 sec. 21, T. 2 N., R. 2 E., Fairbanks Meridian. This prospect is about 1 mile north of Gilmore Dome, near Melba Creek. This prospect is now part of the Fort Knox gold mine (FB115). The prospect is locality 33 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Bi, W

Ore minerals: Bismuthinite, gold, native bismuth, scheelite

Gangue minerals:

Geologic description:

Gold, scheelite, native bismuth, bismuthinite and an undetermined tellurium mineral occur in a 5-inch-thick, nearly vertical quartz vein that trends east and cuts porphyritic biotite granite (Chapin, 1914 [B 592-J, p. 330-331]). Mertie (1917, p. 412) reported that there were two quartz veins separated by 3 feet of shattered granite; these veins were oriented N. 5 W., 80 W. and contained gold, scheelite, bismuthinite, and an unknown tellurium mineral. When visited in July of 1949, the working were completely caved (Wedow and others, 1954). All that remained was highly disintegrated rock on dumps around an old filled shaft and the ruins of a small mill. This is now the site of the Fort Knox gold mine, the largest gold mine in Alaska (FB115).

Alteration:

Age of mineralization:

Deposit model:

Gold-tungsten-bismuth-tellurium-quartz vein in porphyritic biotite granite; comonly referred to as a Fort-Knox-type porphyry gold deposit.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

When visited in July of 1949, the workings were completely caved (Wedow and White, 1954). All that remained was disintegrated rock on dumps around an old filled shaft and the ruins of a small mill.

Production notes:

The ruins of a small mill were found in 1949 but there is no record of the amount of production (Wedow and White, 1954).

Reserves:

Additional comments:

References:

Chapin, 1914 (B592-J, p. 330-331); Mertie, 1917; Brooks, 1919; Brooks, 1921; Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Wedow and White, 1954; Wedow and others, 1954.

Primary reference: Chapin, 1914 (B 592-J, p. 330-331)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Monte Cristo Pup; Monte Cristo Creek

Site type: Mine

ARDF no.: FB117

Latitude: 64.998 **Quadrangle:** FB D-1

Longitude: 147.35

Location description and accuracy:
The Monte Cristo mine is located in the S1/2 sec. 16, T. 2 N., R. 2 E., Fairbanks Meridian. Placer mining took place on the lower mile of Monte Cristo Creek. The coordinates are the approximate center of those workings, which are about one mile north-northeast of the top of Gilmore Dome. The mine is locality 58 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Placer mining has taken place along the lower mile of Monte Cristo Creek. The first report of placer mining was in 1914 (Eakin, 1915, p. 233). Monte Cristo Creek drains the north side of Gilmore Dome. Bedrock in the headwaters is Cretaceous granite, and the Monte Cristo mine is now, or will be, largely consumed by the open pit of the Fort Knox gold mine (FB115), the largest gold mine in Alaska in 2001.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Placer mining along the lower mile of the creek.

Production notes:
No information is available, but there has been some production of placer gold.

Reserves:

Additional comments:

References:
Eakin, 1915; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Eakin, 1915

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Yellow Pup

Site type: Mine

ARDF no.: FB118

Latitude: 64.981 **Quadrangle:** FB D-1

Longitude: 147.348

Location description and accuracy:

The Yellow Pup mine is located in the SW1/4SE1/4, sec. 21, T. 2 N., R. 2 E., Fairbanks Meridian. The Yellow Pup mine is at an elevation of 1,900 feet near the head of Yellow Pup Creek, about 0.5 mile east of the summit of Gilmore Dome. The mine is locality 34 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals: Apatite, diopside, garnet, hornblende

Geologic description:

The following description of the Yellow Pup tungsten deposit is summarized from Robinson (1981). The rocks consist of a hornfelsed sequence of feldspar-quartz schist, biotite-muscovite-quartz schist, muscovite-quartz schist, calc-amphibolite, and marble. The tungsten-bearing beds occur in pelitic schists and quartzite that contain resorbed biotite and andalusite prophyroblasts that reflect hornfelsing caused by the intrusion of the nearby Gilmore Dome stock. The tungsten-bearing rocks are marble, calc-amphibolites, and siliceous calc-silicate rocks. These rocks form distinctive layers within a package of rocks dominated by barren mica schist, quartz schist, and quartzite. Two types of calc-amphibolites are present. The most common is epidote amphibolite, which has sporadic concentrations of scheelite and powellite. The other calc-amphibolite occurs in a 2-meter-thick layer in the main open cut and consists of hornblende, quartz, tremolite, muscovite, epidote clinozoisite, garnet, plagioclase, and chlorite. There may be as much as 10 percent scheelite in this amphibolite. In the mine, the mineralized zone is arched into a small, north-plunging, assymetrical antiform that flattens to the south where it is truncated by a high-angle fault. Most mineralization appears to be within the eastern limb of the structure. Other scheelite occurrences are present in epidote-amphibolite layers in surface trenches; the size of these zones varies, but none appear to be as large or as high grade as the calc-amphibolite zone.

Alteration:

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
An adit was driven 12 feet soon after the discovery of the deposit in 1942 (Thorne and others, 1948, p. 8-9). In 1981, the workings consisted of several open cuts and trenches over an area approximately 1,000 feet long by 300 feet wide (Robinson, 1981).

Production notes:
After its discovery in 1942, 35 tons of ore from the tunnel were stockpiled (Thorne and others, 1948, p. 8-9). In the late 1970's, several tons of high-grade tungsten concentrates were shipped, and a large amount of unmilled ore was stockpiled (Robinson, 1981, p. 1). In 1981, Vincent Monzuella produced a few tons of scheelite concentrate and stockpiled a larger amount of high-grade, unmilled ore (Bundtzen and others, 1982, p. 27).

Reserves:

Additional comments:

References:
Bain, 1946; Thorne and others, 1948; Byers, 1957; Berg and Cobb, 1967; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Robinson, 1981; Bundtzen and others, 1982.

Primary reference: Robinson, 1981

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Stepovich

Site type: Prospect

ARDF no.: FB119

Latitude: 64.979 **Quadrangle:** FB D-1

Longitude: 147.327

Location description and accuracy:

The accuracy of this location is uncertain and is based on a location reported by Cobb (1976 [OFR 76-662, p. 145]), which was in turn based on a sketch map by Chapin (1914 [B 592-J, p. 330]). The coordinates locate the Stepovich prospect on the ridge west of Pearl Creek, south of Yellow Pup mine (FB118) about one mile east-southeast of Gilmore Dome in the NW1/4 sec. 27, T. 2 N., R. 2 E., Fairbanks Meridian. (Note that there another Stepovich deposit nearby, a tungsten mine (FB113).)

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

A 38-foot shaft was sunk on a quartz vein that strikes N. 70 E. and dips 70 NW. Quartz on the dump contains bunches of arsenopyrite and a little pyrite; fractures are cemented by scorodite (Chapin, 1914 [B 592-J, p. 330]). The bedrock is quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist (Newberry and others, 1996). On the ridge, just above this prospect the bedrock is amphibolite, magnetite-rich biotite schist, quartz schist, and marble. The prospect is bordered on the south and east by Cretaceous granite and granodiorite.

Alteration:

Fractures are cemented by scorodite (Chapin, 1914 [B 592-J, p. 330]).

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
A 38-foot shaft was sunk on a quartz vein (Chapin, 1914 [B 592-J, p. 330]).

Production notes:

Reserves:

Additional comments:

References:
Chapin, 1914 (B 592-J, p. 330); Cobb, 1976 (OFR 76-662).

Primary reference: Chapin, 1914 (B592-J, p. 330)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): American; American Eagle; Perrault; Perrault and Murphy

Site type: Mine

ARDF no.: FB120

Latitude: 64.981 **Quadrangle:** FB D-1

Longitude: 147.324

Location description and accuracy:

The American mine is located in the SE1/4SW1/4 sec. 22, T. 2 N., R. 2. E., Fairbanks Meridian, in the saddle on the divide between Victoria Creek, a tributary of Smallwood Creek, and Pearl Creek, a tributary of Fish Creek. It is about 1 mile east of Gilmore Dome. The mine is locality 35 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

By 1913, several tons of ore had been mined from an 18-inch- to 4-foot-wide vein that carried approximately 1.2 ounces of gold per ton (Smith, 1913 [B 525, p. 166]). The gold-quartz vein contained very few sulfides and was oriented N. 50 E., 60 NW. (Chapin, 1914,B[592, p. 329-330]). The footwall is a zone of schist, 3 feet wide, that contains small quartz stringers; gold could be panned from most random samples of the quartz (Chapin, 1914 [B 592-J]). This mine lies on the western edge of a Cretaceous granite that intrudes two units of the Fairbanks Schist that are composed of (1) quartz-muscovite schist, quartzite, and chlorite-quartz schist, and (2) amphibolite, magnetite-rich biotite schist, quartz schist, and marble (Newberry and others, 1996). By 1931, the workings were inaccessible, but the material on the dumps was examined and consisted of brecciated schist partly cemented by quartz (Hill, 1933).

Alteration:

Age of mineralization:

Deposit model:

Schist-hosted gold-quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

In 1914, an inclined shaft was 60 feet deep (Chapin, 1914, B 592-J, p. 329-330). By 1931, the workings were inaccessible (Hill, 1933).

Production notes:

In 1911, twenty tons of ore, with a grade of 1.21 ounces of gold per ton, were mined from a 38-foot shaft on the American Eagle claim. There is no record of production after 1913 when several tons of ore were mined (Smith, 1913 [B 525]).

Reserves:

Additional comments:

References:

Smith, 1913 (B 525); Smith, 1913 (B 542-F); Chapin, 1914 (B 592-J, p. 321-355); Hill, 1933; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-622); Newberry and others, 1996.

Primary reference: Chapin, 1914 (B 592-J, p. 321-355)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Yellow Pup Creek

Site type: Mine

ARDF no.: FB121

Latitude: 64.988 **Quadrangle:** FB D-1

Longitude: 147.32

Location description and accuracy:

Yellow Pup Creek has been placer mined 0.5 mile above its mouth on Pearl Creek; the mine tailings are shown on the Fairbanks (D-1) NW topographic map. The coordinates given are for the approximate center of the placered area. It is about 1.5 miles northeast of the top of Gilmore Dome in sec. 22, T. 2 N., R. 2 E., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The headwaters of Yellow Pup Creek lie within Fairbanks Schist, which is composed of amphibolite, biotite schist, quartz schist, and marble. The rocks near the lower part of the creek consist of quartz-muscovite schist, quartzite, and chlorite-quartz schist of the Fairbanks Schist (Newberry and others, 1996). Placer gold was mined near the confluence of Pearl Creek and Yellow Pup Creek from 1911 to 1914 and from 1938 to 1940 (Cobb, 1976 [OFR 76-662, p. 109]). The placer mine shown on the Fairbanks (D-1) NW topographic map farther upstream on Yellow Pup Creek has been active in recent years.

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Placer gold was mined near the confluence of Pearl Creek and Yellow Pup Creek from 1911 to 1914 and from 1938 to 1940 (Cobb, 1976 [OFR 76-662, p. 109]). The placer mine shown on the Fairbanks (D-1) NW quadrangle farther upstream on Yellow Pup Creek indicate that mining has occurred in recent years.

Production notes:

No information is available on the production.

Reserves:

Additional comments:

References:

Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): White

Site type: Prospect

ARDF no.: FB122

Latitude: 64.99 **Quadrangle:** FB D-1

Longitude: 147.311

Location description and accuracy:
The White prospect is located in the NE1/4 sec. 22, T. 2 N., R. 2 E., Fairbanks Meridian. The White prospect is about 1.6 miles northeast of the top of Gilmore Dome, just downstream from the junction of Yellow Pup and Pearl Creeks. The prospect is locality 36 of Cobb (1972 [MF 410]).

Commodities:

Main: W

Other:

Ore minerals: Scheelite

Gangue minerals:

Geologic description:
A lode prospect was found on placer claims on Pearl Creek that contained an ore shoot of scheelite-bearing material in hornblende and mica schist. These scheelite ore shoots were parallel to schistosity that had a strike of N. 75 E. and a dip of 75 N (Mertie, 1917). The rocks in the area has been mapped as Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996).

Alteration:

Age of mineralization:

Deposit model:
W skarn deposit (Cox and Singer, 1986; model 14a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
14a

Production Status: None

Site Status: Inactive

Workings/exploration:
Prior to 1918, one or more shafts were dug during lode prospecting on placer claims (Mertie, 1917, p. 421).

Production notes:

Reserves:

Additional comments:

References:
Mertie, 1917; Chapin, 1919; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Mertie, 1917

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Pearl Creek

Site type: Mine

ARDF no.: FB123

Latitude: 64.999 **Quadrangle:** FB D-1

Longitude: 147.302

Location description and accuracy:

The Pearl Creek mine is located in sections 15 and 22, T. 2 N., R. 2 E., Fairbanks Meridian. Pearl Creek has been placer mined above its mouth on Fish Creek. The area is approximately 2 miles east-northeast of Gilmore Dome, and the mine tailings are marked on the Fairbanks D-1 topographic map. The coordinates given are for the approximate center of this activity. Another area of placer mining is a 0.5-mile stretch near the junction of Yellow Pup Creek (FB0121) and Pearl Creek; this mine is also shown on the Fairbanks D-1 quadrangle. The mine is locality 59 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Bi, W

Ore minerals: Gold, native bismuth, scheelite, wolframite

Gangue minerals:

Geologic description:

Pearl Creek drains an area predominantly underlain by Cretaceous granite that has intruded the Fairbanks Schist (Newberry and others, 1996). Placer gold was mined along Pearl Creek from 1911 to 1914, from 1938 to 1940, and in recent years, as evidenced by the relatively fresh tailings near its confluence with Fish Creek (Cobb, 1976 [OFR 76-662, p. 109]). Abundant scheelite, wolframite, and native bismuth have been found in concentrates.

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Placer gold was mined along Pearl Creek from 1911 to 1914, from 1938 to 1940, and in recent years, as evidenced by the relatively fresh tailings near its confluence with Fish Creek (Chapman and Foster, 1969; Cobb, 1976 [OFR 76-662, p. 109]).

Production notes:
Placer gold was mined, but production figures are not available.

Reserves:

Additional comments:
See also Yellow Pup, FB121.

References:
Ellsworth, 1912; Ellsworth and Davenport, 1913; Chapin, 1914 (B 592-J, p. 357-362); Eakin, 1915; Mertie, 1917; Hill, 1933; Smith, 1939 (B 917-A); Smith, 1941 (B 926-A); Joesting, 1942 (ATDM Pamph. 1); Smith, 1942 (B 933-A); Joesting, 1943 (ATDM Pamph. 2); Wedow and White, 1954; Byers, 1957; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Last Chance Creek

Site type: Mine

ARDF no.: FB124

Latitude: 64.991 **Quadrangle:** FB D-1

Longitude: 147.217

Location description and accuracy:
The Last Chance Creek mine is located in sec. 19, T. 2 N., R. 3 E., Fairbanks Meridian. This placer mine is marked in the headwaters of Last Chance Creek on the Fairbanks D-1 topographic map. The mine is about 4.3 miles east-northeast of the top of Gilmore Dome. The mine is locality 61 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Bedrock in the Last Chance Creek drainage is Fairbanks Schist that consists of quartz-muscovite schist, quartzite, and chlorite-quartz schist (Newberry and others, 1996). Placer mining took place from 1911 to 1914 and in 1925 and 1926 (Cobb, 1976 [OFR 76-662, p. 73]; Wimmler, 1925 [ATDM MR 195-8, p. 52]; Wimmler, 1926 [ATDM MR 195-11, p. 57]).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Placer mining took place from 1911 to 1914, and hydraulic mining was reported in 1925 and 1926 (Wimmler, 1925 [ATDM MR 195-8, p. 52]; Wimmler, 1926 [ATDM MR 195-11, p. 57]).

Production notes:

Reserves:

Additional comments:

References:

Ellsworth, 1912; Ellsworth and Davenport, 1913; Chapin, 1914 (B 592-J, p. 357-362); Eakin, 1915; Wimmler, 1925 (ATDM MR 195-8); Wimmler, 1926 (ATDM MR 195-11); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Newberry and others, 1996.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Smallwood Creek

Site type: Mine

ARDF no.: FB125

Latitude: 64.913 **Quadrangle:** FB D-1

Longitude: 147.348

Location description and accuracy:

The Smallwood Creek mine is located in about the center of T. 1 N., R. 2 E., Fairbanks Meridian. The coordinates are for prospects shown on the Livengood D-1 NW, topographic map. The site is about 4 miles upstream from its mouth on the Little Chena River and about 4.8 miles south of Gilmore Dome. This mine is locality 60 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The headwaters of Smallwood Creek are in Cretaceous granite and granodiorite, and the middle and lower sections are underlain by mica schist of the Fairbanks Schist (Newberry and others, 1996). The placer ground is deep, ranging from about 40 feet near the head of the creek increasing downstream to more than 300 feet (Cobb, 1976, OFR 76-662, p. 135). Productive gravels were reported to be 120 feet wide and 3 to 4 feet thick (Prindle and Katz, 1913, p. 103). Mining was reported from 1907 to 1916 and in 1927 (Cobb, 1976 [OFR 76-662]). By 1908, it was reported that prospecting and some production had taken place for several years on Smallwood Creek. Production was $12,000 by 1908, with the gold valued at $18.11 per ounce (Brooks, 1908 [B 345, p. 41-42]; Prindle and Katz, 1913, p. 112-113). Small placer mining operations were active in recent years and may be continuing. The gold was between 878 and 911 fine (Glover, 1950).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
By 1908, it was reported that prospecting and some production had taken place for several years on Smallwood Creek. Production was $12,000 by 1908 with the gold valued at $18.11 per ounce (Brooks, 1908 [B 345, p. 41-42]; Prindle and Katz, 1913, p. 112-113). Small placer mining operations were active in recent years and may be continuing.

Production notes:
Production figures are not available for recent work on the creek. The only production that has been reported is from Prindle and Katz (1913, p. 112-113), who reported that production as of 1908 was worth $12,000, with the gold valued at $18.11 per ounce.

Reserves:

Additional comments:

References:
Brooks, 1908; Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Brooks, 1914; Chapin, 1914 (B 592-J, p. 357-362); Smith, 1917 (B 142); Smith, 1917 (B 153); Wimmler, 1925 (ATDM MR 195-8); Smith, 1930 (B 810); Glover, 1950; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Cody Creek

Site type: Occurrence

ARDF no.: FB126

Latitude: 64.056 **Quadrangle:** FB A-4, A-5

Longitude: 149

Location description and accuracy:
The Cody Creek occurrence is probably in sections 6, 7, 8 or 18, T. 10 S., R. 7 W., Fairbanks Meridian. The exact locations of placer gold prospects along Cody Creek are uncertain. The coordinates given are for the approximate center of the drainages, and the placer workings could easily be a mile or more away.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Cody Creek drains an area underlain by the California Creek Member of the Totatlanika Schist; it consists of gray quartz-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ-810]). In 1916, placer gold was reported, but no mining took place (Maddren, 1918, p. 368).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1916, placer gold was reported, but there is no record of any substantial mining (Maddren, 1918, p. 368).

Production notes:

Reserves:

Additional comments:

References:
Maddren, 1918; Wahrhaftig, 1970 (GQ-810); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Moose Creek; Big Moose Creek; Keys; Triple Xs

Site type: Mine

ARDF no.: FB127

Latitude: 64.039 **Quadrangle:** FB A-4

Longitude: 148.976

Location description and accuracy:

The Moose Creek mine is located in sections 16, 17, 18, and 20, T. 10 S., R. 7 W., Fairbanks Meridian. Most placer mining took place for about one mile downstream from the junction of Moose Creek and Little Moose Creek. The coordinates given are near the junction of Moose Creek and Little Moose Creek where a placer mine is plotted on the Fairbanks A-4 topographic map. The mine is locality 62 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Hg, Pt, Sn, W

Ore minerals: Cassiterite, cinnabar, gold, platinum, scheelite

Gangue minerals:

Geologic description:

Moose Creek, a tributary of the Nenana River, drains an area underlain by quartz-orthoclase-sericite schist and augen gneiss of the the California Creek Member of the Totatlanika Schist (Wahrhaftig, 1970 [GQ-810]). The schist is overlain by a thick mantle of gravels. The thick deposits of high gravels that overlie the schist within the Moose Creek basin occur chiefly on the ridges and spurs between Cody, Big Moose, and Little Moose Creeks (Maddren, 1918, p. 366). The first recorded production was in 1909, when 100 ounces of gold was recovered from a gravel bench near the mouth of Little Moose Creek (Capps, 1912, p. 44). Some gold was found in the high gravels, but most gold was recovered from the stream gravels (Maddren, 1918). Concentrates contain gold, scheelite, cassiterite, cinnabar, and platinum-group metals. Mining was reported for most years from 1909 to 1940 (Cobb, 1976 [OFR 76-622, p. 101]). In 1990 and 1991, gold was mined from both upper and lower Moose Creek (Bundtzen and others, 1991, p. 34), and mining continued until at least 1994 in upper Moose Creek. Glover (1950) reported that gold on Moose Creek is 866 to 876 fine.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Small-scale placer mining has taken place since 1909 (Cobb, 1976 [OFR 76-662, p. 101-102]; Smith, 1941 [B 926-A, p. 50-51]). In 1925, an automatic gate was in use (Wimmler, 1925 [ATDM MR 195-8, p. 43]). A dragline plant was installed in 1937 (Smith, 1939 [B 910-A, p. 55]). In 1938, and probably other years, prospect drilling was conducted on benches (Smith, 1939 [B 917-A, p. 54]), and a one-bucket dredge began mining in 1939. In 1991, gold was mined from upper Moose Creek by Tom Faa, and Jim Roland worked his Annebelle Property on lower Moose Creek (Bundtzen and others, 1991, p. 34). In 1994, several discontinuous areas in sections 16 and 15 of upper Moose Creek were being mined. The mining was greatly contsrained by the steep valley walls, abundant boulders, and the narrow auriferous channel along the creek (Donald Grybeck, field observations, 1994).

Production notes:
The first production was reported in 1909, when 100 ounces of gold was recovered from a gravel bench (Capps, 1912, p.44). From 1909 to 1916, the total output from the basin, including Little Moose Creek, was about $30,000 (about 1,451 ounces of gold) (Maddren, 1918). A dragline was installed in 1937, and the total output for the district increased markedly from $12,000 to $44,000 (Smith, 1939 [B 910-A, p. 55]). No information is available on production in later years.

Reserves:

Additional comments:

References:
Capps, 1911; Capps, 1912; Brooks, 1912; Maddren, 1918; Overbeck, 1918; Martin, 1920; Brooks, 1922; Brooks, 1923; Capps, 1924; Wimmler, 1925 (ATDM MR 195-8); Smith, 1930 (B 813-A); Smith, 1932; Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Smith, 1942 (B 933-A); Glover, 1950; Malone, 1962; Malone, 1965; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Hasler and others, 1973;

Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1991.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Little Moose Creek

Site type: Mine

ARDF no.: FB128

Latitude: 64.032 **Quadrangle:** FB A-4

Longitude: 148.957

Location description and accuracy:
The Little Moose Creek mine is located in secs. 20 and 21, T. 10 S., R. 7 W., Fairbanks Meridian. Over the years, placer operations have taken place at various locations along Little Moose Creek, and the coordinates are approximately the mid-point of the creek. The mine is locality 63 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:
The Little Moose Creek basin is underlain mainly by quartz-orthoclase-sericite schist of the California Creek Member of the Totatlanika Schist (Wahrhaftig, 1970 [GQ-810]). Gold is found in stream gravel that is approximately 2 to 4 feet thick along the lower mile of the creek above the confluence with Moose Creek (Maddren, 1918). Scarce scheelite was found in placer concentrates (Joesting, 1943 [ATDM Pamph. 2, p. 20[). Glover (1950) reported that the gold is 860 fine.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
There was small-scale placer mining before 1918; mining probably has continued sporadically since.

Production notes:

Reserves:

Additional comments:

References:
Maddren, 1918; Smith, 1939 (B 910-A); Joesting, 1943 (ATDM Pamph. 2); Thorne and others, 1948; Glover, 1950; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Rambler; Barlow; Koska

Site type: Prospect

ARDF no.: FB129

Latitude: 64.058 **Quadrangle:** FB A-4

Longitude: 148.947

Location description and accuracy:
The Rambler prospect is located in the SW1/4SW1/4 sec. 9, T. 10 S., R. 7 W., Fairbanks Meridian. This prospect is on the north side of Cody Creek, a tributary of Moose Creek; it is approximately 2.7 miles west-northwest of the Liberty Bell mine. The prospect is locality 37 of Cobb (9172 [MF 410]).

Commodities:

Main: Sb

Other: Ag, Pb, Sb

Ore minerals: Galena, gold, stibnite

Gangue minerals:

Geologic description:
Stibnite is found in small, discontinuous, lenticular bodies in black, slaty schist (Joesting, 1942 [ATDM Pamph. 1, p. 12]). Three tunnels were driven on the prospect, one of which was 90 feet long. About two tons of high-grade stibnite was mined and sacked during prospecting, but there is no mention if any ore was shipped (Joesting, 1942 [ATDM Pamph. 1, p. 12]). A sample taken from the site contained 47percent antimony and traces of gold, silver, and lead.

Alteration:
The schist is highly oxidized, and the stibnite is weathered light-yellow.

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: Undetermined

Site Status: Inactive

Workings/exploration:

Three tunnels were driven on the prospect, one of which was 90 feet long (Joesting, 1942 [ATDM Pamph. 1, p. 12]). In 1994, all the workings were caved, and there is little sign of this prospect other than a few, small pieces of rock that contain stibnite near the caved adits (Donald Grybeck, field observations, 1994).

Production notes:

About two tons of high-grade stibnite was mined and sacked during prospecting, but there is no mention of any ore having been shipped (Joesting, 1942 [ATDM Pamph. 1, p. 12]).

Reserves:

Additional comments:

References:

Maddren, 1918; Overbeck, 1918; Joesting, 1942 (ATDM Pamph. 1); Joesting, 1942 (ATDM MR 194-11); Berg and Cobb, 1967; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Joesting, 1942 (ATDM Pamph. 1)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (near Spruce Creek)

Site type: Occurrence

ARDF no.: FB130

Latitude: 64.083 **Quadrangle:** FB A-4

Longitude: 148.925

Location description and accuracy:

This unnamed prospect is located in sec. 4, T. 10 S., R. 7 W., Fairbanks Meridian. Although this occurrence is called Spruce Creek, Cobb plotted it at the head of Rex Creek, just west of Spruce Creek. The coordinates reflect Cobb's location; it is unclear if this location is accurate, and this occurrence may be a mile or more away. The occurrence is locality 38 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Ag, Pb, Sb

Ore minerals: Arsenopyrite, gold, jamesonite, scorodite

Gangue minerals:

Geologic description:

Bedrock in the area is gray quartz-orthoclase-sericite schist and augen gneiss of the California Creek Member of the Totalanika Schist (Wahrhaftig, 1970 [GQ-810]). Berg and Cobb (1967, p. 202-203) reported a few gold-bearing lodes and small jamesonite-bearing veins. Samples from an antimony-bearing vein contained 0.44 ounce of gold per ton and 5.4 ounces of silver per ton (Joesting, 1943 [ATDM Pamph. 2, p. 14]).

Alteration:

Age of mineralization:

Deposit model:

Gold- and antimony-bearing veins in quartz-orthoclase-sericite schist.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

The only work that has been reported is hand samples taken of a vein for assay (Joesting , 1943 [ATDM 2, p. 14]).

Production notes:

Reserves:

Additional comments:

References:

Joesting, 1943 (ATDM Pamph. 2); Berg and Cobb, 1967; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Joesting, 1943 (ATDM Pamph. 2)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Moose Creek

Site type: Occurrence

ARDF no.: FB131

Latitude: 64.053 **Quadrangle:** FB A-4

Longitude: 148.896

Location description and accuracy:

The Moose Creek occurrence is located in the NE1/4 sec. 15, T. 10 S., R. 7 W., Fairbanks Meridian. There are several mineral occurrences. At least one was known prior to 1918, and several were drilled in the mid-1990's. The coordinates are approximately located in the center of an area a mile or more across that has been prospected. The occurrence is locality 39 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Before 1918, quartz porphyry intrusives were noted near the head of Moose Creek and placer gold found in the stream course that cut through them (see FB127). A specimen of oxidized schist from a claim at the head of the creek contained arsenopyrite and pyrite; an assay determined the presence of gold (Overbeck, 1918, p. 350). In 1993, AMAX Gold drilled several intrusions in upper Moose Creek that showed signs of gold mineralization. Apparently the results were not encouraging, and they did not return in subsequent years (Donald Grybeck, field observations, 1994).

Alteration:

Age of mineralization:

Deposit model:

Gold-bearing quartz porphyry intrusive

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

At least one sample that contained gold was collected in the area prior to 1918. In 1993, AMAX Gold drilled several intrusions in upper Moose Creek that showed signs of gold mineralization. Apparently the results were not encouraging, and they did not return in subsequent years (Donald Grybeck, field observations, 1994).

Production notes:

Reserves:

Additional comments:

References:

Overbeck, 1918; Cobb, 1976 (OFR 76-662).

Primary reference: This record

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Liberty Bell

Site type: Mine

ARDF no.: FB132

Latitude: 64.052 **Quadrangle:** FB A-4

Longitude: 148.845

Location description and accuracy:

The Liberty Bell mine is located approximately 5.6 miles south-southeast of Rex Dome in the NW1/4 sec. 13, T. 10 S., R. 7 W., Fairbanks Meridian. This mine is marked on the Fairbanks A-4 topographic map, and the buildings and workings are prominent in the field. As of 1998, the Liberty Bell property was owned by Columbia Yukon Exploration Inc., and it consisted of five targets over a 10,500-acre claim block (Columbia Yukon Exploration Inc., news release no. 83, June 9, 1998). The mine is locality 40 of Cobb (1972 [MF 410]).

Commodities:

Main: Ag, Au, Bi, Cu

Other:

Ore minerals: Arsenopyrite, bismuthinite, bornite, chalcopyrite, covellite, enargite, galena, gold, kobellite, loellingite, malachite, pyrrhotite, pyrite, sphalerite, tennantite, ullmannite

Gangue minerals:

Geologic description:

The following geologic summary is taken from Yesilyurt, 1996. The geology of the Liberty Bell gold mine area is dominated by weakly metamorphosed volcaniclastic-sedimentary rocks of the California Creek Member of the Totatlanika Schist, which is of Devonian-Mississippian(?) age. Metamorphosed Mesozoic(?) mafic dikes and unmetamorphosed Late Cretaceous felsic porphyry dikes and plugs are scattered throughout the area. Continental clastic rocks of the Tertiary Nenana Gravel overlie these rocks in angular unconformity. Gold mineralization is associated with sulfide- and sulfosalt-rich lenses, veins, and low-angle shear zones in the Paleozoic phyllitic rocks adjacent to a porphyry intrusion.

Six types of hydrothermal alteration have been differentiated. Carbonate-quartz alteration occurs in a peripheral zone of the metasomatic mineralization at the mine area. An actinolite-pyrrhotite assemblage occurs adjacent to the gold mineralization. Potassium silicate alteration occurs adjacent to the porphyry intrusions; it consists mainly of alkali feldspar, biotite, tourmaline, allanite, and quartz. A chlorite-sericite-carbonate alteration

assemblage occurs sporadically in the area. The most widespread type of alteration at Liberty Bell is a quartz-sericite-clay assemblage. Supergene alteration and weathering overprint all of the hydrothermal assemblages. The age of hydrothermal alteration is about 92 Ma, based on two K-Ar radiometric determinations on hydrothermal biotite and sericite.

The principal ore minerals at Liberty Bell are arsenopyrite, pyrite, and pyrrhotite. Also present are chalcopyrite, kobellite, ullmannite, bismuthinite, tennantite, and loellingite, and trace amounts of enargite, covellite, bornite, sphalerite, galena, malachite, and native gold. The ore minerals occur mostly as tabular and stringer replacement bodies, disseminations, cross-cutting veins, and as open space fillings.

The initial discovery was float samples that contained arsenopyrite, bismuth, and bismuthinite. Several shafts and tunnels were driven in 1915 and 1916. By 1930, development included more than 1,000 feet of adits, and several shafts and raises (Moffit, 1933). In 1931 a mill was installed; mining in 1932-33 produced a total of 8,400 ounces of gold from 17,500 tons of ore (Smith, 1933 [B 844-A, p. 19]; Smith, 1937; Toupe and others, 1986). In mid-summer of 1936, all work was discontinued and work on the property did not resume until the 1970's (Smith, 1938, p. 35-36). Since 1973, more than 16,000 feet of core has been produced by diamond drilling, and there has been considerable trenching, geologic mapping, geophysical surveys, and several thousand feet of reverse-circulation drilling (see Workings and Exploration field). Recently, five targets have been identified on the 10,500-acre property. The Mine Zone has mineable resources of 1,240,000 tons with an average grade of 0.1 ounce of gold per ton. Drilling has indicated that there is the potential for 250,000 ounces of gold in the Mine Zone and the Northwest Copper Zone (Columbia Yukon Explorations Inc., web site describing 1998 exploration activity).

Alteration:

Six types of hydrothermal alteration have been differentiated (Yesilyurt, 1996). Carbonate-quartz alteration occurs in a peripheral zone of the metasomatic minerlization at the mine. An actinolite-pyrrhotite assemblage occurs adjacent to the gold mineralization. Potassium silicate alteration occurs adjacent to the porphyry intrusions and consists mainly of alkali feldspar, biotite, tourmaline, allanite, and quartz. A chlorite-sericite-carbonate alteration assemblage occurs sporadically in the area. The most widespread type of alteration at Liberty Bell is a quartz-sericite-clay assemblage. Supergene alteration and weathering overprint all of the hydrothermal assemblages.

Age of mineralization:

The age of mineralization has been a source of controversy; the suggestions range from Mesozoic to late Tertiary (Yesilyurt, 1996, p. 1282). Yesilyurt (1996) gives the age of hydrothermal alteration associated with the ore as about 92 Ma, on the basis of two K-Ar radiometric determinations on hydrothermal biotite and sericite that was probably formed contemporaneously with the mineralization.

Deposit model:

Many investigators of the property have suggested various types of syngenetic massive sulfide models. Others favor an epigenetic origin, for instance, Yesilyurt (1996, p. 1282), who has done the most thorough modern work on the deposit.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

By 1918, a tunnel 35 feet long and a shaft 15 feet deep were opened in loose rock (Overbeck, 1918, p. 360). Development work was reported in 1922, 1923, and 1924 (Brooks and Capps, 1924, p. 40; Brooks, 1925, p. 31; Smith, 1926, p. 26). By 1930, developments included more than 1,000 feet of adits and several shafts and raises (Moffit, 1933). In 1931, a mill was constructed by the Fairbanks-based Eva Creek Mining Company (Smith, 1933 [B 844-A, p. 19]). Due to the intense shearing and the degree of decomposition of the schist, much timbering was required to prevent caving (Moffit, 1933). In 1934, very little work was done, and mining was reported to be expensive due to the caving (Smith, 1936, p. 24). In the mid-summer of 1936, all work was discontinued (Smith, 1938, p. 35-36). Interest in the property resumed in the 1970's. In 1973, Alaska Petroleum and Mining and its joint partner Gulf Mineral Company drilled 20 diamond-drill holes totaling 5,839 feet (Yesilyurt, 1996, p. 1282). In 1977, Resource Associates of Alaska (RAA) drilled six diamond-drill holes totaling 4,289 feet (Yesilyurt, 1996, p. 1282). In 1978, the claims were optioned to Cominco Limited, and in 1984 Cominco drilled seven diamond-drill holes totaling 1,578 feet. After the 1984 drilling, RAA acquired the claims under a joint-venture agreement with Cyprus Gold Corporation. A preliminary field study was conducted in 1986, and advanced exploration work began in 1987; it included thirty reverse-circulation drill holes, trenching, and detailed geologic mapping and sampling. In 1989, Nerco Minerals conducted exploration and detailed metallurgical studies at the property (Bundtzen and others, 1990, p. 12). In 1991, some exploration was reported by Amax Gold Inc. (Bundtzen and others, 1991, p. 10). In 1992, Amax Gold completed 5,845 feet of reverse-circulation drilling at the (Nerco-owned) property (Swainbank and others, 1993, p. 9). In 1993, operating on an option from the Liberty Bell Mining Company, Noranda Exploration Inc., funded by Hemlo Gold, mappped and sampled several mineralized zones (Bundtzen and others, 1994, p. 10). In 1994, Noranda Exploration trenched several anomalies that were discovered through geochemistry and geophysics (Swainbank and other, 1995, p. 10). In 1996, lessees of Pacific Northwest Resources Co. conducted a small drilling program (Swainbank and others, 1997, p. 8). In 1997, Liberty Bell Mining conducted a 5,000-foot core-drill program (Swainbank and others, 1998, p. 9).

Production notes:

Mining in 1932 and 1933 produced a total of 8,400 ounces of gold from 17,500 tons of ore (Smith, 1937; Toupe and others, 1986).

Reserves:

In 1933, the reserves were estimated at 37,000 tons of ore that had an average assay of $22 in gold per ton (1.06 ounces of gold per ton) (Moffit, 1933). More recent drilling on

the Northwest Copper Zone, approximately 2,000 feet from the Mine Zone, indicated an aggregated resource of 2,000,000 tons with a grade of 0.05 ounce of gold per ton (Columbia Yukon Explorations Inc., news release no. 83, June 9, 1998). The Mine Zone has mineable resources of 1,240,000 tons with an average grade of 0.1 ounce of gold per ton. Drilling has indicated that there is the potential for 250,000 ounces of gold in the Mine Zone and the Northwest Copper Zone (Columbia Yukon Explorations Inc., web site describing the 1998 exploration).

Additional comments:

Other names associated with Liberty Bell include 'Bearpaw', 'Eva Mining Co.', 'Eva Quartz Mining Co.', 'Irene', 'Johnson, Norberg and Erickson', 'Swanson and Mountaine', 'Short', 'Rose', and 'Wild Goose' (Cobb, 1976 [OFR 76-662 p. 162-167]).

References:

Overbeck, 1918; Brooks, 1919; Brooks, 1921; Brooks and Capps, 1924; Capps, 1924; Brooks, 1925; Smith, 1926; Moffit, 1933; Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1938; Wedow and others, 1952; Berg and Cobb, 1967; Cobb, 1972 (MF 410); Hasler and others, 1973; Cobb, 1976 (OFR 76-662); Nokleberg and others, 1987; Toupe and others, 1986; Bundtzen and others, 1990; Bundtzen and others, 1991; Swainbank and others, 1993; Bundtzen and others, 1994; Swainbank and others, 1995; Yesilyurt, 1996; Swainbank and others, 1997; Swainbank and others, 1998.

Primary reference: Yesilyurt, 1996

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Eva Creek

Site type: Mine

ARDF no.: FB133

Latitude: 64.049 **Quadrangle:** FB A-4

Longitude: 148.83

Location description and accuracy:

The Eva Creek mine is located in sec. 13, T. 10 S., R. 7 W., Fairbanks Meridian. The coordinates given are for a placer-mining operation that was active on Eva Creek in 1916, about one-quarter mile above the mouth of Wilson Creek. This mine is locality 65 of Cobb (1972 [MF 410]). (Note that there is another Eva Creek in the Fairbanks district near Ester (FB050) that also has been placer mined for gold.)

Commodities:

Main: Au

Other: W

Ore minerals: Gold, scheelite, wolframite

Gangue minerals:

Geologic description:

The first attempt at mining on Eva Creek took place in 1915, when a small quantity of gold was found by two men who opened a small cut in the stream bed of the upper valley (Maddren, 1918, p. 385). Mining also took place in 1916, from 1920 to 1921, from 1933 to 1938, and in 1940 (Cobb, 1976 [OFR 76-662, p. 44]). Ralph Simonson operated a placer mine on the creek in 1989 (Bundtzen and others, 1990, p. 37).

The schist in the area is the California Creek Member of the Totalanika Schist; it consists of quart-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ-810]). A rock unit composed of iron-oxide-cemented gravels that strike northeast and dip 23 SE is above the schist, and under the stream gravels in the upper creek (Maddren, 1918, p. 385-386). Wahrhaftig (1970 [GQ-810]), mapped the middle and lower part of Eva Creek as the Nenana Gravel. Placer gold was mined from Eva Creek in 1916, from 1920 to 1921, from 1933 to 1938, and in 1940 (Cobb, 1976 [OFR 76-662, p. 44]). Scarce wolframite and rare scheelite were also found in placer concentrates (Joesting, 1942 [ATDM Pamph. 1]). The gold varies from 831 to 846 fine (Glover, 1950).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The first attempt at mining on Eva Creek took place in 1915, when a small quantity of gold was found by two men who opened a small cut in the stream bed in the upper valley (Maddren, 1918, p. 385). In 1916, another placer operation was undertaken, about a quarter mile above the mouth of Wilson Creek (Maddren, 1918, p. 385). Here, three men built an automatic dam and ground sluiced a 3- to 4-foot-thick cut in stream gravels. Mining also took place from 1920 to 1921, from 1933 to 1938, and in 1940 (Cobb, 1976 [OFR 76-662, p. 44]). Ralph Simonson operated a placer mine on the creek in 1989 (Bundtzen and others, 1990, p. 37).

Production notes:
Information on placer production is not available.

Reserves:

Additional comments:

References:
Maddren, 1918; Brooks, 1922; Brooks, 1923; Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Joesting, 1943 (ATDM Pamph. 2); Thorne and others, 1948; Glover, 1950; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1990.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Rex Creek

Site type: Mine

ARDF no.: FB134

Latitude: 64.103 **Quadrangle:** FB A-4

Longitude: 148.836

Location description and accuracy:

The Rex Creek mine is located in sec. 25, T. 9 S., R. 7 W., Fairbanks Meridian. Rex Creek is a tributary of California Creek that is south of Rex Dome. The creek has been placer mined for a mile, about 3 to 4 miles above its mouth; the mine is approximately 2.5 miles southeast of Rex Dome. The mine is locality 64 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Cu, Sb

Ore minerals: Chalcopyrite, gold, pyrite, stibnite

Gangue minerals:

Geologic description:

Bedrock in the upper drainage is quartz-orthoclase-sericite schist and augen gneiss of the Totatlanika Schist; in the lower reaches, the creek is underlain by the Tertiary sandstone and conglomerate of the Healy Creek Formation (Wahrhaftig, 1970 [GQ-810]). The ground that was mined was 6 to 8 feet deep; the gold was close to or in the top foot of decayed schist bedrock (Capps, 1912, p. 47). Gold occurs in both stream and bench placers (Capps, 1912, p. 47). A bench about 50 feet above the stream was mined in 1910 (Maddren, 1918). The gold was 800 fine (Glover, 1950).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Prospecting began in 1905 or earlier, and mining was reported in 1910 (Capps, 1912, p. 44,47). Maddren (1918) reported that there was no mining in 1916. Mining occured from 3 to 4 miles above the mouth, where a bench 50 feet above the creek was mined (Maddren, 1918). In 1925, one man ground sluiced on Rex Creek (Wimmler, 1925 [ATDM MR 195-8, p. 43]). Prospect drilling was reported in 1939 (Smith, 1941, p. 51).

Production notes:

Total production through 1916 was worth about $5,000, or less than 250 ounces (Maddren, 1918, p. 380-383; Cobb, 1976 [OFR 76-662, p. 119]).

Reserves:

Additional comments:

References:

Capps, 1911; Capps, 1912; Maddren, 1918; Wimmler, 1925 (ATDM MR 195-8); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Glover, 1950; Berg and Cobb, 1967; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (near California Creekl)

Site type: Prospect

ARDF no.: FB135

Latitude: 64.072 **Quadrangle:** FB A-4

Longitude: 148.724

Location description and accuracy:
This unnamed prospect is located in the SE1/4 sec. 4, T. 10 S., R. 6 W., Fairbanks Meridian, along an unnamed, northwest-flowing tributary of California Creek. The mouth of the tributary is about 2.5 miles below the mouth of McAdam Creek, and the prospect is about 4.2 miles east-northeast of the Liberty Bell mine. This prospect is included in locality 41 of Cobb (1972 [MF 410]).

Commodities:

Main: Sb

Other: W

Ore minerals: Ferberite, stibnite, wolframite

Gangue minerals:

Geologic description:
This prospect consists of a stibnite-bearing quartz vein. Wolframite has been found in float (Joesting, 1942, ATDM Pamph. 1, p. 41). Bedrock is gray quartz-orthoclase-sericite schist and augen gneiss of the California Creek Member of the Totatlanika Schist (Wahrhaftig, 1970 [GQ-810]).

Alteration:

Age of mineralization:

Deposit model:
Simple Sb deposit (Cox and Singer, 1986; model 27d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
27d

Production Status: None

Site Status: Inactive

Workings/exploration:
Little is known other than it is a prospect.

Production notes:

Reserves:

Additional comments:

References:
Joesting, 1942 (ATDM Pamph. 1); Berg and Cobb, 1967; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Joesting, 1942 (ATDM Pamph. 1)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): California; Danzinger

Site type: Mine

ARDF no.: FB136

Latitude: 64.063 **Quadrangle:** FB A-4

Longitude: 148.724

Location description and accuracy:

The California mine is located in NE1/4 sec. 9, T. 10 S., R. 6 W., Fairbanks Meridian. The exact location of this mine is uncertain, but it is in the canyon of California Creek, near the mouth of Elsie Creek. This prospect is included in locality 41 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: Ag, Bi, Cu, Pb, Sb

Ore minerals: Arsenopyrite, bismuthinite, chalcopyrite, galena, gold, jamesonite, pyrite, stibnite

Gangue minerals:

Geologic description:

The California lode mine contains small veins of complex ore in schist. The most valuable component of the ore is silver; however, it also contains some gold, considerable copper, and a little lead (Smith, 1936, p. 24). Ore minerals include a lead-antimony sulfide (probably jamesonite), bismuthinite, arsenopyrite, pyrite, stibnite, chalcopyrite, and argentiferous galena (Joesting, 1943 [ATDM Pamph. 2]; White and others, 1952). Ore samples assayed 0.27 ounces of gold per ton and 259 ounces of silver per ton; one sample contained 600 ounces of silver per ton (Joesting, 1943 [ATDM Pamph. 2]). A few carloads of ore were said to have been produced (Wedow and others, 1952).

Alteration:

Age of mineralization:

Deposit model:

Polymetallic vein (Cox and Singer, 1986; model 22c)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

22c

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Little is known about this mine.

Production notes:
A few carloads of ore were said to have been produced (Wedow and others, 1952).

Reserves:

Additional comments:

References:
Smith, 1936; Smith, 1937; Joesting, 1943 (ATDM Pamph. 2); Wedow and others, 1952; White and others, 1952; Berg and Cobb, 1967; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): California Creek

Site type: Mine

ARDF no.: FB137

Latitude: 64.05 **Quadrangle:** FB A-4

Longitude: 148.721

Location description and accuracy:

The California Creek mine is located in sections 16, 9, 10, 3, 4, T. 10 S., R. 6 W. and sections 33 and 28, T. 9 S., R. 6 W., Fairbanks Meridian. The mine is localities 66 and 67 of Cobb (`1972 [MF 410]). The coordinates given are for location 67 of Cobb (1972), which is a placer mine 5 miles above the mouth of Rex Creek, where California creek enters a canyon. Placer mining also occurred at several localities for several miles downstream in recent years. California Creek is a tributary of the Totatlanika River approximately 3.5 miles east of the Liberty Bell mine (FB132).

Commodities:

Main: Au

Other: Hg, Pt

Ore minerals: Cinnabar, gold, platinum group metals

Gangue minerals:

Geologic description:

Prior to 1918, prospecting for placer gold was carried on throughout the 20 miles of California Creek (Maddren, 1918, p. 380). Mining in 1910 was 5 miles above Rex Creek, where gravels are 6 feet deep (Capps, 1912, p. 44). Mining has also taken place at scattered localities in sections 9 and 10, 3 and 4, and 33 and 34, T. 10 S., R. 6 W., at irregular intervals through at least the 1980's (Donald Grybeck, field observations, 1994, and oral commun. from Boyd Blair, 1994). The gold occurs in stream gravels on schist bedrock. Platinum and scarce cinnabar have been found in the placers (Joesting, 1942 [ATDM Pamph. 1]).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au-PGE (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Small-scale placer mining.

Production notes:
Prior to 1918, prospecting for placer gold was carried on throughout the 20-mile-long length of California Creek (Maddren, 1918, p. 380). Mining in 1910 was 5 miles above Rex Creek, where gravels are 6 feet deep (Capps, 1912, p. 44). Mining has also taken place at scattered localities in sections 9 and 10, 3 and 4, and 33 and 34, T. 10 S., R. 6 W., at irregular intervals through at least the 1980's (Donald Grybeck, field observations, 1994, and oral commun. from Boyd Blair, 1994). An undisclosed amount of gold was produced from California Creek in 1989 from placer mines operated by Jack Lacross and Jack Zupan (Bundtzen and others, 1990, p. 37).

Reserves:

Additional comments:

References:
Capps, 1911; Capps, 1912; Maddren, 1918; Joesting, 1942 (ATDM Pamph. 1); Malone, 1962; Malone, 1965; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1990.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): McAdam Creek

Site type: Mine

ARDF no.: FB138

Latitude: 64.037 **Quadrangle:** FB A-4

Longitude: 148.697

Location description and accuracy:

Cobb (1972, MF-410), loc. 68; The McAdam Creek mine is located in the NE1/4 sec. 22, T. 10 S., R. 6 W., Fairbanks Meridian. McAdam Creek is a northwest-flowing tributary of California Creek about 9 miles southeast of Rex Dome. Placer mining has taken place along the lower one-half mile of the creek. The mine is locality 68 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

A little placer mining took place along McAdam Creek in the 1930's (Moffit, 1933; Smith, 1933 [B 836-A]). Several types of bedrock have been mapped along Adam Creek. The headwater section drains an area underlain by the Moose Creek Member of the Totalanika Schist, which is composed of yellow quartz-orthoclase gneiss and schist; the Suntrana Formation, which is composed of poorly consolidated shale; and the California Creek Member of the Totatlanika Schist, which is composed of gray quartz-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ-810]). The mine area itself is underlain by a Miocene coal-bearing unit (Wahrhaftig, 1970 [GQ-810]).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
A little placer mining took place along McAdam Creek in the 1930's (Moffit, 1933; Smith, 1933).

Production notes:
No information on production is available.

Reserves:

Additional comments:

References:
Moffit, 1933; Smith, 1933 (B 836-A); Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (at head of Eagle Creek)

Site type: Occurrence

ARDF no.: FB139

Latitude: 64.059 **Quadrangle:** FB A-4

Longitude: 148.628

Location description and accuracy:

The location of this occurrence is uncertain; it may be a mile or more away from the coordinates given. Joesting (1942 [ATDM MR 194-11, p. 10]) described it as being on the divide between Lynx and Eagle Creeks, probably in the SE1/4 sec. 12, T. 10 S., R. 6 W., Fairbanks Meridian.

Commodities:

Main: Sb

Other: Ag, Au

Ore minerals: Stibnite

Gangue minerals:

Geologic description:

The divide between Lynx and Eagle Creeks is underlain by the California Creek Member of the Totatlanika Schist. It consists of gray quartz-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ 810]). In a report of antimony deposits in the Fairbanks area, Brooks (1916 [B 642-A]), states that where the lode has been opened, the limits of ore deposition appear to be within walls 3 to 4 feet apart, widening to as much as 10 feet in some places. The richest ore occurs in shoots, which appear to be pod or lens shaped. The largest of these shoots measured 40 feet in its longest dimension. The shoots are separated by an aggregate of quartz intergrown with stibnite and kidneys of stibnite, together with iron-stained fragments of the schist that form the country rock . Stibnite is the only important metallic mineral in the lode, but a little free gold and galena are also present, as well as possibly pyrite. The surface of the masses of stibnite shows considerable oxidation; secondary minerals form an incrustation half an inch or more in thickness. The larger ore shoots are composed of almost entirely stibnite with some quartz (Brooks, 1916 [B 642-A]). Antimony ore in float on the divide between Lynx Creek and Eagle Creeks was examined in 1942 by the Alaska Department of Mines (Joesting, 1942 [ATDM MR 194-11, p. 10-11]). High-grade, coarse, bladed stibnite float is scattered for 100 feet along the ridge (Joesting, 1943 [ATDM Pamph. 2]).

Alteration:

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:
There may have been some pits dug prior to 1916. Samples of stibnite were found in float (Joesting, 1942 [ATDM MR 194-11]).

Production notes:

Reserves:

Additional comments:

References:
Brooks, 1916 (B 642-A); Joesting, 1942 (ATDM MR 194-11); Joesting, 1943 (ATDM Pamph. 2); Hill and Associates, 1965; Berg and Cobb, 1967; Wahrhaftig, 1970 (GQ 810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Joesting, 1942 (ATDM MR 194-11)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Daniels Creek

Site type: Mine

ARDF no.: FB140

Latitude: 64.102 **Quadrangle:** FB A-4

Longitude: 148.528

Location description and accuracy:

The Daniels Creek mine is located in sections 28 and 33, T. 9 S., R. 5 W., Fairbanks Meridian. The coordinates given are along the lower part of the creek where most placer mining took place. The creek is about 12 miles east-southeast of Rex Dome. The mine is locality 72 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The following description is summarized from Maddren (1918, p. 388-391). Placer claims were located widely along Daniels Creek as early as 1905; however, most production came from claims located along the lower mile of the creek. Most of the placer gold of Daniels Creek is somewhat rounded or worn. Daniels Creek is approximately 4 miles long and flows into the Totatlanika River from the southwest. The upper valley is composed of two headwater branches that have eroded deep gulches into the California Creek Member of the Totatlanika Schist, which consists of gray quartz-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ-810]). The middle part of the creek is eroded in slightly consolidated coal-bearing sediments that are overlain by the Nenana Gravel. From the junction of the headwater branches to its mouth, a distance of about 2 miles, the stream has cut 100 feet or more below the base of these sedimentary units and into harder and much older schist. The lower quarter mile of the creek is confined in a narrow, rocky gorge whose walls are several hundred feet high and composed of gravel that overlies schist. The gold at Daniels Creek is 817 fine (Glover, 1950).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The following description is summarized from Maddren (1918, p. 388-391). The first mining was reported to have been done in 1914 by two men on the lower end of No. 1 above Discovery (which is at the mouth of the creek). The work on this claim consisted of a sluice box and a small automatic dam that was used to work a cut 40 feet wide by 200 feet long through about 4 feet of gravels. About $1,500 worth of gold (about 72.5 ounces) was mined from this cut. During 1916, three men mined on the lower part of claim No. 3 above Discovery (about one-half mile above the previous workings). The first dam was destroyed by a flood, and the second one had only been in operation a few days at the time of Maddren's visit. At that time, a cut from 20 to 40 feet in width and 300 feet in length had been partly ground sluiced. In 1925, an automatic gate was in use (Wimmler, 1925 [ATDM MR 195-8, p. 43]).

Production notes:
There is no information available on production.

Reserves:

Additional comments:

References:
Maddren, 1918; Martin, 1920; Brooks, 1922; Brooks, 1923; Wimmler, 1925 (ATDM MR 195-8); Smith, 1930 (B 813); Smith, 1932; Glover, 1950; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Totatlanika River

Site type: Mines

ARDF no.: FB141

Latitude: 64.093 **Quadrangle:** FB A-3, A-4

Longitude: 148.498

Location description and accuracy:

Placer claims have been staked over a distance of about 20 miles along the Totatlanika River from California Creek to just above the McCuen Gulch. Mining in the early 1900's took place in the middle of the basin, between the head of Murphy Canyon and a point about half a mile above the mouth of Homestake Creek (Maddren, 1918, p. 388). The coordinates given are the approximate center of the portion of the river that was mined (see sec. 34, T. 9 S., R. 5 W., Fairbanks Meridian).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The discovery of placer gold in the Totatlanika valley took place at the mouth of McCuen Gulch in 1905 (Maddren, 1918, p. 387-388). Productive mining in the early 1900's took place in the middle of the basin between the head of Murphy Canyon and a point about half a mile above the mouth of Homestake Creek (Maddren, 1918, p. 388). Gold colors could be obtained at almost any point in the stream gravels along upper Totatlanika River from its junction with California Creek to a point above McCuen Gulch, a distance of about 20 miles (Maddren, 1918, p. 388). Gold has been found in gravel, on bedrock, and in bedrock crevices (Prindle, 1907). The gold varies from 828 to 863 fine (Glover, 1950). In the late 1980's and early 1990's, fine-grained gold was recovered by a modern placer mine (Bundtzen and others, 1991, p. 34).

Above and at the mouth of Homestake Creek, the Totatlanika River is underlain by the Keevy Peak Formation, which consists of quartz-sericite schist, quartzite, purple and green schist and slate, arkosic gritlike schist, marble, and calcareous schist. The river then flows through the Moose Creek Member of the Totatlanika Schist, which consists of yellow quartz-orthoclase gneiss and schist. The remainder of the river is predominantly underlain by gray quartz-orthoclase gneiss and augen gneiss of the California Creek

Member of the Totatlanika Schist (Wahrhaftig, 1970 [GQ-810]).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; medium

Site Status: Undetermined

Workings/exploration:
Mining began in 1905 and continued intermittently until 1940 (Cobb, 1976 [OFR 76-662, p. 149]). In the late 1980's and early 1990's, fine-grained gold was recovered by a modern placer mine (Bundtzen and others, 1991, p. 34).

Production notes:
There is no record of the amount of production from mining that took place intermittently from 1905 to 1940 or from the recent activity in the 1980's and 1990's.

Reserves:

Additional comments:

References:
Prindle, 1907; Brooks, 1911 (P 70); Capps, 1911; Capps, 1912; Maddren, 1918; Brooks and Capps, 1924; Capps, 1924; Moffit, 1933; Smith, 1939 (B 917-A); Smith, 1941; Smith, 1942; Glover, 1950; Wahrhaftig, 1970 (GQ-810); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1991.

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Unnamed (head of Fourth of July Creek)

Site type: Occurrence

ARDF no.: FB142

Latitude: 64.051 **Quadrangle:** FB A-4

Longitude: 148.555

Location description and accuracy:
The location of this anitmony occurrence is uncertain; the only description states it is at the head of Fourth of July Creek in about the NW1/4 sec. 16, T. 10 S., R. 5 W., Fairbanks Meridian (Joesting, 1942 [ATDM MR 194-11]).

Commodities:

Main: Sb

Other:

Ore minerals: Stibnite

Gangue minerals:

Geologic description:
Antimony ore in float found near the head of Fourth of July Creek was examined in 1942 by the Alaska Department of Mines (Joesting, 1942 [ATDM MR 194-11, p. 10-11]). Fourth of July Creek lies within the California Creek Member of the Totatlanika Schist , which is composed of gray quartz-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ 810]).

Alteration:

Age of mineralization:

Deposit model:

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: None

Site Status: Inactive

Workings/exploration:

Samples of stibnite were collected in float (Joesting, 1942 [ATDM MR 194-11]).

Production notes:

Reserves:

Additional comments:

References:
Joesting, 1942 (ATDM MR 194-11); Wahrhaftig, 1970 (GQ 810).

Primary reference: Joesting, 1942 (ATDM MR 194-11)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Fourth of July Creek; July Creek

Site type: Mine

ARDF no.: FB143

Latitude: 64.038 **Quadrangle:** FB A-4

Longitude: 148.544

Location description and accuracy:

The Fourth of July Creek mine is located in the NW1/4 sec. 21, T. 10 S., R. 5 W., Fairbanks Meridian. Placer mining took place in the lower one-quarter mile of the creek. Fourth of July Creek is a tributary of the Totatlanika River and enters it just above Murphy Canyon; the site is about 13 miles southeast of Rex Dome. The mine is locality 73 of Cobb (1972 [MF 410].

Commodities:

Main: Au

Other: Ag, Pb, Sb

Ore minerals: Gold, jamesonite

Gangue minerals:

Geologic description:

Fourth of July Creek (referred to as July Creek by Maddren, 1918) is a small stream that discharges into the Totatlanika River about one-half mile above the head of Murphy Canyon. The creek is incised in schist, and the lower half mile is narrow and bounded by steep walls 100 to 150 feet high (Maddren, 1918, p. 393). About one-quarter mile above the mouth of the creek, the schist is intruded by a dike that trends northeast across the gulch. The most profitable mining took place in stream gravels from below this dike to the mouth of the creek (Maddren, 1918, p. 394). Much of the gold mined from the creek was rough; some was attached to vein quartz . The largest nugget mined was worth about $25 (about 1.2 ounces) (Maddren, 1918, p. 394). Most of the mining took place in 1910 and 1911; total production owas$10,000 in gold (Maddren, 1918, p. 394).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Mining by pick and shovel took place in 1910 and 1911 along the lower one-quarter mile of Fourth of July Creek (Maddren, 1918, p. 393-394).

Production notes:
Gold woth $10,000 was mined by pick and shovel in the summers of 1910 and 1911. The largest nugget mined was worth about $25 (about 1.2 ounces) (Maddren, 1918, p. 394).

Reserves:

Additional comments:

References:
Maddren, 1918; Overbeck, 1918; Joesting, 1943 (ATDM Pamph. 2); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Homestake Creek

Site type: Mine

ARDF no.: FB144

Latitude: 64 **Quadrangle:** FB A-4

Longitude: 148.55

Location description and accuracy:

The Homestake mine is located in sec. 33, T. 10 S., R. 5 W., Fairbanks Meridian. Placer mining on Homestake Creek, in the Fairbanks quadrangle, took place along the lower mile of the creek. However, most mining took place upstream in the Healy quadrangle. Homestake Creek is a tributary of the Totatlanika River and is about 10 miles east-southeast of the Liberty Bell mine. This mine is locality 74 of Cobb (1972 [MF410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Homestake Creek was one of the most important gold-producing creeks in the Totatlanika basin. The upper part of the basin, in the Healy quadrangle, is underlain by sand, clay, gravel, and lignitic coal (Capps, 1912). The stream then flows through a ridge of schist that has been intruded by andesite (Capps, 1912; Wahrhaftig, 1970 [GQ-810]). In 1912, placer operations were in and immediately upstream of the canyon where gold was first discovered near the mouth of Fox Gulch in the Healy quadrangle (Capps, 1912; Maddren, 1918). The richest placers are below a zone that contains many quartz veins in carbonaceous slate (Maddren, 1918). Gravels are generally 6 feet deep on decayed schist bedrock. The gold is rusty and rather coarse; it is found mainly in the top foot of schist bedrock (Capps, 1912). The gold varies from 833 to 842 fine (Glover, 1950).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Small-scale mining occurred from 1905 to 1909 and in 1912, 1935, 1936, and 1939 (Cobb, 1976 [OFR 76-662, p. 73]).

Production notes:
About 3,870 ounces of gold was produced from 1905 to 1909 (Maddren, 1918). There is no information available of the amount of production in subsequent years.

Reserves:

Additional comments:

References:
Prindle, 1907; Brooks, 1911 (P 70); Capps, 1911; Capps, 1912; Maddren, 1918; Smith, 1937; Smith, 1938; Smith, 1941; Glover, 1950; Wahrhaftig, 1970 (GQ-810); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Grubstake Creek

Site type: Mine

ARDF no.: FB145

Latitude: 64.03 **Quadrangle:** FB A-3

Longitude: 148.206

Location description and accuracy:

The Grubstake Creek mine is loated in sections 19, 20, and 29, T. 10 S., R. 3 W., Fairbanks Meridian. Placer mines on Grubstake Creek are marked in the southeast corner of the Fairbanks A-3 topographic map; the coordinates are the mine marked near the mouth of the creek. The mine is localities 77, 78, and 79 of Cobb (1972 [MF 410].

Commodities:

Main: Au

Other: Hg, W

Ore minerals: Cinnabar, gold, scheelite

Gangue minerals:

Geologic description:

The upper half of Grubstake Creek valley is incised into thick Nenana Gravel; the lower half of the creek has eroded through the base of the Nenana Gravel to a depth of 100 feet or more into semiconsolidated sediments composed of interbedded clay, sand, and gravel, and some thin beds of lignite (Maddren, 1918, p. 399). Since its discovery in 1905, Grubstake Creek has been a major producer of placer gold in the Tatlanika basin. Mining began as early as 1905 and continued intermittently until at least 1940 (Cobb, 1976 [OFR 76-662, p. 44]). Gold is found as small, worn, flat pieces in the bottom two feet of gravel or on the clay bedrock (Prindle, 1907). The gold varies from 817 to 842 fine (Glover, 1950). The gravels are as much as 6 feet thick and include clasts of schist, quartzite, and vein quartz (Prindle, 1907). Scheelite and cinnabar have been found in placer concentrates (Joesting, 1942 [ATDM Pamph. 1, p. 27]).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:

Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Mining began as early as 1905 and continued intermittently until at least 1940 (Cobb, 1976 [OFR 76-662, p. 44]). In 1924, three men mined on the creek with an automatic dam (Wimmler, 1925 [ATDM MR 195-8, p. 43]).

Production notes:
There is no record of the amount of gold that was produced.

Reserves:

Additional comments:

References:
Prindle, 1907; Brooks, 1910; Brooks, 1911 (P 70); Capps, 1911; Capps, 1912; Maddren, 1918; Brooks, 1923; Wimmler, 1925 (ATDM MR 195-8); Smith, 1930 (B 813-A); Smith, 1932; Moffit, 1933; Smith, 1933 (B 836-A); Smith, 1937; Smith, 1941; Joesting, 1942 (ATDM Pamph. 1); Smith, 1942; Glover, 1950; Malone, 1962; Malone, 1965; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Hearst Creek

Site type: Mine

ARDF no.: FB146

Latitude: 64.083 **Quadrangle:** FB A-3

Longitude: 148.165

Location description and accuracy:
The Hearst Creek mine is probably in sec. 4 or 5, T. 10 S., R. 3 W., Fairbanks Meridian. In 1905, placer mining took place approximately 2 miles above the mouth of Hearst Creek (Prindle, 1907, p. 211). The mine is locality 75 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
In 1905, placer mining was reported (Prindle, 1907). Gold is found in the basal stream gravels and on the coal-bearing bedrock (Maddren, 1918). The creek begins in Nenana Gravel and cuts down into the underlying coal-bearing formation (Maddren, 1918).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
In 1905, placer mining was reported (Prindle, 1907, p. 211).

Production notes:
There is no information available of the amount of gold that was produced.

Reserves:

Additional comments:

References:
Prindle, 1907; Brooks, 1911 (P 70); Capps, 1911; Capps, 1912; Maddren, 1918; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Maddren, 1918

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Roosevelt Creek

Site type: Mine

ARDF no.: FB147

Latitude: 64.06 **Quadrangle:** FB A-3

Longitude: 148.163

Location description and accuracy:
The Roosevelt mine is located somewhere in the center of T. 10 S., R. 3 W., Fairbanks Meridian. The exact location of the site that was mined is uncertain, and the coordinates are at about the mid-point of the creek. The actual location of mining may vary by a mile or more from the coordinates. This mine is locality 76 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The upper part of the valley of Roosevelt Creek is eroded in thick Nenana Gravel, but the lower part of the valley is eroded to a depth of 100 feet or more into interbedded clay, sand, gravel, and coal of the Tertiary Grubstake Formation (Wahrhaftig, 1970 [GQ-809]). Gold is found in the basal 2 feet of stream gravel (Maddren, 1918, p. 400). Placer gold in the creek is fine, flat, and well-worn (Prindle, 1907, p. 210-211). Mining was reported in 1910 and 1916 (Capps, 1912, p. 44; Maddren, 1918, p. 399).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Small-scale placer mining was reported in 1910 and 1916 (Capps, 1912, p. 44; Maddren, 1918, p. 399-400).

Production notes:

Small scale placer mining was reported in 1910 and 1916,but there is no information available of the amount of production (Capps, 1912, p. 44; Maddren, 1918, p. 399-400).

Reserves:

Additional comments:

References:

Prindle, 1907; Brooks, 1911 (P 70); Capps, 1911; Capps, 1912; Maddren, 1918; Wahrhaftig, 1970 (GQ-809); Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Gold King Creek

Site type: Mine

ARDF no.: FB148

Latitude: 64.074 **Quadrangle:** FB A-3

Longitude: 148.004

Location description and accuracy:
The Gold King Creek mine is mostly in sec. 6, T. 10 S., R. 2 W., Fairbanks Meridian. Gold King Creek is a north-flowing tributary of the Wood River. The mine is localities 80, 81, and 82 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other: W

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:
In 1990 and 1991, Gold King Creek was the largest placer mine in the district (Swainbank and others, 1991, p. 31; Bundtzen and others, 1991, p. 34). Gold is believed to be derived from the Tertiary Nenana Gravel (Bundtzen and others, 1991, p. 34). Placer gold is found in both the 4 to 5 feet of gravel overlying bedrock and on the clay-rich bedrock (Prindle, 1907, p. 212). Mining took place intermittently from 1903 to 1940 (Cobb, 1976 [OFR 76-662, p. 44]). In the 1920's, an attempt at large-scale hydraulic mining of Nenana Gravel was not financially successful (Capps, 1924, p. 138). The gold varies from 818 to 833 fine (Glover, 1950).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

In 1990 and 1991, Gold King Creek was the largest placer mine in the district; it operated under the direction of Warren Taylor and Alaska Unlimited Inc. (Swainbank and others, 1991, p. 31; Bundtzen and others, 1991, p. 34). Mining from 1903 to 1916 was done by open-cut, pick-and-shovel methods and continued intermittently until 1940 (Maddren, 1918, p. 401). In 1924, a hydraulic operation was active in gravels 6 to 7 feet in depth (Wimmler, 1924, p. 43). An attempt at large-scale hydraulic mining of the Nenana Gravel was not financially successful (Capps, 1924, p. 138). This failed attempt consisted of 11 miles of ditches designed to convey 3,000 miner's inches of water from the upper part of Gold King Creek to a point on the eastern slopes of the valley, where it was to be delivered to a pipeline with a head of 700 feet (Maddren, 1918, p. 401).

Production notes:

Information on gold production is not available.

Reserves:

Additional comments:

References:

Prindle, 1907; Brooks, 1910; Brooks, 1911 (P 70); Capps, 1911; Capps, 1912; Maddren, 1918; Capps, 1924; Wimmler, 1924; Smith, 1930 (B 813-A); Smith, 1932; Moffit, 1933; Smith, 1933 (B 844-A); Smith, 1933 (B 836-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1942; Joesting, 1943 (ATDM Pamph. 2); Glover, 1950; Koschmann and Bergendahl, 1968; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1991.

Primary reference: Cobb, 1976 (OFR 76-662)

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Bonnifield Creek

Site type: Mine

ARDF no.: FB149

Latitude: 64.064 **Quadrangle:** FB A-2

Longitude: 147.936

Location description and accuracy:
The Bonnifield Creek mine is located in sec. 9 and possibly sections 1 or 10, T. 10 S., R. 2 W., Fairbanks Meridian. Small-scale placer mining took place about 4 miles below the head of the creek. This mine is locality 83 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Small-scale placer mining that produced no more than a few hundred dollars worth of gold was reported on Bonnifield Creek in 1929 and 1935 (Smith, 1932, p. 40; Smith, 1937, p. 46). The gold was 818 to 832 fine (Glover, 1950). Production from placer mines on the creek was reported in the 1980's and 1990's (Bundtzen and others, 1990; Swainbank and others, 1995). Only the extreme headwaters of Bonnifield Creek lie within the California Creek Member of the Totatlanika Schist; it is composed of gray quartz-orthoclase-sericite schist and augen gneiss (Wahrhaftig, 1970 [GQ-808]). The lower 8 miles of the creek cuts through the Nenana Gravel (Wahrhaftig, 1970 [GQ-808]).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Apparently there was only small-scale placer mining prior to WW II. In 1924, two men had a groundsluicing operation on the creek (Wimmler, 1925 [ATDM MR 195-8, p. 43]). In 1994, D'Log Industries (Ferrel Woods) mined ground on Bonnifield Creek. A test run indicated average values of about $4.00 in gold per cubic yard of gravel, and the cost of mining ran about $1.75 per cubic yard (Swainbank and others, 1995, p. 29).

Production notes:

Not more than a few hundred dollars worth of gold was produced on this stream in 1929 and 1935 (Smith, 1932, p. 40; Smith, 1937, p. 46). There are no production figures available for more recent mining.

Reserves:

Additional comments:

References:

Wimmler, 1925 (ATDM MR 195-8); Smith, 1932; Smith, 1937; Glover, 1950; Wahrhaftig, 1970 (GQ-808); Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1990; Swainbank and others, 1995.

Primary reference: Smith, 1932

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Caribou Creek

Site type: Mine

ARDF no.: FB150

Latitude: 64.06 **Quadrangle:** FB A-1

Longitude: 147.29

Location description and accuracy:
The Caribou Creek mine is located in sec. 11, T. 10 S., R. 2 E., Fairbanks Meridian. Caribou Creek is a northeast-flowing tributary of Dry Creek. It is not labeled on the Fairbanks A-1 topographic map. The exact location of placer mining activity is uncertain, and this site may be a mile or more from its plotted location. This mine is locality 84 of Cobb (1972 [MF 410]).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Capps (1912), reported that two men made wages mining stream gravels in 1909 but did not return in 1910. Teritary gravel forms the bedrock in the headwaters of the creek; schist occurs in the lower part (Capps, 1912, p. 52).

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Stream gravels were mined by hand methods in 1909 (Capps, 1912).

Production notes:
Capps (1912) reported that two men made wages mining stream gravels in 1909 but the amount of production is not known.

Reserves:

Additional comments:

References:
Capps, 1911; Capps, 1912; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662).

Primary reference: Capps, 1912

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Goldstream Creek

Site type: Mine

ARDF no.: FB151

Latitude: 64.917 **Quadrangle:** FB D-2

Longitude: 147.981

Location description and accuracy:

The Goldstream Creek is located in the NE1/4 sec. 17 and NW1/4 sec. 16, T. 1 N., R. 2 W., Fairbanks Meridian. This large open-pit mine is marked on the Fairbanks D-2 NW topographic map; it is approximately 9 miles northwest of Fairbanks. It is in the valley of Goldstream Creek below the mouth of Sheep Creek, which drains the northeast side of Ester Dome.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Bedrock in the drainage near the mouth of Sheep Creek is Fairbanks Schist, consisting of quartz-muscovite schist, quartzite, and chlorite-quartz schist, and bleached feldspathic quartzose schist (Newberry and others, 1996). The mine, which is near the mouth of Sheep Creek, consists of predominantly frozen ground with a few scattered, thawed bog holes and a thawed area running the length of the old F.E. Co. stripping drain (May and Bundtzen, 1996). Polar Mining Inc. (PMI) ran the placer operation in the Goldstream Creek valley here from 1987 to 1996 and processed gravels through a sophisticated sluice plant (Bundtzen and others, 1988, p. 30; Green and others, 1989, p. 37; May and Bundtzen, 1996). Five hundred additional prospect holes were drilled to further define the ore reserve. At its widest point, PMI's mining cut was more than 1,300 feet wide (May and Bundtzen, 1996). The ore grade in 1995 was 0.00286 ounce of gold per ton, or about 350 tons of frozen gravel were processed for each ounce of gold that was recovered (May and Bundtzen, 1996).

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
Polar Mining Inc. (PMI) mined in Goldstream Creek valley at the mouth of Sheep Creek from 1987 to 1996 and processed gravels through a sophisticated sluice plant (Bundtzen and others, 1988, p. 30; Green and others, 1989, p. 37; May and Bundtzen, 1996). Five hundred additional prospect holes were drilled to further define the ore reserve. At its widest point, PMI's mining cut was more than 1,300 feet wide (May and Bundtzen, 1996). PMI used open-pit mining methods, using drilling and blasting to loosen the frozen materials. Overburden stripping was done in the winter; pay gravels were left to thaw during the summer, then hauled by truck to the wash plant (May and Bundtzen, 1996). During the summer of 1991, PMI processed about 600,000 cubic yards and about 1.5 million pounds of explosives were used to blast frozen overburden during the winter (Bundtzen and others, 1992, p. 32). In 1995, PMI moved 3,600,000 cubic yards and washed 505,000 cubic yards of pay gravel (Bundtzen and others, 1996, p. 28). This area has since been reclaimed and PMI now operates on another Goldstream property near Fox (FB085).

Production notes:
There is no record on the amount of production, but it was clearly substantial.

Reserves:

Additional comments:

References:
Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1976 (OFR 76-662); Bundtzen and others, 1988; Green and others, 1989; May and Bundtzen, 1996; Newberry and others, 1996.

Primary reference: May and Bundtzen, 1996

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Yellow Eagle

Site type: Mine

ARDF no.: FB152

Latitude: 64.843 **Quadrangle:** FB D-2

Longitude: 148.013

Location description and accuracy:

The Yellow Eagle mine site consists of an area south of the Parks Highway that extends between the mouth of Eva Creek and the southern part of the Ester Creek placers (FB034), south nearly to the dredge pond of Cripple Creek (FB 070). It is the location of a large open-pit mine in the late 1990's that covers much of the west half of section 8, T 1 S., R. 2 W., Fairbanks Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

This site occupies a large block of ground between the rich and productive placers on Ester Creek (FB034) and Cripple Creek (FB070), and it has probably been drilled and mined at one place or another since the earliest days of the district, the work being attributed to one or another of those creeks. However, it had never been mined as a whole, and there were indications that considerable gold remained. In 1996, Cripple Creek Venture developed it as a new mine that was worked by Yellow Eagle Mining Inc. Placer mining continued from a series of large open pits using heavy earth-moving equipment until 1999 (Swainbank and others, 1998; Szumigala and Swainbank, 1999; Swainbank and others, 2000). During the last stages of mining, when a pit just south of the Parks Highway reached its maximum depth, it uncovered the top of a weathered granitic body, and there was speculation that some of the gold over it was a residual placer.

Alteration:

Age of mineralization:

Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
The Yellow Eagle site occupies a large block of ground between the rich and productive placers on Ester Creek (FB034) and Cripple Creek (FB070), and it has probably been drilled and mined at one place or another since the earliest days of the district, the work being attributed to one or another of those creeks. However, it had never been mined as a whole, and there were indications that considerable gold remained. In 1996, Cripple Creek Venture developed it as a new mine that was worked by Yellow Eagle Mining Inc. Placer mining continued from a series of large open pits using heavy earth-moving equipment until 1999 (Swainbank and others, 1998; Szumigala and Swainbank, 1999; Swainbank and others, 2000).

Production notes:
Production figures are not available.

Reserves:

Additional comments:

References:
Swainbank and others, 1997; Swainbank and others, 1998; Szumigala and Swainbank, 1999; Swainbank and others, 2000.

Primary reference: Swainbank and others, 2000

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Busby

Site type: Mine

ARDF no.: FB153

Latitude: 64.03 **Quadrangle:** FB A-1

Longitude: 147.32

Location description and accuracy:

The Busby mine is accessible by a winter trail from Ferry on the Alaska Railroad or from mile 46 on the Richardson Highway. The prospect is about 1 mile north of Slide Creek, a tributary of Dry Creek in the SE 1/4 sec. 11, T. 10 S., R. 2 E., Fairbanks Meridian. An airstrip for the mine was constructed on top of a hill in sections 26 and 27, T. 10 S., R. 2 E. (Conwell, 1973).

Commodities:

Main: Ag, Pb

Other:

Ore minerals: Galena

Gangue minerals:

Geologic description:

The following description of the Busby mine is taken from Conwell (1973). The rock at the mine is the Mystic Creek Member of the Totalanika Schist, which consists of black schist with interbedded limestone. Galena-bearing veins crosscut the black schist and are nearly vertical. A well-defined vein containing galena is exposed along a trench about 130 feet long. Two additional veins containing high-grade galena diverge from the main vein at an acute angle. Assays indicate that the ore has about 1 ounce of silver for each 1 percent of lead. In addition to the galena-bearing fractures, there is a prominent altered zone; samples from this zone are not of ore grade, but they are anomalously high in silver and lead. High-grade lead-silver ore was hand-sorted from a shallow trench. Approximately 12 tons of ore assaying 44.4 ounces of silver per ton and 48.1 percent lead was shipped to the American Smelting and Refining Company, at Helena, Montana, in the spring of 1973.

Alteration:

Age of mineralization:

Deposit model:
Schist-hosted galena vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:
High-grade lead-silver ore was hand-sorted from a shallow trench (Conwell, 1973). Approximately 12 tons of ore assaying 44.4 ounces of silver per ton and 48.1 percent lead was shipped to the American Smelting and Refining Company, at Helena, Montana, in the spring of 1973. Approximately 130 feet of trenching along the vein has exposed a well-defined fracture containing galena. Two additional veins containing high-grade galena diverge from the main fracture at an acute angle.

Production notes:
Approximately 12 tons of ore assaying 44.4 ounces of silver per ton and 48.1 percent lead was shipped to the American Smelting & Refining Company, at Helena, Montana, in the spring of 1973 (Conwell, 1973).

Reserves:

Additional comments:

References:
Conwell, 1973.

Primary reference: Conwell, 1973

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Brumfield

Site type: Mine

ARDF no.: FB154

Latitude: 64.97 **Quadrangle:** FB D-1

Longitude: 147.43

Location description and accuracy:
The claims that constitute the Brumfield mine lie in the valley of Hill Creek, a tributary of Gilmore Creek, in sec. 30, T. 2 N., R. 2 E., Fairbanks Meridian (Saunders, 1963). It is directly south of the Hill Creek mine (FB109).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Hill (1933) shows a granite porphyry extending along the ridge south of Gilmore Creek from the head of Engineer Creek to the head of Pearl Creek, a distance of about 7 miles. All of the bedrock exposed by placer mining is part of this intrusion (Saunders, 1963). Gold is found throughout the granitic bedrock and also occurs in narrow quartz veinlets that carry visible free gold (Saunders, 1963). Saunders (1963) reported that placer mining was done using a small crawler-type tractor for stripping moss and one or two feet of overburden. The remaining two to four feet of gravel was shoveled by hand into a 6-inch sluice box. The descriptions are somewhat unclear, but this may be a residual placer on a decomposed, quartz-veined granite.

Alteration:

Age of mineralization:

Deposit model:
Residual placer on a decomposed, quartz-veined granite porphyry(?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

Production Status: Yes; small

Site Status: Inactive

Workings/exploration:

Saunders (1963) reported that placer mining was done using a small crawler-type tractor for stripping moss and one or two feet of overburden. The remaining two to four feet of gravel was shoveled by hand into a 6-inch sluice box.

Production notes:

The production data are not available.

Reserves:

Additional comments:

References:

Hill, 1963; Saunders, 1963.

Primary reference: Saunders, 1963

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

Site name(s): Gold Hill

Site type: Mine

ARDF no.: FB155

Latitude: 64.85 **Quadrangle:** FB D-2

Longitude: 147.95

Location description and accuracy:

Gold Hill is a prominent area of dredged ground about 1.5 miles long that extends to both sides of the Parks Highway about 2.5 miles east of the town of Ester. It is centered at about the intersection of section 3, 4, 9 and 10, T. 1 S., R. 2. W., Fairbanks Meridian, and the dredge tailings are prominent on the Fairbanks D-2 topographic map.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Early workers, notably Prindle and Katz in 1913 indicated the presence of a gold placer on their map here but without details in their text. The discovery of gold here and the early mining was certainly carried out by drift mining because here, as most of the of the placer ground in the Ester area, the auriferous gravel was capped by a thick deposit of barren gravel and frozen reworked wind-blown silt or loess (called muck by miners) that had washed down into the Cripple Creek valley. Later after the United States Smelting, Refining and Mining Company consolidated ground in the Ester area and began dredging on Ester Creek (FB034), they washed the muck off the auriferous gravel in this area, thawed the gravel, and prepared the ground for dredging. In 1950, they moved Dredge 6 from near the mouth of Eva Creek via a canal to this area which by then was well known as the Gold Hill area. Dredge 6 worked here until the spring of 1958, when it was moved overland to Sheep Creek (FB052) (Boswell, 1979; R.L.Chapman, USGS, unpublished memorandum, 1978). The paleodrainage here is obscured by the thick muck that originally blanketed the gravel in the valley, and it is unclear whether the Gold Hill placer represents a continuation of the Ester Creek (FB034) or Cripple Creek (FB070) channels, or both. And it is not impossible that some of the gold here was contributed from the drainages and lode deposits ofnthe east side of Ester Dome.

Alteration:

Age of mineralization:
Quaternary placer.

Deposit model:
Placer Au (Cox and Singer, 1986; model 39a)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; medium

Site Status: Probably inactive

Workings/exploration:
Early workers, notably Prindle and Katz in 1913, indicated the presence of a gold placer on their map here but without details in their text. The discovery of gold here and the early mining must certainly have been carried out by deep drift mining because here, as on most of the placer ground in the Ester area, the auriferous gravel was capped by a thick deposit of barren gravel and frozen reworked wind-blown silt or loess (called muck by miners) that had washed down into the Cripple Creek valley. Later after the United States Smelting, Refining and Mining Company consolidated ground in the Ester area and began dredging on Ester Creek (FB034), they washed the muck off the auriferous gravel in this area, thawed the gravel, and prepared the ground for dredging. In 1950, they moved Dredge 6 from near the mouth of Eva Creek via a canal to this area which by then was well known as the Gold Hill area. Dredge 6 worked here until the spring of 1958, when it was moved overland to Sheep Creek (FB052) (Boswell, 1979; R.L.Chapman, USGS, unpublished memorandum, 1978).

Production notes:
Production figures are not available, but considerable gold must have produced during dredge operations from 1950 to 1957.

Reserves:

Additional comments:

References:
Prindle, 1906; Brooks, 1907; Brooks, 1908; Prindle, 1908; Prindle and Katz, 1909; Ellsworth, 1910; Brooks, 1911 (P 70); Brooks, 1911 (B 480); Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Brooks, 1914; Chapin, 1914 (B 592-J, p. 357-362; Brooks, 1915; Eakin, 1915; Brooks, 1916 (B 642-A); Smith, 1917 (BMB 142); Smith, 1917 (BMB 153); Brooks, 1918; Martin, 1919; Martin, 1920; Brooks and Martin, 1921; Brooks, 1922; Wimmler, 1922; Brooks, 1923; Brooks and Capps, 1924; Capps, 1924; Wimmler, 1924; Brooks, 1925; Wimmler, 1925 (ATDM

MR 195-8); Smith, 1926; Wimmler, 1926 (ATDM MR 195-11); Moffit, 1927; Wimmler, 1929; Smith, 1929; Smith, 1930 (B 810); Smith, 1930 (B 813-A); Smith, 1932; Smith, 1933 (B 836-A); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936 (B 868-A); Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1942; Burand, 1966 (GR 10); Koschmann and Bergendahl, 1968; Chapman and Foster, 1969; Cobb, 1972 (MF 410); Cobb, 1973 (B 1374); Cobb, 1975 (C 722); Cobb, 1976 (OFR 76-662); Boswell, 1979.

Primary reference: Boswell, 1979

Reporter(s): J.R. Guidetti Schaefer and C.J. Freeman (Avalon Development Corporation)

Last report date: 07/31/01

References

Alaska Division of Geological and Geophysical Surveys staff, 1973, Aeromagnetic map, Fairbanks quadrangle: Alaska Division of Geological and Geophysical Surveys Open-File Report 8, 5 p., 1 sheet, scale 1:250,000.

Alaska Division of Geological and Geophysical Surveys staff, 1981, Short notes on Alaskan Geology - 1981: Alaska Division of Geological and Geophysical Surveys Geologic Report 73, 62 p.

Alaska Territorial Department of Mines staff, 1919, Stepovich tungsten property (history and workings): Alaska Territorial Department of Mines Miscellaneous Investigations 58-1A, 3 p.

Albanese, M. D., 1982, Geochemical reconnaissance of the Fairbanks D-3 quadrangle, Alaska; summary of data on stream-sediment, pan-concentrate, and rock samples: Alaska Division of Geological and Geophysical Surveys Open-File Report 166, 15 p., 3 sheets, scale 1:63,360.

Albanese, M. D., 1982, Geochemical reconnaissance of the northern Fairbanks D-1 and southern Livengood A-1 quadrangles, Alaska: Alaska Division of Geological and Geophysical Surveys Open-File Report 164, 26 p., 3 sheets, scale 1:63,360.

Albanese, M. D., 1982, Geochemical reconnaissance of the northern Fairbanks D-2 and southern Livengood A-2 quadrangles; summary of data on stream-sediment, pan-concentrate, and rock samples: Alaska Division of Geological and Geophysical Surveys Open-File Report 165, 3 sheets, scale 1:63,360.

Allegro, G. L., 1987, The Gilmore Dome tungsten occurrences, Fairbanks mining district, Alaska; a preliminary report: Alaska Division of Geological and Geophysical Surveys Public-Data File 85-53, 50 p., 7 sheets, scale 1:120.

Anderson, P. L., 1969, A geochemical orientation study for lead and zinc in the Fairbanks, Alaska, area: Alaska Division of Mines and Geology Lab Notes 15, 17 p.

Bain, H. F., 1946, Alaska's minerals as a basis for industry: U.S. Bureau of Mines Information Circular 7379, 89 p.

Bakke, A., 1992, Geology of the Fort Knox gold deposit, Fairbanks, Alaska [abs.]: Alaska Miners Association Annual Convention, Anchorage, Alaska, November 1992, Abstracts and Papers, 1 p.

Bakke, A., 1994, The Fort Knox ‘porphyry’ gold deposit; structurallly controlled stockwork and shear quartz vein, sulfide-poor mineralization hosted by a Late Cretaceous pluton, east-central Alaska, IN Schroeter, T. D., ed., Porphyry deposits of the northwestern Cordillera of North America: Canadian Institute of Mining, Metallurgy, and Petroleum Special Volume 46, p. 795-802.

Barker, J. C., 1978, Mineral deposits of the Tanana-Yukon uplands; A summary report: U.S. Bureau of Mines Open-File Report 88-78, 33 p., 7 sheets.

Berg, H. C., and Cobb, E. H., 1967, Metalliferous lode deposits of Alaska: U.S. Geological Survey Bulletin 1246, 254 p.

Blum, J. D., 1983, Petrology, geochemistry, and isotope geochronology of the Gilmore Dome and Pedro Dome plutons, Fairbanks mining district: Alaska Division of Geological and Geophysical Surveys Report of Investigations 83-2, 59 p.

Boswell, J. C., 1979, History of Alaskan operations of United States Smelting, Refining and Mining Company: Mineral Industry Research Laboratory, University of Alaska, 126 p.

Brooks, A. H., 1905, Placer Mining in Alaska in 1904: U.S. Geological Survey Bulletin 259, p. 18-31.

Brooks, A. H., 1907, The mining industry in 1906: U.S. Geological Survey Bulletin 314-A, p. 19-39.

Brooks, A. H., 1908, The mining industry in 1907: U.S. Geological Survey Bulletin 345-A, p. 30-53.

Brooks, A. H., 1910, The mining industry in 1909: U.S. Geological Survey Bulletin 442-A, p. 20-46.

Brooks, A. H., 1911, The Mount McKinley region, Alaska, with descriptions of the igneous rocks and of the Bonnifield and Kantishna districts by L.M. Prindle: U.S. Geological Survey Professional Paper 70, 234 p.

Brooks, A. H., 1911, Geologic features of Alaskan metalliferous lodes: U.S. Geological Survey Bulletin 480-C, p. 43-93.

Brooks, A. H., 1912, The mining industry in 1911: U.S. Geological Survey Bulletin 520-A, p. 17-44.

Brooks, A. H., 1914, The Alaskan mining industry in 1913: U.S. Geological Survey Bulletin 592-A, p. 45-74.

Brooks, A. H., 1915, The Alaskan mining industry in 1914: U.S. Geological Survey Bulletin 622-A, p. 15-68.

Brooks, A. H., 1916, The Alaskan mining industry in 1915: U.S. Geological Survey Bulletin 642-A, p. 16-71.

Brooks, A. H., 1916, Antimony deposits of Alaska: U.S. Geological Survey Bulletin 649, 67 p.

Brooks, A. H., 1918, The Alaskan mining industry in 1916: U.S. Geological Survey Bulletin 662-A, p. 11-62.

Brooks, A. H., 1919, Alaska's mineral supplies: U.S. Geological Survey Bulletin 666-P, p. 89-102.

Brooks, A. H., 1921, The future of Alaska mining: U.S. Geological Survey Bulletin 714-A, p. 5-57.

Brooks, A. H., 1922, The Alaskan mining industry in 1920: U.S. Geological Survey Bulletin 722-A, p. 1-74.

Brooks, A. H., 1923, The Alaskan mining industry in 1921: U.S. Geological Survey Bulletin 739-A, p. 1-50.

Brooks, A. H., 1925, Alaska's mineral resources and production, 1923: U.S. Geological Survey Bulletin 773-A, p. 1-52.

Brooks, A. H., and Capps, S. R., 1924, The Alaskan mining industry in 1922: U.S. Geological Survey Bulletin 755-A, p. 1-56.

Brooks, A. H., and Martin, G. C., 1921, The Alaskan mining industry in 1919: U.S. Geological Survey Bulletin 714-A, p. 59-95.

Bundtzen, T. K., 1975, Antimony in Alaska: Alaska Division of Geological and Geophysical Surveys Miscellaneous Paper 10, v. 24, no. 6, p. 9-10.

Bundtzen, T. K., 1979, Historic gold production in Alaska - a minisummary: Mines and Geology Bulletin, v. 28, no. 3; Alaska Division of Geological and Geophysical Surveys Miscellaneous Paper 12, 4 p.

Bundtzen, T. K., 1982, Bedrock geology of the Fairbanks mining district, western sector: Alaska Division of Geological and Geophysical Surveys Open-File Report 155, 2 sheets, scale 1:24,000.

Bundtzen, T. K., 1984, Drift-miners - Alaska's incurable optimists: Alaska Division of Geological and Geophysical Surveys Miscellaneous Paper 14, 4 p.; Mines and Geology Bulletin, v. 33, no. 1, p. 1-4.

Bundtzen, T. K., Eakins, G. R., Clough, J. G., Lueck, L. L., Green, C. B., Robinson, M. S., and Coleman, D. A., 1984, Alaska's mineral industry 1983: Alaska Division of Geological and Geophysical Surveys Special Report 33, 56 p.

Bundtzen, T. K., Eakins, G. R., and Conwell, C. N., 1982, Review of Alaska mineral resources 1981: Alaska Division of Geological and Geophysical Surveys Annual Report 1981, 48 p., 2 sheets, scale 1:3,000,000.

Bundtzen, T. K., Eakins, G. R., and Conwell, C. N., 1983, Alaska mineral resources 1981-82: Alaska Division of Geological and Geophysical Surveys Annual Report 1981-82, 153 p., 4 sheets, scale 1:2,500,000.

Bundtzen, T. K., Eakins, G. R., Green, C. B., and Lueck, L. L., 1986, Alaska's mineral industry 1985: Alaska Division of Geological and Geophysical Surveys Special Report 39, 68 p.

Bundtzen, T. K. and Gilbert, W. G., 1977, Reconnaissance geochemistry of parts of the Fairbanks A-4 and Healy D-2, D-3 and D-4 quadrangles: Alaska Division of Geological and Geophysical Surveys Open-File Report 108, 10 p., 1 sheet, scale 1:250,000.

Bundtzen, T. K., Green, C. B., Deagen, J. R., and Daniels, C. L., 1987, Alaska's mineral industry 1986: Alaska Division of Geological and Geophysical Surveys Special Report 40, 68 p.

Bundtzen, T. K., Green, C. B., Peterson, R. J., and Seward, A. F., 1988, Alaska's mineral industry 1987: Alaska Division of Geological and Geophysical Surveys Special Report 41, 69 p.

Bundtzen, T. K. and Kline, J. T., 1981, Geologic mine map, Grant gold mine: Alaska Division of Geological and Geophysical Surveys Open-File Report 141, 2 p., 1 sheet, scale 1:120.

Bundtzen, T. K., Robinson, M. S., Kline, J. T., and Albanese, M. D., 1982, Geology of the Clipper gold mine, Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Open-File Report 157, 13 p., 1 sheet, scale 1:120.

Bundtzen, T. K., Swainbank, R. C., Clough, A. H., Henning, M. W., and Charlie, K. M., 1996, Alaska's mineral industry 1995: Alaska Division of Geological and Geophysical Surveys Special Report 50, 72 p.

Bundtzen, T. K., Swainbank, R. C., Clough, A. H., Henning, M. W., and Hansen, E. W., 1994, Alaska's mineral industry 1993: Alaska Division of Geological and Geophysical Surveys Special Report 48, 84 p.

Bundtzen, T. K., Swainbank, R. C., Deagen, J. R., and Moore, J. L., 1990, Alaska's mineral industry 1989: Alaska Division of Geological and Geophysical Surveys Special Report 44, 100 p.

Bundtzen, T. K., Swainbank, R. C., Wood, J. E., and Clough, A. H., 1991, Alaska's mineral industry 1991: Alaska Division of Geological and Geophysical Surveys Special Report 46, 89 p.

Burand, W. M., 1966, A geochemical investigation of the Nenana Highway area, central Alaska: Alaska Division of Mines and Minerals Geochemical Report 10, 13 p.

Burand, W. M., 1966, Geochemical investigations of selected areas in the Yukon-Tanana region of Alaska, 1965 and 1966: Alaska Division of Mines and Minerals Geochemical Report 13, 51 p.

Burns, L. E., Newberry, R. J., and Solie, D. N., 1991, Quartz normative plutonic rocks of interior Alaska and their favorability for association with gold: Alaska Division of Geological and Geophysical Surveys Report of Investigations 91-3, 71 p., 2 sheets, scale 1:412,500.

Burns, L. E., Solie, D. N., and Newberry, R. J., 1993, Digital files of geochemical analyses of plutonic rocks in east-central interior Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 93-44, 1 – 5.25-inch disk.

Byers, F. M., Jr., 1957, Tungsten deposits in the Fairbanks district, Alaska: U.S. Geological Survey Bulletin 1024-I, p. 179-216.

Capps, S. R., 1911, Mineral resources of the Bonnifield region: U.S. Geological Survey Bulletin 480-H, p. 218-235.

Capps, S. R., 1912, Geologic map of the Bonnifield region, Alaska: U.S. Geological Survey Bulletin 501, 64 p., 1 sheet, scale 1:250,000.

Capps, S. R., 1924, Geology and mineral resources of the region traversed by the Alaska railroad: U.S. Geological Survey Bulletin 755-C, p. 73-150.

Chapin, T., 1914, Lode mining near Fairbanks: U.S. Geological Survey Bulletin 592-J, p. 321-355.

Chapin, T., 1914, Placer mining in the Yukon-Tanana region: U.S. Geological Survey Bulletin 592-J, p. 357-362.

Chapin, T., 1919, Mining in the Fairbanks District: U.S. Geological Survey Bulletin 692-F, p. 321-327.

Chapman, R. M., and Foster, R. L., 1969, Lode mines and prospects in the Fairbanks district, Alaska: U.S. Geological Survey Professional Paper 625-D, 25 p., 1 plate.

Clautice, K. H., 1983, Upper O'Connor Creek geochemical survey, Fairbanks quadrangle: Alaska Division of Geological and Geophysical Surveys Public-Data File 84-10, 25 p.

Clautice, K. H., 1987, Rock samples analyses (1987): Circle, Fairbanks, Healy, and Kantishna areas: Alaska Division of Geological and Geophysical Surveys Public-Data File 87-34, 67 p.

Clautice, K. H., Burns, L. E., and Newberry, R. J., 1993, Land selection unit 5 (Big Delta, Mount Hayes, and Fairbanks quadrangles); references, major oxide and geochemical data: Alaska Division of Geological and Geophysical Surveys Public-Data File 93-5, 18 p., 1 sheet, scale 1:250,000.

Cobb, E. H., 1972, Metallic mineral resources map of the Fairbanks quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-410, 1 sheet, scale 1:250,000.

Cobb, E. H., 1973, Placer deposits of Alaska: U.S. Geological Survey Bulletin 1374, 213 p.

Cobb, E. H., 1975, Mineral resources of Alaska, IN Yount, M. E., ed., United States Geological Survey Alaska Program: U.S. Geological Survey Circular 722, p. 37.

Cobb, E. H., 1976, Summary of references to mineral occurrences (other than mineral fuels and construction materials) in the Fairbanks quadrangle, Alaska: U.S. Geological Survey Open-File Report 76-662, 174 p.

Conwell, C. N., 1973, Busby lead-silver prospect, Fairbanks, Alaska: Alaska Territorial Department of Mines Property Examination 58-17, 13 p.

Conwell, C. N., 1982, Mineral preparation, Grant gold mine, Alaska: Alaska Division of Geological and Geophysical Surveys Geologic Report 74, 15 p.

Cox, D. P., and Singer, D. A., 1986, Mineral deposit models: U.S. Geological Survey Bulletin 1693, 379 p.

Dashevsky, S., 1993, Eagle Creek project (Au), Fairbanks district, Alaska: American Copper and Nickel Company, Inc., 60 p. (available by request from Sam Dashevsky, Northern Associates Inc., 1831 Musk Ox Trail, Fairbanks, Alaska, 99709, with permission from current lease holders)

Davis, J. A., 1922, Lode mining in the Fairbanks District, Alaska: Alaska Territorial Department of Mines Mis-

cellaneous Report 58-1, 80 p.

Eakin, H. M., 1915, Mining in the Fairbanks district: U.S. Geological Survey Bulletin 622-G, p. 229-238.

Eakins, G. R., Bundtzen, T. K., Lueck, L. L., Green, C. B., Gallagher, J. L., and Robinson, M. S., 1985, Alaska's mineral industry 1984: Alaska Division of Geological and Geophysical Surveys Special Report 38, 57 p.

Eakins, G. R., Bundtzen, T. K., Robinson, M. S., Clough, J. G., Green, C. B., Clautice, K. H., and Albanese, M. D., 1982, Alaska's mineral industry 1982: Alaska Division of Geological and Geophysical Surveys Special Report 31, 68 p.

Ebbley, N., and Wright, W. S., 1948, Antimony deposits in Alaska: U.S. Bureau of Mines Report of Investigations 4173, 41 p.

Ellsworth, C. E., 1910, Placer mining in the Yukon-Tanana region: U.S. Geological Survey Bulletin 442-Fp. 230-245.

Ellsworth, C. E., 1912, Placer mining in the Fairbanks and Circle districts: U.S. Geological Survey Bulletin 520-Hp. 240-245.

Ellsworth, C. E., and Davenport, R. W., 1913, Placer mining in the Yukon-Tanana region: U.S. Geological Survey Bulletin 542-E, p. 203-222.

Ellsworth, C. E., and Parker, G. L., 1911, Placer mining in the Yukon-Tanana region: U.S. Geological Survey Bulletin 480-G, p. 153-172.

Emmel, K. S., and Coonrod, P. L., 1982, Geological literature on the Copper River basin and middle Tanana River basins, Alaska: Alaska Division of Geological and Geophysical Surveys Special Report 30, 11 p.

Foley, J. Y., Burns, L. E., Schneider, C. L., and Forbes, R. B., 1989, Preliminary report of the platinum group element occurrences in Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 89-20, 33 p., 1 sheet, scale 1:2,500,000.

Forbes, R. B., 1982, Bedrock geology and petrology of the Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Open-File Report 169, 76 p.

Forbes, R. B., and Weber, F. R., 1982, Bedrock geologic map of the Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Open-File Report 170, 2 sheets, scale 1:63,360.

Fox, E. F., 1940, Memorandum on Lookout gold-quartz prospect (Emma Creek): Alaska Territorial Department of Mines Miscellaneous Report 58-4, 3 p.

Gabhardt, R. C., 1942, Nada Gulch tungsten prospect (Fairbanks): Alaska Territorial Department of Mines Miscellaneous Report 58-5, 11 p.

Gilbert, W. G., 1977, General geology and geochemistry of the Healy D-1 and southern Fairbanks A-1 quadrangles: Alaska Division of Geological and Geophysical Surveys Open-File Report 105, 13 p., 2 sheets, scale 1:63,360.

Glover, A. E., 1950, Placer gold fineness: Alaska Territorial Department of Mines Miscellaneous Report 195-1, 38 p.

Green, C. B., Bundtzen, T. K., Peterson, R. J., Seward, A. F., Deagen, J. R., and Burton, J. E., 1989, Alaska's mineral industry 1988: Alaska Division of Geological and Geophysical Surveys Special Report 43, 79 p.

Hall, M. H., 1985, Structural geology of the Fairbanks mining district, central Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 85-61, 68 p., 2 sheets, scale 1:250,000.

Hasler, J. W., Miller, M. H., and Chapman, R. M., 1973, Bismuth, IN Brobst, D. A., and Pratt, W. P., eds., United States mineral resources: U.S. Geological Survey Professional Paper 820, p. 95-98.

Hawkins, D. B., 1982, Gold content of rocks in the Fairbanks mining district: Alaska Division of Geological and Geophysical Surveys Open-File Report 168, 107 p.

Hawkins, D. B., 1982, Hierarchical analysis of variance of stream-sediment samples for geochemical reconnaissance, Ester Dome, Fairbanks mining district: Alaska Division of Geological and Geophysical Surveys Open-File Report 167, 89 p.

Hill, H. A., and Associates, Ltd., 1965, Report on the Eagle Creek antimony mine, Fairbanks: Alaska Territorial Department of Mines Miscellaneous Report 58-9, 21 p., 1 map.

Hill, J. M., 1933, Lode deposits of the Fairbanks District, Alaska: U.S. Geological Survey Bulletin 849-B, p. 29-163.

Joesting, H. R., 1938, The Chena district: Alaska Territorial Department of Mines Miscellaneous Report 194-8, 8 p.

Joesting, H. R., 1939, Notes on lode mining, Fairbanks precinct: Alaska Territorial Department of Mines Miscellaneous Report 194-9, 3 p.

Joesting, H. R., 1939, Geophysical data - miscellaneous: Alaska Territorial Department of Mines Miscellaneous Report 195-22, 138 p.

Joesting, H. R., 1940, Progress report on the Ryan Lode geological and geophysical survey (Ester Dome): Alaska Territorial Department of Mines Property Examination 58-3, 15 p.

Joesting, H. R., 1942, Antimony and tungsten deposits in the Fairbanks and adjacent districts: Alaska Territorial Department of Mines Miscellaneous Report 194-11, 26 p.

Joesting, H. R., 1942, Strategic mineral occurrences in interior Alaska: Alaska Territorial Department of Mines Pamphlet no. 1, 50 p.

Joesting, H. R., 1943, Report on an experimental magnetometer survey of scheelite deposits in the Gilmore Dome area: Alaska Territorial Department of Mines Miscellaneous Investigation 58-1, 21 p.

Joesting, H. R., 1943, Report on magnetic and non-magnetic gangue in scheelite ore from Cleary Hill Mines property, Gilmore Dome: Alaska Territorial Department of Mines Property Examination 58-4, 15 p., 1 map.

Joesting, H. R., 1943, Strategic mineral occurrences in interior Alaska, supplement to pamphlet no. 1: Alaska Territorial Department of Mines Pamphlet no. 2, 26 p.

Joesting, H. R., and Glover, A. E., 1941, Strategic minerals in Alaska (assays by college assay office starting 1917): Alaska Territorial Department of Mines Miscellaneous Report 195-23, 78 p.

Killeen, P. L., and Mertie, J. B., 1951, Antimony ore in the Fairbanks District, Alaska: U.S. Geological Survey Open-File Report 51-46, 43 p.

Koschmann, A. H., and Bergendahl, M. H., 1968, Principal gold-producing districts of the United States: U.S.

Geological Survey Professional Paper 610, 283 p.

Kukkola, T., 1939, Report on the Blue Bird mine: Fairbanks, University of Alaska Bachelor of Mining Engineering thesis, 33 p.

Maddren, A. G., 1918, Gold placers near the Nenana coal field: U.S. Geological Survey Bulletin 662, p. 363-402.

Malone, K., 1962, Mercury occurrences in Alaska: U.S. Bureau of Mines Information Circular 8131, 57 p.

Malone, K., 1965, Mercury in Alaska, IN U.S. Bureau of Mines, Mercury potential of the United States: U.S. Bureau of Mines Information Circular 8252, p. 31-59.

Martin, G. C., 1919, The Alaska mining industry in 1917: U.S. Geological Survey Bulletin 692-A, p. 11-42

Martin, G. C., 1920, The Alaska mining industry in 1918: U.S. Geological Survey Bulletin 712-A, p. 1-52.

Masterman, S., and Campbell, B., 1993, The Ryan Lode Project, Ester Dome, Alaska: Alaska Miner, June 1993, p. 11.

May, D., and Bundtzen, T. K., 1996, Placer mine tour, Little Eldorado Group and Polar Mining Inc. operations, Fairbanks mining district, IN brochure for 15th biennial Conference of Alaska Mining, Fairbanks, Alaska, 12 p.

McConnell, D. L., 1995, Project report of the Fairbanks and Richardson mining districts: Alaska Division of Geological and Geophysical Surveys Public-Data File 95-12, 178 p., 3 sheets, scale 1:63,360.

McCoy, D., Newberry, R. J., Layer, P., DiMarchi, J. J., Bakke, A., Masterman, S., and Minehane, D. L., 1997, Plutonic-related gold deposits of interior Alaska: Economic Geology Monograph 9, p. 191-241.

McPherson, R., 1987, Intrusions in the Fairbanks area and their relation to mineralization, IN Albanese, M. A. and Campbell, B. W., eds., Proceeding of 9th annual Alaska Conference on Placer Mining: Alaska Division of Geological and Geophysical Surveys Miscellaneous Papers 9, p. 149-153.

Mertie, J. B. Jr., 1917, Lode mining in the Fairbanks District, Alaska: U.S. Geological Survey Bulletin 662-H, p. 403-424.

Metz, P. A., 1977, Comparison of mercury-antimony-tungsten mineralization of Alaska with strata-bound cinnabar-stibnite-scheelite deposits of the circum-Pacific and Mediterranean regions, IN Short notes on Alaskan geology - 1977: Alaska Division of Geological and Geophysical Surveys Geologic Report 55, p. 39-41.

Metz, P. A., 1982, Bedrock geology of the Fairbanks mining district, northeast sector: Alaska Division of Geological and Geophysical Surveys Open-File Report 154, 1 sheet, scale 1:24,000.

Metz, P. A., 1987, Geological factors governing the formation of gold placer deposits of the Fairbanks mining district, Alaska, IN Albanese, M. A. and Campbell, B. W., eds., Proceedings of 9th annual Alaska Conference on Placer Mining: Alaska Department of Geological and Geophysical Surveys Miscellaneous Papers 9, p. 195-223.

Moffit, F. H., 1927, Mineral industry of Alaska in 1925: U.S. Geological Survey Bulletin 792-A, p. 1-39.

Moffit, F. H., 1933, Mining developments in the Tatlanika and Totatlanika basins: U.S. Geological Survey Bulletin 836-D, p. 339-345.

Mulligan, J. J., 1974, Mineral resources of the trans-Alaska pipeline corridor: U.S. Bureau of Mines Information

Circular 8626, 24 p.

Newberry, R. J., 1995, An update on skarn deposits of Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 95-20, 72 p., 1 disk.

Newberry, R. J., 1996, Major and trace element analyses of Cretaceous plutonic rocks in the Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 96-18, 19 p.

Newberry, R. J., Bundtzen, T. K., Clautice, K. H., Combellick, R. A., Douglas, T., Laird, G. M., Liss, S. A., Pinney, D. S., Reifenstuhl, R. N., and Solie, D. N., 1996, Preliminary geologic map of the Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 96-16, 17 p., 2 sheets, scale 1:63,360.

Newberry, R. J., and Burns, L. E., 1989, The probabilistic estimation of gold resources in the Circle-Fairbanks-Kantishna area: Alaska Division of Geological and Geophysical Surveys Public-Data File 89-9, 34 p.

Newberry, R. J., Burns, L. E., Solie, D. N., and Clautice, K. H., 1988, A revised geologic model for the North Star gold belt, interior Alaska: progress report: Alaska Division of Geological and Geophysical Surveys Public-Data File 88-23, 21 p.

Newberry, R. J., and Solie, D. N., 1995, Data for plutonic rocks and associated gold deposits in Interior Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 95-25, 62 p.

Nokleberg, W. J., Bundtzen, T. K., Berg, H. C., Brew, D. A., Grybeck, D., Robinson, M. S., Smith, T. E., and Yeend, W., 1987, Significant metalliferous lode deposits and placer districts of Alaska: U.S. Geological Survey Bulletin 1786, 104 p., 2 plates.

Noll, R. S., and Vohden, J., 1994, Investigation of stream sediment loads related to placer mining in the Goldstream Creek basin: Alaska Division of Geological and Geophysical Surveys Public-Data File 94-44, 32 p.

Orris, G. J., and Bliss, J. D., 1985, Geologic and grade-volume data on 330 gold placer deposits: U.S. Geological Survey Open-File Report 85-0213, 173 p.

Overbeck, R. M., 1918, Lode deposits near the Nenana coal field: U.S. Geological Survey Bulletin 662-F, p. 351-362.

Pewe, T. L., 1958, Geology of the Fairbanks (D-2) quadrangle, Alaska: U.S. Geological Survey Geologic Quadrangle Map GQ-110, 1 sheet, scale 1:63,360.

Pewe, T. L., Bell, J. W., Forbes, R. B., and Weber, F. R., 1976 (1977), Geologic map of the Fairbanks D-2 NE quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-950, 1 sheet, scale 1:24,000.

Pewe, T. L., Bell, J. W., Forbes, R. B., and Weber, F. R., 1975 (1977), Geologic map of the Fairbanks D-2 NW quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-907, 1 sheet, scale 1:24,000.

Pewe, T. L., Bell, J. W., Forbes, R. B., and Weber, F. R., 1976 (1977), Geologic map of the Fairbanks D-2 SE quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-942, 1 sheet, scale 1:24,000.

Pewe, T. L., Bell, J. W., Forbes, R. B., and Weber, F. R., 1976, Geologic map of the Fairbanks D-2 SW quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-829-A, 1 sheet, scale 1:24,000.

Pewe, T. L., Bell, J. W., Williams, J. A., and Paige, R. A., 1976, Geologic map of the Fairbanks D-1 SW quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-949, 1 sheet, scale 1:24,000.

Pewe, T. L., and Rivard, N. R., 1961, Geologic map and section of the Fairbanks D-3 quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-340, 1 sheet, scale 1:63:360.

Pewe, T. L., Wahrhaftig, C., and Weber, F. R., 1966, Geologic map of the Fairbanks quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-455, 5 p., 1 sheet, 1:250,000.

Pilgrim, E. R., 1930, Various properties in the Fairbanks District: Alaska Territorial Department of Mines Miscellaneous Report 58-2, 38 p.

Pilgrim, E. R., 1931, Gold lodes of the Nenana district: Alaska Territorial Department of Mines Miscellaneous Report 58-3, 11 p.

Pilgrim, E. R., 1932, Lode mining progress, interior Alaska: Alaska Territorial Department of Mines Miscellaneous Report 194-4, 28 p.

Pilkington, H. D., Forbes, R. B., Hawkins, D. B., Chapman, R. M., and Swainbank, R. C., 1969, Preliminary investigation of gold mineralization in the Pedro Dome - Cleary Summit area, Fairbanks District, Alaska: U.S. Geological Survey Open-File Report 69-206, 47 p.

Prindle, L. M., 1904, Gold placers of the Fairbanks district, Alaska: U.S. Geological Survey Bulletin 225, p. 64-73.

Prindle, L. M., 1905, The gold placers of the Fortymile, Birch Creek, and Fairbanks regions, Alaska: U.S. Geological Survey Bulletin 251, 89 p.

Prindle, L. M., 1906, Yukon placer fields: U.S. Geological Survey Bulletin 284, p. 109-127.

Prindle, L. M., 1907, The Bonnifield and Kantishna regions, Alaska: U.S. Geological Survey Bulletin 314-L, p. 205-226.

Prindle, L. M., 1908, The Fairbanks and Rampart quadrangles, Yukon-Tanana region, Alaska, with a section on the Rampart placers by F. L. Hess, and a paper on the water supply of the Fairbanks region by C.C. Covert: U.S. Geological Survey Bulletin 337, 102 p.

Prindle, L. M., and Katz, F. J., 1909, The Fairbanks gold-placer region: U.S. Geological Survey Bulletin 379, p. 181-200.

Prindle, L. M., and Katz, F. J., 1913, Detailed description of the Fairbanks district, IN Prindle, L. M., A geologic reconnaissance of the Fairbanks quadrangle, Alaska: U.S. Geological Survey Bulletin 525, p. 59-152.

Purington, C. W., 1905, Methods and costs of gravel and placer mining in Alaska: U.S. Geological Survey Bulletin 263, 273 p.

Ray, S. R., Vohden, J., and Morgan, W., 1992, Investigation of trace metals related to placer mining on Fairbanks and Porcupine Creeks: Alaska Division of Geological and Geophysical Surveys Public-Data File 92-13, 27 p.

Reed, I. M., 1938, Report on lode mining and development in the year 1938 in the Fairbanks district: Alaska Territorial Department of Mines Miscellaneous Report 194-6, 28 p.

Robinson, M. S., 1981, Surface geology and ground magnetics of the Yellow Pup tungsten deposit, Gilmore

Dome, Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Open-File Report 137, 9 p., 1 sheet, scale 1:1200.

Robinson, M. S., 1986, Tungsten and arsenic concentrations in rock, pan concentrate, and stream sediment samples from the Steele Creek area, northeast of Fairbanks: Alaska Division of Geological and Geophysical Surveys Public-Data File 86-81, 6 p.

Robinson, M. S., and Bundtzen, T. K., 1979, Historic gold production in Alaska - a minisummary: Mines and Geology Bulletin, v. 28, no. 3, p. 1-4; Alaska Division of Geological and Geophysical Surveys Miscellaneous Paper 28, 10 p.

Robinson, M. S., and Bundtzen, T. K., 1982, Geology of the Scrafford antimony-gold lode deposit, Fairbanks mining district, Alaska: Alaska Division of Geological and Geophysical Surveys Open-File Report 173, 7 p., 1 sheet, scale 1:120.

Robinson, M. S., Smith, T. E., and Metz, P. A., 1990, Bedrock geology of the Fairbanks mining district: Alaska Division of Geological and Geophysical Surveys Professional Report 106, 2 sheets, scale 1:63:360.

Roehm, J. C., 1949, Report of investigations and itinerary of J.C. Roehm in the Bonnifield district, Nenana precinct, Alaska: Alaska Territorial Department of Mines Itinerary Report 58-1, 12 p.

Rogers, J. A., McCoy, D. T., Nerup, M., Yuengling, K., Bean, K., Cameron, C., Grahm, G., Frantz, P., and Athey, J., 1998, Placer Dome - Silverado lease 1998 annual report for Ester Dome: (available from Range Minerals, Inc., 2742 Badger Rd., North Pole, AK 99705), 68 p.

Saarela, L. H., 1951, Report of the Commissioner of Mines for the biennium ended December 31, 1950: Alaska Territorial Department of Mines Annual Report 1950, 57 p.

Saunders, R. H., 1951, Gilmore Dome tungsten deposit (Stepovich): Alaska Territorial Department of Mines Property Examination 58-6A, 15 p.

Saunders, R. H., 1953, Vuyovich gold-quartz prospect (Ester Dome): Alaska Territorial Department of Mines Property Examination 58-7, 22 p.

Saunders, R. H., 1956, Mohawk Mine tailing treatment (Saint Patricks Creek): Alaska Territorial Department of Mines Property Examination 58-9, 6 p.

Saunders, R. H., 1958, Work done in 1956-57 on the Spruce Hen tungsten prospect (Steele Creek): Alaska Territorial Department of Mines Property Examination 58-8, 10 p.

Saunders, R. H., 1959, Silver-lead occurrences in the Fairbanks district: Alaska Territorial Department of Mines Miscellaneous Report 194-18, 19 p., 2 maps, scale 1:63,360.

Saunders, R. H., 1960, Mining in the Fairbanks District: Alaska Territorial Department of Mines Itinerary Report 58-2, 15 p.

Saunders, R. H., 1961, The Silvertone prospect in 1961 (Fox Creek): Alaska Territorial Department of Mines Property Examination 58-11, 6 p.

Saunders, R. H., 1963, The McGrath lode-gold prospect, Fairbanks quadrangle: Alaska Territorial Department of Mines Property Examination 58-13, 4 p.

Saunders, R. H., 1963, Examination of a gold prospect on Nugget Creek: Alaska Territorial Department of Mines Property Examination 58-14, 2 p.

Saunders, R. H., 1967, Mineral occurrences in the Yukon-Tanana region, Alaska: Alaska Division of Mines and Minerals Special Report 2, 60 p., 2 sheets, scale 1:1,000,000 and 1:100,000.

Smith, P. S., 1913, Lode mining near Fairbanks, IN Prindle, L. M., A geologic reconnaissance of the Fairbanks quadrangle, Alaska: U.S. Geological Survey Bulletin 525, p. 153-216.

Smith, P. S., 1913, Lode mining near Fairbanks: U.S. Geological Survey Bulletin 542-F, p. 137-202.

Smith, P. S., 1926, Mineral resources of Alaska in 1924: U.S. Geological Survey Bulletin 783-A, p. 1-30.

Smith, P. S., 1929, Mineral resources of Alaska in 1926: U.S. Geological Survey Bulletin 797-A, p. 1-50.

Smith, P. S., 1930, Mineral resources of Alaska in 1928: U.S. Geological Survey Bulletin 813-A, p. 1-72.

Smith, P. S., 1930, Mineral industry of Alaska in 1927: U.S. Geological Survey Bulletin 810, p. 1-64.

Smith, P. S., 1932, Mineral resources of Alaska in 1929: U.S. Geological Survey Bulletin 842-A, p. 1-81.

Smith, P. S., 1933, Mineral resources of Alaska in 1930: U.S. Geological Survey Bulletin 836-A, p. 1-83.

Smith, P. S., 1933, Mineral resources of Alaska in 1931: U.S. Geological Survey Bulletin 844-A, p. 1-82.

Smith, P. S., 1934, Mineral industry of Alaska in 1933: U.S. Geological Survey Bulletin 864-A, p. 1-94.

Smith, P. S., 1934, Mineral resources of Alaska in 1932: U.S. Geological Survey Bulletin 857-A, p. 1-91.

Smith, P. S., 1936, Mineral resources of Alaska in 1934: U.S. Geological Survey Bulletin 868-A p. 1-91.

Smith, P. S., 1937, Mineral resources of Alaska in 1935: U.S. Geological Survey Bulletin 880-A, p. 1-95.

Smith, P. S., 1938, Mineral resources of Alaska in 1936: U.S. Geological Survey Bulletin 897-A, p. 1-107.

Smith, P. S., 1939, Mineral resources of Alaska in 1937: U.S. Geological Survey Bulletin 910-A, p. 1-113.

Smith, P. S., 1939, Mineral resources of Alaska in 1938: U.S. Geological Survey Bulletin 917-A, p. 1-113.

Smith, P. S., 1941, Mineral resources of Alaska in 1939: U.S. Geological Survey Bulletin 926-A, p. 1-106.

Smith, P. S., 1942, Mineral resources of Alaska in 1940: U.S. Geological Survey Bulletin 933-A, p. 1-102.

Smith, S. S., 1912, Report of the Mine Inspector for the Territory of Alaska to the Secretary of the Interior for the fiscal year ended June 30, 1912: Alaska Territorial Department of Mines Annual Report 1912, 24 p.

Smith, S. S., 1913, Report of the Mine Inspector for the Territory of Alaska to the Secretary of the Interior for the fiscal year ended June 30, 1913: Alaska Territorial Department of Mines Annual Report 1913, 24 p.

Smith, S. S., 1917, The mining industry in the Territory of Alaska during the calendar year 1915: U.S. Bureau of Mines Bulletin 142, 66 p.

Smith, S. S., 1917, The mining industry in the Territory of Alaska during the calendar year 1916: U.S. Bureau of Mines Bulletin 153, 89 p.

Smith, T. E., and Metz, P. A., 1984, Geology and metallogeny of the Fairbanks mining district: Alaska Division of Geological and Geophysical Surveys Public-Data File 84-49, 12 p.

Solie, D. N., and Tannian, F., 1993, Short notes on Alaskan Geology 1993: Alaska Division of Geological and Geophysical Surveys Professional Report 113, 99 p.

Stein, D. R., 1957, Geochemical prospecting on the gold-quartz vein, McGrath property: Alaska Territorial Department of Mines Miscellaneous Report 58-8, 6 p.

Stewart, B. D., 1933, Mining investigations and mine inspection in Alaska, biennium ending March 31, 1933: Alaska Territorial Department of Mines Annual Report 1933B, 196 p.

Stewart, B. D., 1949, Report of the Commissioner of Mines for the biennium ended December 31, 1948: Alaska Territorial Department of Mines Annual Report 1948, 50 p.

Swainbank, R. C., Bundtzen, T. K., Clough, A. H., Hansen, E. W., and Nelson, M. G., 1993, Alaska's mineral industry 1992: Alaska Division of Geological and Geophysical Surveys Special Report 47, 80 p.

Swainbank, R. C., Bundtzen, T. K., Clough, A. H., and Henning, M. W., and Hansen, E. W., 1995, Alaska's mineral industry 1994: Alaska Division of Geological and Geophysical Surveys Special Report 49, 77 p.

Swainbank, R. C., Bundtzen, T. K., Clough, A. H., and Henning, M. W., 1997, Alaska's mineral industry 1996: Alaska Division of Geological and Geophysical Surveys Special Report 51, 68 p.

Swainbank, R. C., Bundtzen, T. K., and Wood, J. M., 1991, Alaska's mineral industry 1990: Alaska Division of Geological and Geophysical Surveys Special Report 45, 78 p.

Swainbank, R. C., and Clautice, K. H., 1998, Alaska's mineral industry 1997; a summary: Alaska Division of Geological and Geophysical Surveys Information Circular 43, 12 p.

Swainbank, R. C., Robinson, M. S., and Clement, R. F., 1992, Map of selected mines, reserves, and resources in Alaska: Alaska Division of Geological and Geophysical Surveys Public-Data File 92-16, 1 sheet, scale 1:2,500,000.

Swainbank, R. C., and Szumigala, D. J., 2000, Alaska's mineral industry 1999; a summary: Alaska Division of Geological and Geophysical Surveys Information Circular 46, 12 p.

Szumigala, D. J., and Swainbank, R. C., 1999, Alaska's mineral industry 1998; a summary: Alaska Division of Geological and Geophysical Surveys Information Circular 45, 12 p.

Thomas, B. I., 1946, Report of mining investigations along the Richardson, Nabesna, Edgerton, and Glen Allen Highways: Alaska Territorial Department of Mines Itinerary Reports 195-46, 9 p.

Thomas, B. I., 1947, Operations of Alaskan Mining Company (Ester Dome): Alaska Territorial Department of Mines Property Examination 58-5, 4 p.

Thomas, B. I., 1973, Gold-lode deposits, Fairbanks mining district, central Alaska: U.S. Bureau of Mines Information Circular 8604, 23 p.

Thorne, R. L., Muir, N. M., Erickson, A. W., Thomas, B. I., Heide, H. E., and Wright, W. S., 1948, Tungsten deposits in Alaska: U.S. Bureau of Mines Report of Investigation 4174, 22 p.

Toupe, W. M., Freeman, L. K., Teller, S. D., and Porterfield, B., 1986, Western north flank joint venture, final report, v. 1: Fairbanks, Alaska, Resource Associates of Alaska, unpublished company report, 66 p.

Turner, D. L., Grybeck, D. G., and Wilson, F. H., 1975, Radiometric dates from Alaska; a 1975 compilation: Alaska Division of Geological and Geophysical Surveys Special Report 10, 64 p.

Wahrhaftig, Clyde, 1970, Geologic map of the Fairbanks A-2 quadrangle, Alaska: U.S. Geological Survey Geologic Quadrangle Map GQ-808, 1 sheet, scale 1:63,360.

Wahrhaftig, Clyde, 1970, Geologic map of the Fairbanks A-3 quadrangle, Alaska: U.S. Geological Survey Quadrangle Map GQ-809, 1 sheet, scale 1:63,360.

Wahrhaftig, Clyde, 1970, Geologic map of the Fairbanks A-4 quadrangle, Alaska: U.S. Geological Survey Geologic Quadrangle Map GQ-810, 1 sheet, scale 1:63:360.

Wahrhaftig, Clyde, 1970, Geologic map of the Fairbanks A-5 quadrangle, Alaska: U.S. Geological Survey Geologic Quadrangle Map GQ-811, 1 sheet, scale 1:63,360.

Warfield, R. S., and Thomas, B. I., 1972, Rotary drilling exploration of the Ryan lode properties, Fairbanks mining district, Alaska: U.S. Bureau of Mines Open-File Report 72-23, 21 p.

Wedow, H., Jr., Killeen, P. L., and others, 1954, Reconnaissance for radioactive deposits in eastern interior Alaska, 1946: U.S. Geological Survey Circular 331, 36 p.

Wedow, H., Jr. and White, M. G., 1954, Reconnaissance for radioactive deposits in east-central Alaska, 1949: U. S. Geological Survey Circular 335, 22 p.

Wedow, H., Jr., White, M. G., and Moxham, R. M., 1952, Interim report on an appraisal of the uranium possibilities of Alaska: U.S. Geological Survey Open-File Report 51, 123 p.

White, M. G., West, W. S., Tolbert, G. E., Nelson, A. E., and Houston, J. R., 1952, Preliminary summary of reconnaissance for uranium in Alaska: U.S. Geological Survey Circular 196, 17 p.

Williams, J. A., 1950, Mining operations in the Fairbanks district and Innoko and Koyukuk precincts: Alaska Territorial Department of Mines Miscellaneous Report 194-13, 20 p.

Williams, J. A., 1951, 1951 Mining operations in the Fairbanks district of the Fairbanks precinct: Alaska Territorial Department of Mines Miscellaneous Report 194-14, 8 p.

Williams, J. A., 1960, Report of the Division of Mines and Minerals for the year 1959: Alaska Division of Mines and Minerals Annual Report 1959, 80 p.

Williams, J. A., 1960, Report of the Division of Mines and Minerals for the year 1960: Alaska Territorial Department of Mines Annual Report 1960, 88 p.

Williams, J. A., 1961, Report of the Division of Mines and Minerals for the year 1961: Alaska Division of Mines and Minerals Annual Report 1961, 108 p.

Williams, J. A., 1964, Report of the Division of Mines and Minerals for the year 1963: Alaska Division of Mines and Minerals Annual Report 1963, 87 p.

Williams, J. A., 1964, Report of the Division of Mines and Minerals for the year 1964: Alaska Division of Mines and Minerals Annual Report 1964, 107 p.

Williams, J. A., 1965, Report of the Division of Mines and Minerals for the year 1965: Alaska Territorial Department of Mines Annual Report 1965, 99 p.

Williams, J. A., 1967, Report of the Division of Mines and Minerals for the year 1966: Alaska Division of Mines and Minerals Annual Report 1966, 115 p.

Williams, J. A., 1968, Report of the Division of Mines and Minerals for the year 1967: Alaska Division of Mines

and Minerals Annual Report 1967, 98 p.

Williams, J. A., 1969, Report of the Division of Mines and Minerals for the year 1968: Alaska Division of Mines and Minerals Annual Report 1968, 67 p.

Williams, J. A., 1970, Report of the Division of Mines and Geology for the year 1969: Alaska Division of Mines and Geology Annual Report 1969, 72 p.

Williams, J. A., 1971, Division of Geological and Geophysical Surveys annual report 1970: Alaska Division of Geological and Geophysical Surveys Annual Report 1970, 102 p.

Williams, J. A., Pewe, T. L., and Paige, R. A., 1959, Geology of the Fairbanks (D-1) quadrangle, Alaska: U.S. Geological Survey Geologic Quadrangle Map GQ-124, 1 sheet, scale 1:63,360.

Williams, J. A., and Saunders, R. H., 1957, Examination of Ready Bullion lode property prospect trenches (Ester Dome), 1950-1956: Alaska Territorial Department of Mines Property Examination 58-6, 10 p., 1 map.

Wiltse, M. A., Clautice, K. H., Burns, L. E., Gilbert, W. G., March, G. D., Tam, J., Pessel, G. H., Smith, T. E., Bundtzen, T. K., Robinson, M. S., Bakke, A. A., Duce, P., Fogel, E., Colter, G., and Moddrow, C., 1988, Mineral potential of Alaska Mental Health Trust and replacement pool lands: Alaska Division of Geological and Geophysical Surveys Public-Data File 88-4, 40 p., 49 sheets, scale 1:250,000.

Wimmler, N. L., 1922, Placer mining in Alaska in 1922: Alaska Territorial Department of Mines Miscellaneous Report 195-6, 77 p.

Wimmler, N. L., 1924, Placer mining in Alaska in 1924: Alaska Territorial Department of Mines Miscellaneous Report 195-7, 114 p.

Wimmler, N. L., 1925, Placer mining in Alaska in 1924 and 1925 and lode mining by districts: Alaska Territorial Department of Mines Miscellaneous Report 195-10, 234 p.

Wimmler, N. L., 1925, Placer mining in Alaska in 1925: Alaska Territorial Department of Mines Miscellaneous Report 195-8, 118 p.

Wimmler, N. L., 1926, Eva Quartz Company (Ready Bullion Hill): Alaska Territorial Department of Mines Property Examination 58-1, 3 p.

Wimmler, N. L., 1926, Elmes Gold Mining Company (Happy Creek): Alaska Territorial Department of Mines Property Examination 58-2, 5 p.

Wimmler, N. L., 1926, Notes on lode mining and development during 1926 in the Fairbanks district: Alaska Territorial Department of Mines Miscellaneous Report 194-3, 6 p.

Wimmler, N. L., 1926, Placer mining in Alaska in 1926: Alaska Territorial Department of Mines Miscellaneous Report 195-11, 121 p.

Wimmler, N. L., 1929, Placer mining in Alaska in 1929: Alaska Territorial Department of Mines Miscellaneous Report 195-12, 318 p.

Wood, J. E., 1992, Preliminary results of heavy minerals concentrate analysis from selected interior and western Alaska placer mines: Alaska Division of Geological and Geophysical Surveys Public-Data File 92-2, 8 p.

Yesilyurt, S., 1996, Geology, geochemistry, and mineralization of the Liberty Bell gold mine area, Alaska, IN Coyner, A. R., and Fahey, P. L., eds., Geology and Ore Deposits of the American Cordillera: Sympo-

sium Proceedings, Reno/Sparks, Nevada, April 1995, p. 1281-1316.