Alaska Resource Data File, Tanana quadrangle, Alaska

By David J. Szumigala[1], Garth E. Graham[1], and Jennifer E. Athey[1]

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[1] Fairbanks, Alaska

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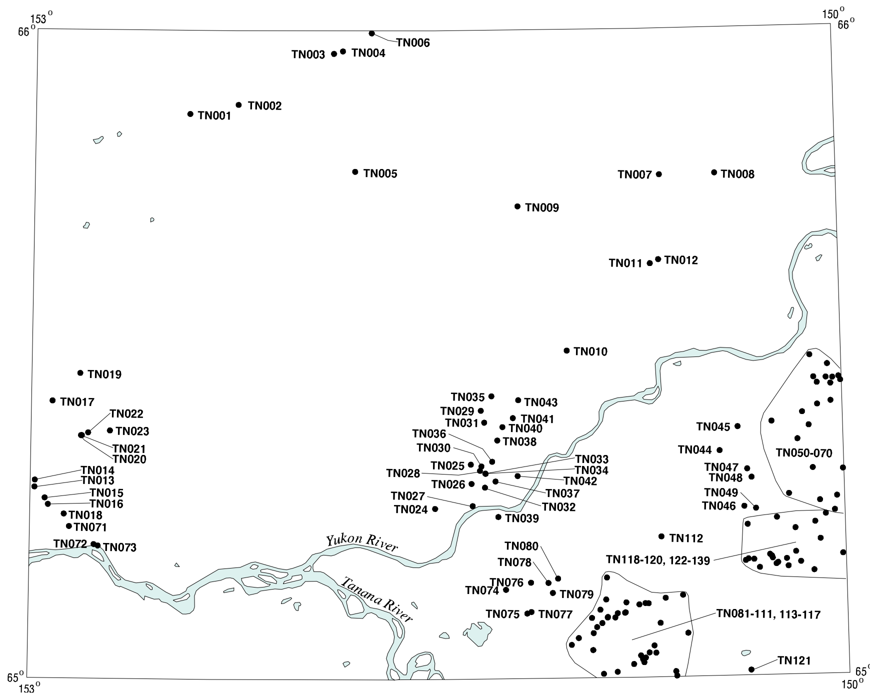
Alaska Resource Data File

Tanana 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 Tanana 1:250,000-scale quadrangle, Alaska

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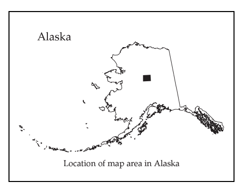

U.S. DEPARTMENT OF THE INTERIOR · MARCH 3, 1849

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

OPEN-FILE REPORT 2004-1386

Site name(s): Unnamed (upper Slokhenjikh Creek)

Site type: Occurrences

ARDF no.: TN001

Latitude: 65.8716 **Quadrangle:** TN D-5

Longitude: 152.4210

Location description and accuracy:

This record represents anomalous rock samples of a ten-mile-long ultramafic body on the northwest slopes of the Ray Mountains, stretching from Holonada Creek on the east to the upper reaches of the northeast tributaries of Slokhenjikh Creek on the west. The samples are in T. 12 N., R. 23 W. and T. 13N, R. 22 W., of the Fairbanks Meridian. For this record, the site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92Ha232 (Solie and others, 1993), the westernmost of the sample localities. It is at an elevation of about 1,950 feet 0.55 mile west of hill 2358, in the northeast quarter of section 18, T. 12 N., R. 23 W. The location is accurate within 500 feet.

This site corresponds with the site for Holonada Creek, U.S. Bureau of Land Management MAS number 0020480134.

Commodities:

Main: Cr

Other: Ni, Pd, Pt, Zn

Ore minerals: Chromite (magnesiochromite)

Gangue minerals:

Geologic description:

The Kanuti River region straddles the southeastern boundary of the Yukon-Koyukuk Basin and includes sedimentary and volcanic rocks of the basin sequence as well as metamorphic and plutonic rocks of the adjoining Kokrines-Hodzana Highlands (Patton and Miller, 1970). The Sithylemenkat Pluton, a 170-square mile body of mid-Cretaceous granitic rocks, intrudes metasedimentary rocks on the south side of the Kanuti River. Dikes of pegmatite are locally abundant on the perimeter of the predominantly porphyritic, biotite quartz monzonite pluton.

Overlying and intruding the metasedimentary rocks along the northwest flank of the Kokrines-Hodzana Highlands is an ophiolitelike assemblage of Permian to Jurassic, altered pillow basalt, diabase, and gabbro; serpentinized peridotite and dunite; and bedded chert (Patton and Miller, 1970). Six of the ultramafic bodies extend for 65 miles, from Caribou Mountain in the northeast to the upper Melozitna River in the southwest. Numerous smaller bodies also occur in this belt. The ultramafic rocks are crudely layered, tabular bodies dipping gently to steeply northwest. The Holonada body is about 2,500 feet thick. Layering in the Kilolitna body is less well defined, but the width of its outcrops suggests that it is at least as thick. The lower contact of the ultramafic bodies is sharply defined, possibly by a fault, with little evidence of thermal alteration of the underlying rocks. The ultramafic rocks are composed almost entirely of serpentinized peridotite, chiefly harzburgite, and serpentinized dunite. They are cut by veinlets and irregular masses of chalcedony and drusy quartz. Patton and Miller (1970) found one small mass of colloform magnesite in the northern part of the Kilolitna body (in the Bettles quadrangle).

Chromite in serpentinized dunite in the Holonada Complex forms roughly parallel, planar bands up to about 0.5 inch thick that alternate with layers of serpentinite containing abundant disseminated chromite (U. S. Bureau of Mines memo from Albany Research Center to Jim Barker, 1986). The chromite grains are subhedral to euhedral and generally sand size. Polished section examinations show that the individual chromite grains are extensively fractured.

The Bureau of Mines Alaska Field Operation Center investigated chromite deposits in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic mineral program (Foley and others, 1985). The Holonada area contained 10 occurrences of disseminated and massive chromite in dunite bedrock and rubble. One occurrence, about 400 feet long and 5 to 15 feet wide in outcrop, contains more than 20 percent chromite (13,000-26,000 tons Cr2O3)). Four other occurrences contain 4 to 8 percent chromite (less than 1,000 tons Cr2O3 each) (Foley and others, 1985). The Bureau collected 12 hand-sorted, chromite-rich, rock samples of the Holonada ultramafic body that contained an average of 33.2% Cr2O3 (Foley and others, 1985). None of the concentrates examined during beneficiation studies contained detectable precious metals (1986 U.S. Bureau of Mines memo from Albany Research Center to Jim Barker).

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) collected 7 samples of chromite, or of chromite in dunite and/or lherzolite, in the Slokhenjikh Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The samples contained maximum values of 30,000 parts per million (ppm) chromium, 2,313 ppm nickel, 38 parts per billion (ppb) palladium, 23 ppb platinum, 295 ppm zinc, and 23 ppm bismuth. At one site (station 92Ha232), chromite covered a 25 by 300 foot area. Two samples of chalcedony in the ultramafic rocks contained detectable platinum and palladium (respective maximums of 33 ppb and 14 ppb (Solie and others, 1993).

Alteration:

Age of mineralization:

Permian to Jurassic, based on age of host rocks and deposit model.

Deposit model:

Podiform chromite (Cox and Singer, 1986; model 8a).

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

8a

Production Status: None

Site Status: Inactive

Workings/exploration:

The Bureau of Mines Alaska Field Operation Center investigated chromite deposits in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic mineral program (Foley and others, 1985). The Holonada area contained 10 occurrences of disseminated and massive chromite in dunite bedrock and rubble. One occurrence, about 400 feet long and 5 to 15 feet wide in outcrop, contains more than 20 percent chromite (13,000-26,000 tons Cr2O3)). Four other occurrences contain 4 to 8 percent chromite (less than 1,000 tons Cr2O3 each) (Foley and others, 1985). The Bureau collected 12 hand-sorted, chromite-rich, rock samples of the Holonada ultramafic body that contained an average of 33.2% Cr2O3 (Foley and others, 1985). None of the concentrates examined during beneficiation studies contained detectable precious metals (1986 U.S. Bureau of Mines memo from Albany Research Center to Jim Barker).

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Production notes:

Reserves:

Additional comments:

References:
Patton and Miller, 1970; Foley and others, 1985; Solie and others, 1993.

Primary reference: Foley and others, 1985; Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/14/2004

Site name(s): Unnamed (Holonada Creek)

Site type: Occurrences

ARDF no.: TN002

Latitude: 65.8860 **Quadrangle:** TN D-5

Longitude: 152.2393

Location description and accuracy:

This record represents occurrences of anomalous rock samples in a two mile long area on the west side of Holonada Creek. For this record, the site is ADGGS sample station 92Ha242 (Solie and others, 1993), in the northwest corner of section 7, T. 12 N., R. 22 W. of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Pt

Other: Au, Ba, Bi, Sn, V

Ore minerals:

Gangue minerals:

Geologic description:

The Kanuti River region straddles the southeastern boundary of the Yukon-Koyukuk Basin and includes sedimentary and volcanic rocks of the basin sequence as well as metamorphic and plutonic rocks of the adjoining Kokrines-Hodzana Highlands (Patton and Miller, 1970). The Sithylemenkat Pluton, a 170-square mile body of mid-Cretaceous granitic rocks, intrudes metasedimentary rocks on the south side of the Kanuti River. Dikes of pegmatite are locally abundant on the perimeter of the predominantly porphyritic, biotite quartz monzonite pluton.

Overlying and intruding the metasedimentary rocks along the northwest flank of the Kokrines-Hodzana Highlands is an ophiolitelike assemblage of Permian to Jurassic, altered pillow basalt, diabase, and gabbro; serpentinized peridotite and dunite; and bedded chert (Patton and Miller, 1970). Six of the ultramafic bodies extend for 65 miles, from Caribou Mountain in the northeast to the upper Melozitna River in the southwest. Numerous smaller bodies also occur in this belt. The ultramafic rocks are crudely layered, tabular bodies dipping gently to steeply northwest. The Holonada body is about 2,500 feet thick. Layering in the Kilolitna body is less well defined, but the width of its outcrops suggests that it is at least as thick. The lower contact of the ultramafic bodies is sharply defined, possibly by a fault, with little evidence of thermal alteration of the underlying rocks. The ultramafic rocks are composed almost entirely of serpentinized peridotite, chiefly harzburgite, and serpentinized dunite. They are cut by veinlets and irregular masses of chalcedony and drusy quartz. Patton and Miller (1970) found one small mass of colloform magnesite in the northern part of the Kilolitna body (in the Bettles quadrangle).

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) collected rock samples for geochemical analysis in the Holonada Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The samples are of volcanic and sedimentary rocks of the Jurassic to Mississippian Rampart Group south of the Holonada ultramafic body (Chapman and others, 1982). Samples having anomalous values included silicic mudstone or waterlaid tuff (sample 92Ha242), with 30 parts per billion (ppb) gold and 20,000 parts per million (ppm) barium; diabase (sample 92MW434), with 291 ppm vanadium, 74 ppm bismuth, 24 ppb platinum, and 64 ppm tin; and chert (sample 92MW43) with 10 ppb platinum (Solie and others, 1993).

Alteration:

Age of mineralization:

Deposit model:
Alaskan PGE(Cox and Singer, 1986; model 9) and epithermal veins.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
9

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) collected rock samples for geochemical analysis in the Holonada Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The samples are of volcanic and sedimentary rocks of the Jurassic to Mississippian Rampart Group south of the Holonada ultramafic body (Chapman and others, 1982). Samples having anomalous values included silicic mudstone or waterlaid tuff (sample 92Ha242), with 30 parts per billion (ppb) gold and 20,000 parts per million (ppm) barium; diabase (sample 92MW434), with 291 ppm vanadium, 74 ppm bismuth, 24 ppb platinum, and 64 ppm tin; and chert (sample 92MW43) with 10 ppb platinum (Solie and others, 1993).

Production notes:

Reserves:

Additional comments:

References:
Patton and Miller, 1970; Chapman and others, 1982; Solie and others, 1993.

Primary reference: Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/14/2004

Site name(s): Unnamed (west of Kanuti Kilolitna River)

Site type: Occurrences

ARDF no.: TN003

Latitude: 65.9650 **Quadrangle:** TN D-4

Longitude: 151.8796

Location description and accuracy:

This record represents occurrences of anomalous rock samples in a half-mile-long area on hill 1458 on the west side of the Kanuti Kilolitna River. The site is at the top of the hill, in the southeast quarter of section 12, T. 13 N., R. 21 W., of the Fairbanks Meridian. The location is accurate within 1,000 feet. This site roughly corresponds with the site for Kilolitna River, U.S. Bureau of Land Management MAS number 0020480133.

Commodities:

Main: Cr, Ni

Other: Au, Pd

Ore minerals: Chromite

Gangue minerals:

Geologic description:

The Kanuti River region straddles the southeastern boundary of the Yukon-Koyukuk Basin and includes sedimentary and volcanic rocks of the basin sequence as well as metamorphic and plutonic rocks of the adjoining Kokrines-Hodzana Highlands (Patton and Miller, 1970). The Sithylemenkat Pluton, a 170-square mile body of mid-Cretaceous granitic rocks, intrudes metasedimentary rocks on the south side of the Kanuti River. Dikes of pegmatite are locally abundant on the perimeter of the predominantly porphyritic, biotite quartz monzonite pluton.

Overlying and intruding the metasedimentary rocks along the northwest flank of the Kokrines-Hodzana Highlands is an ophiolitelike assemblage of Permian to Jurassic, altered pillow basalt, diabase, and gabbro; serpentinized peridotite and dunite; and bedded chert (Patton and Miller, 1970). Six of the ultramafic bodies extend for 65 miles, from Caribou Mountain in the northeast to the upper Melozitna River in the southwest. Numerous smaller bodies also occur in this belt. The ultramafic rocks are crudely layered, tabular bodies dipping gently to steeply northwest. The Holonada body is about 2,500 feet thick. Layering in the Kilolitna body is less well defined, but the width of its outcrops suggests that it is at least as thick. The lower contact of the ultramafic bodies is sharply defined, possibly by a fault, with little evidence of thermal alteration of the underlying rocks. The ultramafic rocks are composed almost entirely of serpentinized peridotite, chiefly harzburgite, and serpentinized dunite. They are cut by veinlets and irregular masses of chalcedony and drusy quartz. Patton and Miller (1970) found one small mass of colloform magnesite in the northern part of the Kilolitna body (in the Bettles quadrangle).

In the late 1960s, the U.S. Geological Survey collected composite rock samples at several locations across the Kilolitna and lower Kanuti ultramafic bodies (Patton and Miller, 1970). Nine samples, each weighing approximately 3 pounds, were analyzed. The range of analytical values for these samples was: 2,400 to 3,000 parts per million (ppm) chromium, 1,900 to 2,400 ppm nickel, les than 0.010 ppm platinum, less than 0.005 ppm rhenium, and less than 0.004 ppm to 0.008 ppm palladium. Chromium content ranged as high as 9 percent in selected grab samples of dunite streaked with grains of chrome spinel.

The U.S. Bureau of Mines Alaska Field Operation Center investigated chromite deposits and occurrences in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic minerals program (Foley and others, 1985). Several hand-sorted, chromite-rich samples collected in the Kilolitna River area contained an average of 46.7 percent Cr_2O_3 (Foley and others, 1985).

Several samples of chromite-rich dunite were collected by U.S. Bureau of Mines geologists and submitted for mineralogical and beneficiation tests at the Bureau's Albany Research Center (J.Y. Foley, written commun., 2004). Sample PB19670 is iron-stained, highly fractured and partly altered, tan dunite containing light green pyroxene crystals and veins and lenses of serpentine along fractures and replacing olivine. Euhedral to subhedral chromite crystals are densely to sparsely disseminated in the dunite. Sample PB19671 is similar, but the serpentine is accompanied by chlorite and the dunite also contains nearly massive aggregates of disseminated chromite crystals (Foley, written commun., 2004). Chromite analyzed by the Albany Research Center was classified as high-iron, high-aluminum chromite and high-chromium chromite, respectively, for the 2 samples. Neither sample contained detectable platinum or palladium, but the minus- 65 mesh concentrate of sample PB19670 contained 0.160 ounce of gold per ton, and the minus-65 mesh concentrate contained 0.002 ounce of gold per ton (Foley, written commun., 2004).

Alteration:

Age of mineralization:

Permian to Jurassic, coeval with the presumed age range of the mafic and ultramafic hostrocks.

Deposit model:

Podiform chromite (Cox and Singer, 1986; model 8a).

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

8a

Production Status: None

Site Status: Inactive

Workings/exploration:

In the late 1960s, the U.S. Geological Survey collected composite rock samples at several locations across the Kilolitna and lower Kanuti ultramafic bodies (Patton and Miller, 1970). Nine samples, each weighing approximately 3 pounds, were analyzed. The range of analytical values for these samples was: 2,400 to 3,000 parts per million (ppm) chromium, 1,900 to 2,400 ppm nickel, les than 0.010 ppm platinum, less than 0.005 ppm rhenium, and less than 0.004 ppm to 0.008 ppm palladium. Chromium content ranged as high as 9 percent in selected grab samples of dunite streaked with grains of chrome spinel.

The U.S. Bureau of Mines Alaska Field Operation Center investigated chromite deposits and occurrences in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic minerals program (Foley and others, 1985). Several hand-sorted, chromite-rich samples collected in the Kilolitna River area contained an average of 46.7 percent Cr_2O_3 (Foley and others, 1985).

Several samples of chromite-rich dunite were collected by U.S. Bureau of Mines geologists and submitted for mineralogical and beneficiation tests at the Bureau's Albany Research Center (Foley, written commun., 2004). Sample PB19670 is iron-stained, highly fractured and partly altered, tan dunite containing light green pyroxene crystals and veins and lenses of serpentine along fractures and replacing olivine. Euhedral to subhedral chromite crystals are densely to sparsely disseminated in the dunite. Sample PB19671 is similar, but the serpentine is accompanied by chlorite and the dunite also contains nearly massive aggregates of disseminated chromite crystals (Foley, written commun., 2004). Chromite analyzed by the Albany Research Center was classified as high-iron, high-aluminum chromite and high-chromium chromite, respectively, for the 2 samples. Neither sample contained detectable platinum or palladium, but the minus- 65 mesh concentrate of sample PB19670 contained 0.160 ounce of gold per ton, and the minus-65 mesh concentrate contained 0.002 ounce of gold per ton (Foley, written commun., 2004).

Production notes:

Reserves:

Additional comments:

References:

Patton and Miller, 1970; Foley and others, 1985.

Primary reference: Foley and others, 1985; this record

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/20/2004

Site name(s): Unnamed (north of Kanuti Kilolitna River)

Site type: Occurrences

ARDF no.: TN004

Latitude: 65.9688 **Quadrangle:** TN D-4

Longitude: 151.8458

Location description and accuracy:

This record represents occurrences of anomalous rock samples in a thousand-foot-long area along the south slope of hill 2360, north of the Kanuti Kilolitna River. The site is at an elevation of 1,200 feet, 0.45 mile east-northeast of the center of section 7, T. 13 N., R. 20 W., of the Fairbanks Meridian. The location is accurate within a thousand feet.

Commodities:

Main: Cr, Pt

Other: Ni, Pd, Rh, Zn

Ore minerals: Chromite

Gangue minerals:

Geologic description:

The Kanuti River region straddles the southeastern boundary of the Yukon-Koyukuk Basin and includes sedimentary and volcanic rocks of the basin sequence as well as metamorphic and plutonic rocks of the adjoining Kokrines-Hodzana Highlands (Patton and Miller, 1970). The Sithylemenkat Pluton, a 170-square mile body of mid-Cretaceous granitic rocks, intrudes metasedimentary rocks on the south side of the Kanuti River. Dikes of pegmatite are locally abundant on the perimeter of the predominantly porphyritic, biotite quartz monzonite pluton.

Overlying and intruding the metasedimentary rocks along the northwest flank of the Kokrines-Hodzana Highlands is an ophiolitelike assemblage of Permian to Jurassic, altered pillow basalt, diabase, and gabbro; serpentinized peridotite and dunite; and bedded chert (Patton and Miller, 1970). Six of the ultramafic bodies extend for 65 miles, from Caribou Mountain in the northeast to the upper Melozitna River in the southwest. Numerous smaller bodies also occur in this belt. The ultramafic rocks are crudely layered, tabular bodies dipping gently to steeply northwest. The Holonada body is about 2,500 feet thick. Layering in the Kilolitna body is less well defined, but the width of its outcrops suggests that it is at least as thick. The lower contact of the ultramafic bodies is sharply defined, possibly by a fault, with little evidence of thermal alteration of the underlying rocks. The ultramafic rocks are composed almost entirely of serpentinized peridotite, chiefly harzburgite, and serpentinized dunite. They are cut by veinlets and irregular masses of chalcedony and drusy quartz. Patton and Miller (1970) found one small mass of colloform magnesite in the northern part of the Kilolitna body (in the Bettles quadrangle).

In the late 1960s, the U.S. Geological Survey collected composite rock samples at several locations across the Kilolitna and lower Kanuti ultramafic bodies (Patton and Miller, 1970). Nine samples, each weighing approximately 3 pounds, were analyzed. The range of analytical values for these samples was: 2,400 to 3,000 parts per million (ppm) chromium, 1,900 to 2,400 ppm nickel, les than 0.010 ppm platinum, less than 0.005 ppm rhenium, and less than 0.004 ppm to 0.008 ppm palladium. Chromium content ranged as high as 9 percent in selected grab samples of dunite streaked with grains of chrome spinel.

The U.S. Bureau of Mines Alaska Field Operation Center investigated chromite deposits and occurrences in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic minerals program (Foley and others, 1985). Several hand-sorted, chromite-rich samples collected in the Kilolitna River area contained an average of 46.7 percent Cr_2O_3 (Foley and others, 1985).

In 1992, The Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Kanuti-Kilolitna River area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Samples of chromite schlieren (station 92MW437) and chromite pods (station 92MW438) in lherzolite contained more than 30,000 ppm chromium, 2,150 ppm nickel, 29 parts per billion (ppb) platinum, and 510 ppm zinc. A sample (station 92MW438) of serpentinized, slickensided gabbro contained 4,700 ppm chromium, 1,800 ppm nickel, 22 ppb platinum, and 30 ppm tin. A pan-concentrate sample collected about one mile west of this site was anomalous inr uranium, chromium, niobium, tin, titanium, zind, and zirconium.

Alteration:

Age of mineralization:

Permian to Jurassic, coeval with the presumed age range of the mafic and ultramafic hostrocks.

Deposit model:

Podiform chromite (Cox and Singer, 1986; model 8a).

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

8a

Production Status: None

Site Status: Probably inactive

Workings/exploration:

In the late 1960s, the U.S. Geological Survey collected composite rock samples at several locations across the Kilolitna and lower Kanuti ultramafic bodies (Patton and Miller, 1970). Nine samples, each weighing approximately 3 pounds, were analyzed. The range of analytical values for these samples was: 2,400 to 3,000 parts per million (ppm) chromium, 1,900 to 2,400 ppm nickel, les than 0.010 ppm platinum, less than 0.005 ppm rhenium, and less than 0.004 ppm to 0.008 ppm palladium. Chromium content ranged as high as 9 percent in selected grab samples of dunite streaked with grains of chrome spinel.

The U.S. Bureau of Mines Alaska Field Operation Center investigated chromite deposits and occurrences in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic minerals program (Foley and others, 1985). Several hand-sorted, chromite-rich samples collected in the Kilolitna River area contained an average of 46.7 percent Cr2O3 (Foley and others, 1985).

In 1992, The Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Kanuti-Kilolitna River area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Samples of chromite schlieren (station 92MW437) and chromite pods (station 92MW438) in lherzolite contained more than 30,000 ppm chromium, 2,150 ppm nickel, 29 parts per billion (ppb) platinum, and 510 ppm zinc. A sample (station 92MW438) of serpentinized, slickensided gabbro contained 4,700 ppm chromium, 1,800 ppm nickel, 22 ppb platinum, and 30 ppm tin. A pan-concentrate sample collected about one mile west of this site was anomalous inr uranium, chromium, niobium, tin, titanium, zind, and zirconium.

Production notes:

Reserves:

Additional comments:

References:

Patton and Miller, 1970; Foley and others, 1985; Solie and others, 1993.

Primary reference: Patton and Miller, 1970; Foley and others, 1985; Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 12/10/2003

Site name(s): Unnamed (upper Ishtalitna Creek)

Site type: Occurrences

ARDF no.: TN005

Latitude: 65.7832 **Quadrangle:** TN D-4

Longitude: 151.8007

Location description and accuracy:
This record represents occurrences of anomalous rock samples in a two-square-mile mile area of the central Ray Mountains on the divide between Ishtalitna and Banddana creeks. For this record, the site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92Ha248 (Solie and others, 1993), 0.3 mile north-northeast of the center of section 18, T. 11 N., R. 20 W. of the Fairbanks Meridian. The location is accurate within 1000 feet.

Commodities:

Main: Ag, Pb, Zn

Other: Bi, U

Ore minerals:

Gangue minerals: Quartz, tourmaline

Geologic description:
The country rocks if the area of this site are granitic rocks of the Cretaceous, Ray Mountains batholith, which trends east-west across the northeast-trending Ruby-Hodzana upland (Dover, 1994). The batholith constitutes the core of the Ray Mountains and includes at least four phases: K-feldspar-rich, porphyritic granite; biotite granite; two-mica granite; and granodiorite. Several K-Ar, Rb-Sr whole rock, and U-Pb age dates on various phases of the batholith range from 104 to 111.6 Ma (Dover, 1994). The isotope chemistry of plutonic rocks from the Ray Mountains indicates that they are S-type plutons derived from or contaminated by continental crust. A brittle-fracture fabric and high-angle fault pattern are superimposed on more ductile older fabrics (Dover, 1994). Brittle structures are expressed mainly as northeast-trending topographic lineaments having generally small, down-to-the-northwest, dip-slip offsets.

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the upper Ishtalitna Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The area is in center of the western (main) lobe of the Ray Mountains batholith (Chapman and others, 1982). Rocks in the area are coarse-grained granite, porphyritic granite, pegmatitic granite, fine-grained, two-mica granite, and aplite. The granite is cut by quartz, quartz-tourmaline, and tourmaline veins (Solie and others, 1993). Drill core at one locality is of unknown vintage. Five of seven ADGGS samples of quartz and quartz-tourmaline veins in granite (stations 92Ha248, 92Ha249, 92MW447) contained the following maximum values of one or more of the following elements: 20.1 parts per million (ppm) silver, 219 ppm bismuth, 6,745 ppm lead, and 609 ppm zinc. (Solie and others, 1993). A sample of black, fracture filling in muscovite granite (station 92MW445) contained 52.3 ppm U.

Alteration:

Age of mineralization:
Cretaceous, the age of the granite host rock.

Deposit model:
Sn-polymetallic veins, polymetallic veins (Cox and Singer, 1986; models 20b and 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
20b, 22c

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the upper Ishtalitna Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The area is in center of the western (main) lobe of the Ray Mountains batholith (Chapman and others, 1982). Rocks in the area are coarse-grained granite, porphyritic granite, pegmatitic granite, fine-grained, two-mica granite, and aplite. The granite is cut by quartz, quartz-tourmaline, and tourmaline veins (Solie and others, 1993). Drill core at one locality is of unknown vintage. Five of seven ADGGS samples of quartz and quartz-tourmaline veins in granite (stations 92Ha248, 92Ha249, 92MW447) contained the following maximum values of one or more of the following elements: 20.1 parts per million (ppm) silver, 219 ppm bismuth, 6,745 ppm lead, and 609 ppm zinc. (Solie and others, 1993). A sample of black, fracture filling in muscovite granite (station 92MW445) contained 52.3 ppm U.

Production notes:

Reserves:

Additional comments:

References:
Chapman and others, 1982; Solie and others, 1993; Dover, 1994.

Primary reference: Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/14/2004

Site name(s): Unnamed (north of Kanuti Kilolitna River)

Site type: Occurrences

ARDF no.: TN006

Latitude: 65.9966 **Quadrangle:** TN D-4

Longitude: 151.7369

Location description and accuracy:

This record represents occurrences of anomalous rock samples in a mile-long area on the north valley wall of the Kanuti Kilolitna River. The site is at an elevation of 1,850 feet, at the west boundary of section 35, T. 14 N., R. 20 W., of the Fairbanks Meridian. The location is accurate within 1,000 feet.

Commodities:

Main: Cr, Ni

Other:

Ore minerals: Chromite

Gangue minerals:

Geologic description:

The Kanuti River region straddles the southeastern boundary of the Yukon-Koyukuk Basin and includes sedimentary and volcanic rocks of the basin sequence as well as metamorphic and plutonic rocks of the adjoining Kokrines-Hodzana Highlands (Patton and Miller, 1970). The Sithylemenkat Pluton, a 170-square mile body of mid-Cretaceous granitic rocks, intrudes metasedimentary rocks on the south side of the Kanuti River. Dikes of pegmatite are locally abundant on the perimeter of the predominantly porphyritic, biotite quartz monzonite pluton.

Overlying and intruding the metasedimentary rocks along the northwest flank of the Kokrines-Hodzana Highlands is an ophiolitelike assemblage of Permian to Jurassic, altered pillow basalt, diabase, and gabbro; serpentinized peridotite and dunite; and bedded chert (Patton and Miller, 1970). Six of the ultramafic bodies extend for 65 miles, from Caribou Mountain in the northeast to the upper Melozitna River in the southwest. Numerous smaller bodies also occur in this belt. The ultramafic rocks are crudely layered, tabular bodies dipping gently to steeply northwest. The Holonada body is about 2,500 feet thick. Layering in the Kilolitna body is less well defined, but the width of its outcrops suggests that it is at least as thick. The lower contact of the ultramafic bodies is sharply defined, possibly by a fault, with little evidence of thermal alteration of the underlying rocks. The ultramafic rocks are composed almost entirely of serpentinized peridotite, chiefly harzburgite, and serpentinized dunite. They are cut by veinlets and irregular masses of chalcedony and drusy quartz. Patton and Miller (1970) found one small mass of colloform magnesite in the northern part of the Kilolitna body (in the Bettles quadrangle). Ultramafic rocks in the north Kanuti-Kilolitna area consist of harzburgite with lenses of dunite, hobnail peridotite with magmatic segregations of dunite, and garnet peridotite (J.Y. Foley, written commun., 2004).

In the late 1960s, the U.S. Geological Survey collected composite rock samples at several locations across the Kilolitna and lower Kanuti ultramafic bodies (Patton and Miller, 1970). Nine samples, each weighing approximately 3 pounds, were analyzed. The range of analytical values for these samples was: 2,400 to 3,000 parts per million (ppm) chromium, 1,900 to 2,400 ppm nickel, les than 0.010 ppm platinum, less than 0.005 ppm rhenium, and less than 0.004 ppm to 0.008 ppm palladium. Chromium content ranged as high as 9 percent in selected grab samples of dunite streaked with grains of chrome spinel.

The U.S. Bureau of Mines Alaska Field Operation Center investigated chromite deposits in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic minerals program (Foley and others, 1985). Several hand-sorted, chromite-rich samples collected in the Kilolitna River area contained an average of 46.7 percent Cr2O3 (Foley and others, 1985).

Seven samples of chromite-rich dunite were collected by the U.S. Bureau of Mines during mineral investigations in the north Kanuti-Kilolitna area (Foley, written commun., 2004). The samples contained 1,800 to 4,800 parts per million (ppm) chromium, 1,900 to 2400 ppm nickel, and no detectable platinum or palladium.

Alteration:

Age of mineralization:

Permian to Jurassic, coeval with the presumed age range of the mafic and ultramafic hostrocks.

Deposit model:

Podiform chromite (Cox and Singer, 1986; model 8a).

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

8a

Production Status: None

Site Status: Inactive

Workings/exploration:

In the late 1960s, the U.S. Geological Survey collected composite rock samples at several locations across the Kilolitna and lower Kanuti ultramafic bodies (Patton and Miller, 1970). Nine samples, each weighing approximately 3 pounds, were analyzed. The range of analytical values for these samples was: 2,400 to 3,000 parts per million (ppm) chromium, 1,900 to 2,400 ppm nickel, les than 0.010 ppm platinum, less than 0.005 ppm rhenium, and less than 0.004 ppm to 0.008 ppm palladium. Chromium content ranged as high as 9 percent in selected grab samples of dunite streaked with grains of chrome spinel.

The U.S. Bureau of Mines Alaska Field Operation Center investigated chromite deposits in Alaska between 1979 and 1984 as part of the Bureau's critical and strategic minerals program (Foley and others, 1985). Several hand-sorted, chromite-rich samples collected in the Kilolitna River area contained an average of 46.7 percent Cr2O3 (Foley and others, 1985).

Several samples of chromite-rich dunite were collected by U.S. Bureau of Mines geologists and submitted for mineralogical and beneficiation tests at the Bureau's Albany Research Center (J.Y. Foley, written commun., 2004). Sample PB19670 is iron-stained, highly fractured and partly altered, tan dunite containing light green pyroxene crystals and veins and lenses of serpentine along fractures and replacing olivine. Euhedral to subhedral chromite crystals are densely to sparsely disseminated in the dunite. Sample PB19671 is similar, but the serpentine is accompanied by chlorite and the dunite also contains nearly massive aggregates of disseminated chromite crystals (Foley, written commun., 2004). Chromite analyzed by the Albany Research Center was classified as high-iron, high-aluminum chromite and high-chromium chromite, respectively, for the 2 samples. Neither sample contained detectable platinum or palladium, but the minus- 65 mesh concentrate of sample PB19670 contained 0.160 ounce of gold per ton, and the minus-65 mesh concentrate contained 0.002 ounce of gold per ton (Foley, written commun., 2004).

Seven samples of chromite-rich dunite were collected by the U.S. Bureau of Mines during mineral investigations in the north Kanuti-Kilolitna area (Foley, written commun., 2004). The samples contained 1,800 to 4,800 parts per million (ppm) chromium, 1,900 to 2400 ppm nickel, and no detectable platinum or palladium.

Production notes:

Reserves:

Additional comments:

References:

Patton and Miller, 1970; Foley and others, 1985.

Primary reference: Foley and others, 1985; this record

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/20/2004

Site name(s): Unnamed (Asbestos Creek; Dreamland Creek)

Site type: Prospect

ARDF no.: TN007

Latitude: 65.7746 **Quadrangle:** TN D-2

Longitude: 150.6607

Location description and accuracy:

The location of this asbestos prospect is uncertain, and could be anywhere within a 10-square-mile area in the upper parts of Asbestos and Dreamland creeks. For this record, the site is arbitrarily placed at an elevation of about 2,900 feet, about 0.4 mile south-southwest of the center of section 15, T. 11 N., R. 15 W., of the Fairbanks Meridian. This location is about at the center of a 3-mile-long area of sample sites near Asbestos Creek. According to Thomas (1958 [Dreamland Creek asbestos]), the prospect is at 150o35' W. longitude, 65o46' N. latitude, but his accompanying sample location map shows no sample sites at that location, only numerous sample sites approximately 2 miles to the west along Asbestos Creek.

This site corresponds closely with the site for Asbestos Creek, U.S. Bureau of Land Management MAS number 0020480121, but it could represent the reported occurrence of asbestos at TN008.

Commodities:

Main: Asbestos

Other:

Ore minerals: Chrysotile asbestos

Gangue minerals:

Geologic description:

Chapman and others (1982) map the Asbestos Creek area as Rampart Group, Mississippian to Jurassic sedimentary and mafic volcanic rocks, along with abundant gabbro and sparse ultramafic rocks. Serpentine is common in the mafic and ultramafic rocks, many of which are highly magnetic (Thomas, 1958 [Dreamland Creek asbestos]).

A prospect in the Dreamland Creek area reportedly contains commercial-grade chrysotile asbestos (Thomas, 1958 [Dreamland Creek asbestos]). The deposit is marked by old claim corners and initial discovery stakes. A trench, since caved, was dug in the 1920s(?) into talus at the base of a hill near creek level. Thomas did not observe asbestos in place, and the steep talus and overburden prevented digging. The prevalance of serpentine in the area suggests the possibility of additional asbestos deposits. Thomas collected grab samples of asbestos from the talus, and numerous rock chip samples from various outcrops in the area, but no analyses are reported.

Alteration:

Age of mineralization:

Deposit model:

Serpentine-hosted asbestos (Cox and Singer, 1986; model 8d).

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

8d

Production Status: None

Site Status: Inactive

Workings/exploration:

The deposit is marked by old claim corners and initial discovery stakes. A trench, since caved, was dug in the 1920s(?) into talus at the base of a hill near creek level. Thomas (1958 [Dreamland Creek asbestos]) collected grab samples of asbestos from the talus, and numerous rock chip samples from various outcrops in the area, but no analyses are reported.

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; Thomas, 1958 (Dreamland Creek asbestos).

Primary reference: Thomas, 1958 (Dreamland Creek asbestos)

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/27/2004

Site name(s): Unnamed (Little Salt Creek)

Site type: Occurrence

ARDF no.: TN008

Latitude: 65.7757 **Quadrangle:** TN D-1

Longitude: 150.4532

Location description and accuracy:

This record represents a reported occurrence of asbestos on the divide between the Little Salt Creek and Dreamland Creek drainages (Saunders, 1957 [MR 48-5]). For this record, the site is at an elevation of about 2,550 feet, in the southwest quarter of section 15, T. 11 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within about two miles.

Commodities:

Main: Asbestos

Other:

Ore minerals: Asbestos

Gangue minerals:

Geologic description:

Chapman and others (1982) map the Salt Creek area as Rampart Group, Mississippian to Jurassic sedimentary and mafic volcanic rocks, along with abundant gabbro and sparse ultramafic rocks. The ridge on which the asbestos is reported is composed of Devonian or Carboniferous greenstone interbedded with thin beds of slate, chert, and limestone (Eakin, 1916; Saunders, 1957 [MR 48-5]).

Information about this asbestos occurrence was provided by Ira Weisner and Harry Havrilack, longtime residents of Rampart, to Saunders (1957 [MR 48-5]). Several years before Saunders' visit, two prospectors came up the Yukon River and stopped at Rampart to inquire about the asbestos. After the prospectors left, two men from Rampart (one named Ed Mayo) staked the ground, but the claims apparently were allowed to revert to public domain (Saunders, 1957 [MR 48-5]). Harry Havrilack reported that only a few pieces of float were found that consisted of serpentine containing small stringers of asbestos.

Alteration:

Serpentinization of ultramafic rocks.

Age of mineralization:

Deposit model:

Serpentine-hosted asbestos (Cox and Singer, 1986; model 8d).

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

8d

Production Status: None

Site Status: Inactive

Workings/exploration:

Information about this asbestos occurrence was provided by Ira Weisner and Harry Havrilack, longtime residents of Rampart, to Saunders (1957 [MR 48-5]). Several years before Saunders' visit, two prospectors came up the Yukon River and stopped at Rampart to inquire about the asbestos. After the prospectors left, two men from Rampart (one named Ed Mayo) staked the ground, but the claims apparently were allowed to revert to public domain (Saunders, 1957 [MR 48-5]). Harry Havrilack reported that only a few pieces of float were found that consisted of serpentine containing small stringers of asbestos.

Production notes:

Reserves:

Additional comments:

References:
Eakin, 1916; Saunders, 1957 (MR 48-5); Solie and others, 1993.

Primary reference: Saunders, 1957 (MR 48-5)

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/21/2004

Site name(s): Unnamed (Spooky Valley)

Site type: Occurrences

ARDF no.: TN009

Latitude: 65.7285 **Quadrangle:** TN C-3

Longitude: 151.1927

Location description and accuracy:

This record represents occurrences of anomalous rock samples in a five-square-mile area of the central Ray Mountains in Spooky Valley and along ridges to the north and east. For this record, the site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92MW451 (Solie and others, 1993), at the northwest corner of section 6, T. 10 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within 1000 feet.

Commodities:

Main: Ag, Pb, Zn

Other: Bi, La, Mo, Sn, U, W

Ore minerals: Hematite

Gangue minerals: Chlorite, epidote, quartz

Geologic description:

The country rocks in the area of this site are granitic rocks of the Cretaceous, Ray Mountains batholith, which trends east-west across the northeast-trending Ruby-Hodzana upland (Dover, 1994). The batholith constitutes the core of the Ray Mountains and includes at least four phases: K-feldspar-rich, porphyritic granite; biotite granite; two-mica granite; and granodiorite. Several K-Ar, Rb-Sr whole rock, and U-Pb age dates on various phases of the batholith range from 104 to 111.6 Ma (Dover, 1994). The isotope chemistry of plutonic rocks from the Ray Mountains indicates that they are S-type plutons derived from or contaminated by continental crust. A brittle-fracture fabric and high-angle fault pattern are superimposed on more ductile older fabrics (Dover, 1994). Brittle structures are expressed mainly as northeast-trending topographic lineaments having generally small, down-to-the-northwest, dip-slip offsets.

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Spooky Valley area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The Spooky Valley area is in the center of the eastern lobe of the Ray Mountains batholith (Chapman and others, 1982). The rocks in the area are textural variants of granite and biotite granite. The granite commonly is hematite stained (altered) and locally brecciated (Solie and others, 1993). ADGGS collected 23 rock samples for geochemical analysis. Twelve of the samples (at stations 92Ha259, 92RE2034, 92MW450, 92MW451, 92MW452, 92MW453, and 92MW454) contained the following maximum values for one or more of the following **Commodities:** 43 parts per million (ppm) uranium, 110 ppm tungsten, 73 ppm bismuth, 1,771 ppm lead, 110 ppm tin, 5,308 ppm zinc, 15.9 ppm silver, 13 ppm molybdenum, and 140 ppm lanthanum.

Alteration:

Age of mineralization:

Cretaceous, the age of the granitic hostrock.

Deposit model:

Sn-polymetallic veins, polymetallic veins (Cox and Singer, 1986; models 20b and 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
20b, 22c

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Spooky Valley area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The Spooky Valley area is in the center of the eastern lobe of the Ray Mountains batholith (Chapman and others, 1982). The rocks in the area are textural variants of granite and biotite granite. The granite commonly is hematite stained (altered) and locally brecciated (Solie and others, 1993). ADGGS collected 23 rock samples for geochemical analysis. Twelve of the samples (at stations 92Ha259, 92RE2034, 92MW450, 92MW451, 92MW452, 92MW453, and 92MW454) contained the following maximum values for one or more of the following **Commodities:** 43 parts per million (ppm) uranium, 110 ppm tungsten, 73 ppm bismuth, 1,771 ppm lead, 110 ppm tin, 5,308 ppm zinc, 15.9 ppm silver, 13 ppm molybdenum, and 140 ppm lanthanum.

Production notes:

Reserves:

Additional comments:

References:
Chapman and others, 1982; Solie and others, 1993; Dover, 1994.

Primary reference: Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/15/2004

Site name(s): Unnamed (southeast of Canyon Creek)

Site type: Occurrence

ARDF no.: TN010

Latitude: 65.5052 **Quadrangle:** TN C-3

Longitude: 151.0158

Location description and accuracy:

This record represents an anomalous rock sample collected on a ridge at about 2,000 feet elevation, south and east of Canyon Creek. The site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92MW459 (Solie and others, 1993), 0.45 mile east of the center of section 22, T. 8 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within 1000 feet.

Commodities:

Main: Mn, Zn

Other: Cd

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock at this occurrence consists of Paleozoic limestone, dolomite, greenstone, and chert, bordered to the south by schist, quartzite, phyllite, and slate (Chapman and others, 1982). The rocks are structurally complex and regionally metamorphosed to greenschist grade. The site is on the axis of a northeast-trending antiform.

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated this area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The sample collected at this site is described as a black metallic mineral filling fractures in quartzite. The sample contained 25 parts per million (ppm) bismuth, 16.5 ppm cadmium, 20,000 ppm manganese, 22 ppm molybdenum, and 1,117 ppm zinc. Samples (at stations 92Ha260, 92RE2039, and 92Ha261) of quartz veins in phyllite and schist in a three mile area around this occurrence did not contain anomalous metal values.

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 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated this area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). The sample collected at this site is described as a black metallic mineral filling fractures in quartzite. The sample contained 25 parts per million (ppm) bismuth, 16.5 ppm cadmium, 20,000 ppm manganese, 22 ppm molybdenum, and

1,117 ppm zinc. Samples (at stations 92Ha260, 92RE2039, and 92Ha261) of quartz veins in phyllite and schist in a three mile area around this occurrence did not contain anomalous metal values.

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; Solie and others, 1993.

Primary reference: Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/16/2004

Site name(s): Unnamed (Tozitna River, Ray Mountains)

Site type: Occurrences

ARDF no.: TN011

Latitude: 65.6378 **Quadrangle:** TN C-2

Longitude: 150.7013

Location description and accuracy:

This site represents occurrences of geochemically anomalous rock samples in a two-square-mile area in the eastern Ray Mountains, on ridges southeast of the Tozitna River. The site is at U.S. Bureau of Mines sample station RM24197 (Barker, 1990), at an elevation of 3,000 feet, in the northwest quarter of section 4, T. 9 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within 1,000 feet. This site closely corresponds with the site for Ray Mountains, U.S. Bureau of Land Management MAS number 0020480132.

Commodities:

Main: Mn

Other: Ag

Ore minerals: Braunite, hausmannite

Gangue minerals:

Geologic description:

Chapman and others (1982) map the Tozitna River area as Rampart Group, Mississippian to Jurassic sedimentary and mafic volcanic rocks, along with abundant gabbro and sparse ultramafic rocks. Mafic and ultramafic rocks, including locally serpentinized peridotite, gabbro, and pyroxenite, occur approximately one mile northeast of this site. Contacts between the mafic and ultramafic lithologies are well defined, suggesting a zoned ultramafic complex (Barker, 1990). The country rocks at these occurrences are locally hematitic chert and argillite, interlayered with andesite, that are thrust over the mafic and ultramafic rocks (Barker, 1990).

These occurrences consist of the manganese minerals hausmannite and braunite, which were discovered in 1979 during a joint U.S. Bureau of Mines - U.S. Bureau of Land Management mineral resource evaluation (Barker, 1990; Foley, 1992). The site was revisited by the Bureau in 1987 to determine its manganese resource potential.

The deposits consist of lenticular layers of massive manganese minerals intercalated with red and green chert (Barker, 1990). Four occurrences, ranging in thickness from 2 inches to 3.5 feet, were examined. In each case, the mineralized layer is underlain and overlain by hematitic chert that is part of a thick sequence of green andesite. At one location, a 3.5-foot-thick layer can be traced in outcrop and float for about 300 feet, along a strike of S75E. This layer dips 50o into a hillside, and is marked by minor shears or bedding-plane faults. The mineralized rock is black, has a fine-grained, soft, earthy texture, and is noticeably heavy. A grab sample (RM24197) contained 26.2 percent manganese, 1.8 parts per million (ppm) silver, 43 ppm copper, 92 ppm nickel, 30 ppm vanadium, and no detectable gold. A 42-inch-wide channel sample (RM23330) contained 16.1 percent manganese and no detectable gold or silver. X-ray diffraction analyses identified the minerals hausmannite and braunite. Thirty pounds of mineralized material was collected and sent to the U.S. Bureau of Mines Albany Research Laboratory for pyrometallurgical testing, but the results have not been made public.

Alteration:

Hematitization and propylitization.

Age of mineralization:

Deposit model:
Volcanogenic Mn (Cox and Singer, 1986; model 24c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
24c

Production Status: None

Site Status: Inactive

Workings/exploration:
These occurrences of the manganese minerals hausmannite and braunite were discovered in 1979 during a joint U.S. Bureau of Mines - U.S. Bureau of Land Management mineral resource evaluation (Barker, 1990; Foley, 1992). The site was revisited by the Bureau in 1987 to determine its manganese resource potential. A grab sample (RM24197) contained 26.2 percent manganese, 1.8 parts per million (ppm) silver, 43 ppm copper, 92 ppm nickel, 30 ppm vanadium, and no detectable gold. A 42-inch wide channel sample (RM23330) contained 16.1 percent manganese and no detectable gold or silver. Thirty pounds of mineralized material was collected and sent to the U.S. Bureau of Mines Albany Research Laboratory for pyrometallurgical testing, but the results have not been made public.

Production notes:

Reserves:
Barker (1990) estimated that the individual manganese deposits would not exceed 50,000 short tons and most would contain considerably less.

Additional comments:

References:
Chapman and others, 1982; Barker, 1990; Foley, 1992.

Primary reference: Barker, 1990; Foley, 1992

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/17/2004

Site name(s): Unnamed (Tozitna River, eastern Ray Mountains)

Site type: Occurrences

ARDF no.: TN012

Latitude: 65.6439 **Quadrangle:** TN C-2

Longitude: 150.6698

Location description and accuracy:

This site represents occurrences of geochemically anomalous rock samples in the eastern Ray Mountains, on ridges southeast of the Tozitna River. The site is at an elevation of about 3,100 feet, in the southwest quarter of section 34, T. 10 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within 0.5 mile. This site roughly corresponds with the site for Ray Mountains, U.S. Bureau of Land Management MAS number 0020480132.

Commodities:

Main: Au, Pd, Pt

Other:

Ore minerals:

Gangue minerals:

Geologic description:

Chapman and others (1982) map the Tozitna River area as Rampart Group, Mississippian to Jurassic sedimentary and mafic volcanic rocks, along with abundant gabbro and sparse ultramafic rocks. Contacts between the mafic and ultramafic rocks are well defined, suggesting a zoned ultramafic complex (Barker, 1990).

A small body of mafic and ultramafic rocks, including locally serpentinized peridotite, gabbro, and pyroxenite, occurs at this site (Barker, 1990; Foley, 1992). Samples of this body contained as much as 25 parts per billion (ppb) gold, 45 ppb palladium, and 40 ppb platinum (Foley, 1992).

Alteration:

Age of mineralization:

Deposit model:

Noril'sk Cu-Ni-PGE(?) (Cox and Singer, 1986; model 5b), Podiform chromite(?) (Cox and Singer, 1986; model 8a).

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

5b?, 8a?

Production Status: None

Site Status: Inactive

Workings/exploration:

The mafic and ultramafic rocks in this area were sampled in 1979 during a joint U.S. Bureau of Mines - U.S. Bureau of Land Management mineral resource evaluation. Samples of a small mafic-ultramafic body at this site contained as much as 25 parts per billion (ppb) gold, 45 ppb palladium, and 40 ppb platinum

(Foley, 1992).

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; Barker, 1990; Foley, 1992.

Primary reference: Foley, 1992

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/17/2004

Site name(s): Golden Creek

Site type: Mine

ARDF no.: TN013

Latitude: 65.2946 **Quadrangle:** TN B-6

Longitude: 152.9844

Location description and accuracy:

The Golden Creek placer mine extends from the western edge of the Tanana quadrangle into the Melozitna quadrangle, where there has been more extensive mining. For this record, the site is at the northeast end of the landing strip, in the north half of section 6, T. 5 N., R. 26 W., of the Fairbanks Meridian. The location is accurate. The site corresponds to location 13 of Cobb (1972), and roughly to the site for Golden Creek, U.S. Bureau of Land Management MAS number 0020480092.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Bedrock in the area of the Golden Creek placer deposit is pelitic schist with interbedded marble and greenstone (Chapman and others, 1982). The Cretaceous Melozitna Pluton, ranging in composition from quartz-monzonite to granite, borders the schist and crops out about 5 miles north of Golden Creek. The Kaltag fault, a major, east-northeast structure, is approximately 5 miles to the south.

Gold in the Golden Creek placer occurs in thin bench and shallow stream gravel deposits (Cobb, 1973). According to Cobb, Golden Creek was one of the most recently mined placer areas in the Melozitna mining district, and as of 1954, was the only active placer mine in the district. Chapman and others (1963) explored the placer for cassiterite, but found none.

Phil Ramsted worked in the area in 1991 and was mining on Golden Creek in 1993 (Bundtzen and others, 1992, 1994). In 1993-94 and 1997-98, Wayne Gibson used a dragline to mine (Bundtzen and others, 1994; Swainbank and others, 1995, 1998; Szumigala and Swainbank, 1999). There is no public record of production, which probably has been small.

Alteration:

Age of mineralization:

Quaternary.

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 has been small-scale placer mining on Golden Creek (Chapman and others, 1963). There is no public record of production, which probably has been small. According to Cobb (1973), Golden Creek was one of the most recently mined placer deposits in the Melozitna mining district, and as of 1954, was the only active placer mine in the district. The history of the placer operation in the Tanana quadrangle, however, is little known.

Phil Ramsted worked in the area in 1991 and was mining on Golden Creek in 1993 (Bundtzen and others, 1992, 1994). In 1993-94 and 1997-98, Wayne Gibson used a dragline to mine (Bundtzen and others, 1994; Swainbank and others, 1995, 1998; Szumigala and Swainbank, 1999).

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1963; Cobb, 1972; Cobb, 1973; Chapman and others, 1982; Bundtzen and others, 1992; Bundtzen and others, 1994; Swainbank and others, 1995; Swainbank and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Chapman and others, 1963; Cobb, 1973

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Frankie Creek

Site type: Prospect

ARDF no.: TN014

Latitude: 65.3053 **Quadrangle:** TN B-6

Longitude: 152.9835

Location description and accuracy:

Mining claims were staked in 1971, followed by placer mining, on Frankie Creek (Alaska Kardex files). Mining claim location notices state that the claims are about 1.25 miles from the Golden Creek airstrip. The site is at the location given in the U.S. Bureau of Land Management MAS system (MAS number 0020480091), in the northeast quarter of section 31, T. 6 N., R. 26 W., of the Fairbanks Meridian. The location is accurate within about 1000 feet.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock in the area of the Frankie Creek placer deposit is pelitic schist with interbedded marble and greenstone (Chapman and others, 1982). The Cretaceous Melozitna Pluton, ranging in composition from quartz monzonite to granite, crops out about 5 miles north of Frankie Creek. The Kaltag fault, a major, east-northeast structure, is approximately 5 miles to the south.

In 1971, prospecting for placer gold deposits at Frankie Creek consisted of drilling 3-inch-diameter holes through the gravels to bedrock (Alaska Kardex files). The holes were spaced 25 feet apart. Samples from the drilling were panned and good colors of gold were reported. Affidavits of annual labor from 1971 to 1985 list prospecting, drilling, and testing colors. There is no record of production.

Alteration:

Age of mineralization:

Quaternary.

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:

In 1971, prospecting for placer gold deposits at Frankie Creek consisted of drilling 3-inch-diameter holes through the gravels to bedrock (Alaska Kardex files). The holes were spaced 25 feet apart. Samples from the drilling were panned and good colors of gold were reported. Affidavits of annual labor from 1971 to 1985 list prospecting, drilling, and testing colors.

Production notes:

Reserves:

Additional comments:

References:

Cobb, 1973; Chapman and others, 1982.

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/7/2004

Site name(s): American Creek; American Gulch

Site type: Mine

ARDF no.: TN015

Latitude: 65.2780 **Quadrangle:** TN B-6

Longitude: 152.9462

Location description and accuracy:
This placer deposit is on American Creek at an elevation of about 800 feet, in the northeast quarter of section 8, T. 5 N., R. 26 W., of the Fairbanks Meridian. The location is accurate within a quarter of a mile. The site corresponds to location 14 of Cobb (1972), and roughly to the site for American-Lynx Creek, U.S. Bureau of Land Management MAS number 0020480096.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Bedrock in the American Creek area includes Precambrian or lower Paleozoic marine metasedimentary rocks and intermediate to mafic meta-igneous rocks; middle Paleozoic greenschist, carbonate, and chert; and Mesozoic greenstone and metasedimentary rocks (Chapman and others, 1982; WGM, Inc., 1998). The right-lateral Kaltag fault bounds these rocks to the south.
Little is published about the placer deposit, and only a little work was done there in the early 1900's. Eakin (1913) reported that the gravels are 10 to 12 feet thick and are thawed placer material at the head of American Creek proved to be as rich as $1 in gold per square foot of bedrock (at $20.67 per ounce). The stream gradient is about 200 feet per mile.
Prospect shafts were reported on American Creek, and surface mining may also have been employed. There was small-scale mining and prospecting on American Creek in 1911 and 1912 (Eakin, 1912, 1913). No work was reported again until 1917, when some open cuts were made (Martin, 1919). The creek then appears to have been abandoned for a long time. Delima Placers and Holovics Placers operated bulldozers on American Creek in 1975 (Carnes, 1976).
Some exploration for lode gold was done by Central Alaska Gold Company for Doyon, Ltd., in the American-Lynx creeks area (WGM, Inc., 1998). The lode occurrences in that area are described in ARDF record TN016.

Alteration:

Age of mineralization:
Quaternary.

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:

Prospect shafts were reported on American Creek, and surface mining may also have been employed. There was small-scale mining and prospecting on American Creek in 1911 and 1912 (Eakin, 1912, 1913). No work was reported again until 1917, when some open cuts were made (Martin, 1919). The creek then appears to have been abandoned for a long time. Delima Placers and Holovics Placers operated bulldozers on American Creek in 1975 (Carnes, 1976).

Some exploration for lode gold was done by Central Alaska Gold Company for Doyon, Ltd., in the American-Lynx creeks area (WGM, Inc., 1998). The lode occurrences in that area are described in ARDF record TN016.

Production notes:

There is no public record of the amount of gold mined from American Creek. However, some of the placer ground reportedly contained as much as $1 in gold per square foot of bedrock (at $20.67 per ounce).

Reserves:

Additional comments:

This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Eakin, 1912; Eakin, 1913; Martin, 1919; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; WGM, Inc., 1998.

Primary reference: Cobb, 1977

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (Lynx Creek; Lynx Gulch; Grant Creek area)

Site type: Occurrences

ARDF no.: TN016

Latitude: 65.2681 **Quadrangle:** TN B-6

Longitude: 152.9337

Location description and accuracy:
This record represents various lode occurrences in the Lynx Creek area. The site is at the junction of American and Lynx creeks, in the southwest quarter of section 9, T. 5 N., R. 26 W., of the Fairbanks Meridian. The location is accurate within a mile.

Commodities:

Main: Au

Other: As, Hg, Pb, Sb, Zn

Ore minerals: Iron oxide

Gangue minerals: Quartz

Geologic description:
Bedrock in the American-Lynx creeks area includes Precambrian or lower Paleozoic marine metasedimentary rocks and intermediate to mafic meta-igneous rocks; middle Paleozoic greenschist, carbonate, and chert; and Mesozoic greenstone and metasedimentary rocks (Chapman and others, 1982; WGM Inc., 1998). The right-lateral Kaltag fault bounds these rocks to the south.
Mining claims, thought to be for lode gold, were active at this site in 1967 (Heiner and others, 1968). In the 1990s(?), Central Alaska Gold Company, under contract to Doyon, Ltd., explored for gold on Lynx Creek (WGM, Inc., 1998). Fragments of vein quartz on the northeast fork of Lynx Creek contained 3,000 parts per billion (ppb) gold. Three soil samples collected on Lynx Creek contained gold values of 30, 50, and 960 ppb, and eight of the remaining 97 samples contained detectable gold. Half of these samples contained 145-305 parts per million (ppm) arsenic. Brecciated and sheared vein quartz cemented by iron oxide contained up to 1,575 ppm arsenic, 475 ppm antimony, 202 ppm lead, 710 ppm zinc, and 1 ppm mercury (DiMarchi, 1991); all contained less than 11 ppb gold. In 2003, Wayne Gibson prospected in the area just west of Grant Dome and just north of Doyon lands, and planned to continue prospecting in 2004 (Alaska placer mining application, 2004).

Alteration:

Age of mineralization:

Deposit model:
Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a) or Polymetallic veins (Cox and Singer, 1986; model 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a or 22c

Production Status: None

Site Status: Inactive

Workings/exploration:

Mining claims, thought to be for lode gold, were active at this site in 1967 (Heiner and others, 1968). In the 1990s(?), Central Alaska Gold Company, under contract to Doyon, Ltd., explored for gold on Lynx Creek (WGM, Inc., 1998). Fragments of vein quartz on the northeast fork of Lynx Creek contained 3,000 parts per billion (ppb) gold. Three soil samples collected on Lynx Creek contained gold values of 30, 50, and 960 ppb, and eight of the remaining 97 samples contained detectable gold. Half of these samples contained 145-305 parts per million (ppm) arsenic. Brecciated and sheared vein quartz cemented by iron oxide contained up to 1,575 ppm arsenic, 475 ppm antimony, 202 ppm lead, 710 ppm zinc, and 1 ppm mercury (DiMarchi, 1991); all contained less than 11 ppb gold. In 2003, Wayne Gibson prospected in the area just west of Grant Dome and just north of Doyon lands, and planned to continue prospecting in 2004 (Alaska placer mining application, 2004).

Production notes:

Reserves:

Additional comments:

This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Heiner and others, 1968; Chapman and others, 1982; DiMarchi, 1991; WGM, Inc., 1998.

Primary reference: WGM, Inc., 1998

Reporter(s): G.E. Graham (ADGGS), J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/8/2003

Site name(s): Melozimoran Creek

Site type: Prospects

ARDF no.: TN017

Latitude: 65.4276

Quadrangle: TN B-6

Longitude: 152.9226

Location description and accuracy:

This record represents approximately located placer gold prospects and occurrences in Melozimoran Creek. The site is on the upper part of the creek, between the junctions of Grimm and Webories creeks, in the south half of section 16, T. 7 N., R. 26 W., of the Fairbanks Meridian. The prospects are referred to in Cobb (1977), and the site corresponds to location 26 of Eberlein and others (1977). This site roughly corresponds to the U.S. Bureau of Land Management location for Melozimoran Creek (MAS number 0020480130).

Commodities:

Main: Au

Other: Sn

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock in the area of Melozimoran Creek consists of Cretaceous granitic rocks, and of lower Paleozoic quartzite and minor mafic meta-igneous rocks cut by barren, lenticular quartz veins (Eberlein and others, 1977; Chapman and others, 1982). Original bedding is obliterated in most places, but appears to be parallel to schistosity, which dips north more steeply than it does on the south flank of Moran Dome (Chapman and others, 1982). Coarsely crystalline to porphyritic granite locally underlies the ridges on the north side of Webories and Grimm creeks. Alluvium is largely confined to the floor of the modern valley.

Prospect pits dug from 1913 to 1918 reportedly yielded a little gold and cassiterite (Martin, 1920). Claims were staked in the Grimm and Webories creeks area during 1943, but there was no production or significant development. Thirteen test pits dug by the U.S. Geological Survey in 1943 near the junction of Melozimoran and Webories creeks failed to find cassiterite or gold in either the bench or the modern stream gravels, but only one pit reached bedrock (at a depth of 6.5 feet) (Chapman and others, 1963). Twelve feet of gravel overlies bedrock in a prospect pit on Webories Creek a short distance above its mouth.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer Au(-Sn) (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:

Prospect pits dug from 1913 to 1918 reportedly yielded a little gold and cassiterite (Martin, 1920). Claims were staked in the Grimm and Webories creeks area during 1943, but there was no production or significant development. Thirteen test pits dug by the U.S. Geological Survey in 1943 near the junction of Melozimoran and Webories creeks failed to find cassiterite or gold in either the bench or the modern stream gravels, but only one pit reached bedrock (at a depth of 6.5 feet) (Chapman and others, 1963). Twelve feet of gravel overlies bedrock in a prospect pit on Webories Creek a short distance above its mouth.

Production notes:

Reserves:

Additional comments:

References:

Martin, 1920; Chapman and others, 1963; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982.

Primary reference: Chapman and others, 1963

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/4/2003

Site name(s): Ring Hill-Monday Creek

Site type: Prospect

ARDF no.: TN018

Latitude: 65.2537 **Quadrangle:** TN B-6

Longitude: 152.8748

Location description and accuracy:

This lode prospect is at an elevation of 1170 feet, at the summit of locally named Ring Hill. It is in the southeast quarter of section 15, T. 5 N., R. 26 W., of the Fairbanks Meridian.

Also see Additional comments.

Commodities:

Main: Au

Other: As, Ba, Mo, Pd, Pt

Ore minerals: Gold, pyrite

Gangue minerals:

Geologic description:

The Ring Hill-Monday Creek prospect is on the southwest flank of Grant Dome in a broad divide that separates Monday and Lynx creeks. The bedrock in the area is black graphitic schist, quartz-muscovite schist, chert, and quartzite (WGM, Inc., 1998). The closest intrusive rock known in the area is the Cretaceous Melozitna pluton, which crops out about 8 miles northwest of the prospect (Chapman and others, 1982). Boulders of a diorite dike occur in gravel at the American Creek placer mine, about 2 miles to the northwest (TN015) (WGM, Inc., 1998).

Although placer gold was mined in the early 1900's from nearby Grant Creek (TN071), more recent work has focused on exploring the area for lode deposits. DiMarchi (1991) postulated that concentric rings identified in air photos of Lynx Dome may represent a granitic cupola associated with mineralization. Anomalous values of 1-3 parts per million (ppm) molybdenum in geochemical samples support this possibility. Concentric circular features and intersecting lineaments at Ring Hill also suggest a buried pluton there.

During the 1990 season, 121 soil, 12 rock, and 5 stream-sediment samples were collected by Central Alaska Gold Company (DiMarchi, 1991). The sampling program delineated an area up to 5,000 feet wide of anomalous gold and arsenic values, including 15 samples with gold values between 30 and 910 parts per billion (ppb) and arsenic as high as 1,510 ppm.

Trenches dug by Central Alaska Gold Company in 1991 intersected several gold-bearing shear zones that trend N10E and dip 20W. Geochemical samples show high arsenic, barium, iron, strontium and phosphorus values. Platinum and palladium values are also elevated, but silver and base metal values are low.

Ventures Resource Corporation (1997) reported that the west side of Monday Creek is a broad area of gold geochemical anomalies, quartz veins, and alteration products, including iron oxide and clay. Of 64 samples, 16 contained gold ranging from 50 to 580 ppb. These samples average twice background levels of arsenic and contain weakly anomalous phosphorous.

WGM, Inc., explored the Ring Hill-Monday Creek area in 1997. Their work confirmed that several large, northeast-trending, as well as smaller, northwest-trending, faults cut through the prospect area (WGM, Inc., 1998). These faults may be conjugate sets associated with the east-west trending, right-lateral Kaltag fault. The northeasterly structures are traceable for up to 12 miles, and cut across Lynx Creek and Grant Creek. Silicification appears to have occurred along all of the faults; silicified country rocks up to 1,000 feet from the faults contain up to 5% sulfides, mostly pyrite.

WGM, Inc., (1998) suggest that the Ring Hill/Monday Creek area may host a deposit similar to the Ryan mine, a partially shear-hosted, gold-arsenic deposit near Fairbanks (McCoy and others, 1997). Their suggestion is based on a 2-square-mile soil sample grid in the Monday Creek area that shows several coincident areas of anomalous gold and arsenic values.

Alteration:
Silicification and pyritization; iron oxide and clay.

Age of mineralization:
Mineralization may be Cretaceous in age, based on Cretaceous ages assigned to the nearby Melozitna Pluton.

Deposit model:
Polymetallic veins (Cox and Singer, 1986; model 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c

Production Status: None

Site Status: Inactive

Workings/exploration:
Although placer gold was mined in the early 1900's from nearby Grant Creek (TN071), more recent work has focused on exploring the area for lode deposits. DiMarchi (1991) postulated that concentric rings identified in air photos of Lynx Dome may represent a granitic cupola associated with mineralization. Anomalous values of 1-3 ppm molybdenum in geochemical samples support this possibility.

Trenches dug by Central Alaska Gold Co. in 1991 (DiMarchi, 1991) intersected several gold-bearing shear zones that trend N10E and dip 20W. Geochemical samples show high arsenic, barium, iron, strontium, and phosphorus values. Of 64 samples, 16 contained gold ranging from 50 to 580 ppb. Platinum and palladium values (in placer concentrates) are also elevated, but silver and base metal values are low.

In 1996 Dighem Surveys of Toronto Canada flew magnetic and electromagnetic surveys, and Ventures Resource Corporation worked in the area.

WGM, Inc. worked in the Ring Hill-Monday Creek area in 1997 (WGM, Inc., 1998). They confirmed that several large northeast-trending, as well as smaller northwest-trending, faults cut through the prospect area. WGM, Inc., suggests that the Ring Hill/Monday Creek area may host a deposit similar to the Ryan mine, a partially shear-hosted, gold-arsenic deposit near Fairbanks (McCoy and others, 1997). Their suggestion is based on a 2-square-mile soil sample grid in the Monday Creek area that shows several coincident areas of anomalous gold and arsenic values.

Production notes:

Reserves:

Additional comments:
The land on which the Ring Hill-Monday Creek prospect lies is leased or owned by Doyon, Ltd., on their West Tanana land selection block. Much of the prospect lies in the northern portion of T. 5 N., R. 26 W. , three to four miles north of the Yukon River. For further information, please contact Doyon, Ltd., 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:
Chapman and others, 1982; DiMarchi, 1991; Ventures Resource Corporation, 1997; McCoy and others, 1997; WGM, Inc., 1998.

Primary reference: WGM, Inc., 1998

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (upper Haha Creek; Wrongtrail Creek)

Site type: Occurrences

ARDF no.: TN019

Latitude: 65.4706 **Quadrangle:** TN B-6

Longitude: 152.8214

Location description and accuracy:

This record represents occurrences of anomalous rock samples in a three-square-mile area in the central Ray Mountains, on ridges at the heads of Haha Creek, Wrongtrail Creek, and tributaries of Melozimoran Creek. For this record, the site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92Ha225c (Solie and others, 1993), about 0.5 mile south-southwest of the center of section 36, T. 8 N., R. 26 W. of the Fairbanks Meridian. The location is accurate within 1000 feet.

This site roughly corresponds with the site for Wrongtrail Creek, U.S. Bureau of Land Management MAS number 0020480122. There is no commodity information in the MAS record.

Commodities:

Main: Pb, Zn

Other: U

Ore minerals:

Gangue minerals: Fluorite, limonite

Geologic description:

Bedrock in the area of Melozimoran Creek consists of Cretaceous granitic rocks, and of lower Paleozoic quartzite and minor mafic meta-igneous rocks cut by barren, lenticular quartz veins (Eberlein and others, 1977; Chapman and others, 1982). Original bedding is obliterated in most places, but appears to be parallel to schistosity, which dips north more steeply than it does on the south flank of Moran Dome (Chapman and others, 1982). Coarsely crystalline to porphyritic granite locally underlies the ridges on the north side of Webories and Grimm creeks. Alluvium is largely confined to the floor of the modern valley.

The margin of the Cretaceous granite body in the upper Haha Creek area has an extensive hornfels zone (Chapman and others, 1982) in which low-grade schist is contact metamorphosed to medium grade (Dover, 1994). Wollastonite in hornfels is reported about 5 miles north of Moran Dome (Chapman and others, 1982). About 5 miles northeast of Moran Dome, differences in metamorphic grade and degree of recrystallization between metamorphic units appear to be telescoped by east-dipping thrusts (Dover, 1994).

In 1979, Resource Associates of Alaska, Inc. (RAA) staked 67 mining claims in the upper Haha Creek area (Alaska Kardex files). They also staked 12 prospecting sites in the area. In 1980, RAA conducted geochemical sampling across the claims and contracted a 100-line-mile airborne radiometric survey of the area.

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the upper Haha Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Rocks collected during this study included biotite granite, quartz monzonite, and monzonite, which locally are brecciated and iron stained. Fluorite was noted in 2 samples and one sample of granite had smoky quartz phenocrysts. Seven rock samples (at stations 92Ha225b, 92Ha225c, 92RE021, and 92MW420) collected for geochemical analysis contained the following maximum values of one or more of the following **Commodities:** 52.3 parts per million (ppm) uranium, 15 ppm tungsten, 30 ppm bismuth, 1,695 ppm lead, 200 ppm tin, 821 ppm zinc, 5.2 ppm silver, 34 ppm molybdenum, 565 ppm arsenic, 73 ppm thorium, and 37 ppm lanthanum.

Alteration:

Age of mineralization:
Cretaceous or younger, inferred from age of granite stock.

Deposit model:
Sn-polymetallic veins, polymetallic veins (Cox and Singer, 1986; models 20b and 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
20b, 22c

Production Status: None

Site Status: Inactive

Workings/exploration:
In 1979, Resource Associates of Alaska, Inc. (RAA) staked 67 mining claims in the upper Haha Creek area (Alaska Kardex files). They also staked 12 prospecting sites in the area. In 1980, RAA conducted geochemical sampling across the claims and contracted a 100-line-mile airborne radiometric survey of the area.

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the upper Haha Creek area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Rocks collected during this study included biotite granite, quartz monzonite, and monzonite, which locally are brecciated and iron stained. Fluorite was noted in 2 samples and one sample of granite had smoky quartz phenocrysts. Seven rock samples (at stations 92Ha225b, 92Ha225c, 92RE021, and 92MW420) collected for geochemical analysis contained the following maximum values of one or more of the following **Commodities:** 52.3 parts per million (ppm) uranium, 15 ppm tungsten, 30 ppm bismuth, 1,695 ppm lead, 200 ppm tin, 821 ppm zinc, 5.2 ppm silver, 34 ppm molybdenum, 565 ppm arsenic, 73 ppm thorium, and 37 ppm lanthanum.

Production notes:

Reserves:

Additional comments:

References:
Eberlein and others, 1977; Chapman and others, 1982; Solie and others, 1993; Dover, 1994.

Primary reference: Dover, 1994; Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/16/2004

Site name(s): Ash Creek

Site type: Occurrence

ARDF no.: TN020

Latitude: 65.3749 **Quadrangle:** TN B-6

Longitude: 152.8154

Location description and accuracy:

The site of the Ash Creek placer occurrence is on Ash Creek near its junction with Tozimoran Creek. It is in the southeast quarter of section 1, T. 6 N., R. 26 W., of the Fairbanks Meridian. The site corresponds to location 3 in the Tanana quadrangle in Eberlein and others (1977), and is also referred to by Cobb (1977).

Commodities:

Main: Au, Sn

Other:

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The country rocks in the area of this occurrence include Paleozoic limestone, chert, quartzite, phyllite, and schist (Chapman and others, 1982). Cretaceous granite crops out north and west of Moran Dome. Ash Creek and nearby creeks were prospected following the discovery of gold in Tozimoran Creek (TN022) around 1902 (Chapman and others, 1963). Placer gold was also reported in those creeks.

A 12-foot-deep shaft dug by the U.S. Bureau of Mines near the mouth of Ash Creek exposed 12.4 cubic feet of frozen coarse gravel containing 120 grams of cassiterite and 91.29 mg of gold (Thomas and Wright, 1948 [RI 4323]). In 1952, the U.S. Bureau of Mines drilled five holes in the Ash Creek placer (Chapman and others, 1963). The work consisted of two two-hole fences and a single hole. The fences were 1,000 feet apart, and the single hole was 1,200 feet from the fences. A total of 5.529 grams of cassiterite were recovered from a total of 190.35 grams of sample [representing] all of the holes. This value, compared to the results of drilling on Tozimoran Creek (TN022) above Ash Creek, shows that Ash Creek contains more cassiterite. However, the bedrock source of the gold and cassiterite is unknown.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

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

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

39a

Production Status: No

Site Status: Inactive

Workings/exploration:

Ash Creek was prospected for gold around 1900. A 12-foot-deep shaft dug by the U.S. Bureau of Mines near the mouth of Ash Creek exposed 12.4 cubic feet of frozen coarse gravel containing 120 grams of cassiterite and 91.29 mg of gold (Thomas and Wright, 1948 [RI 4323]). In 1952, the U.S. Bureau of Mines drilled 5 holes on Ash Creek (Chapman and others, 1963). These holes ranged from 13 to 20.5 feet in depth, and yielded a total of 5.529 grams of cassiterite ('tin') in 190.35 grams of sample. No values are given for gold.

Production notes:

Reserves:

Additional comments:

References:

Thomas and Wright, 1948 (RI 4323); Chapman and others, 1963; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982.

Primary reference: Thomas and Wright, 1948 (RI 4323)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/14/2000

Site name(s): Unnamed (Tozimoran Creek)

Site type: Occurrences

ARDF no.: TN021

Latitude: 65.3749 **Quadrangle:** TN B-6

Longitude: 152.8123

Location description and accuracy:

According to Cobb (1972, location 1; Cobb, 1977), these lode occurrences are on the south side of Tozimoran Creek, at or just below the confluence of Ash Creek. Chapman and others (1963) report two small veins on the south side of Tozimoran Creek; one is a short distance downstream from the cabin, and the other is just above the mouth of Ash Creek. For this record, the site is approximately one thousand feet upstream from the cabin, in the east half of section 1, T. 6 N., R. 26 W., of the Fairbanks Meridian. The location is accurate within half a mile.

Commodities:

Main: Pb

Other: Ag

Ore minerals: Argentiferous galena, cerussite

Gangue minerals: Calcite, quartz

Geologic description:

Bedrock in the Tozimoran Creek area consists of metamorphosed sedimentary and mafic igneous rocks, including quartzite, quartz-mica schist, quartz-chlorite schist, epidote-albite-chlorite-actinolite schist, and subordinate marble and dolomite (Chapman and others, 1963; Chapman and others, 1982). The local bedrock is mainly quartz-mica schist (Thomas and Wright, 1948). Coarsely crystalline to porphyritic Cretaceous granite, cut by smaller granitic dikes, crops out about 5 miles north and west of Moran Dome (Chapman and others, 1982). The Tozimoran Creek placer mine (TN022) is less than a mile downstream from the lode occurrences.

The lode occurrences reportedly consist of argentiferous galena- and cerussite-bearing quartz-calcite veins and galena veins on the south side of a creek in the headwaters of Tozimoran Creek (Wedow and others, 1952; Wedow and others, 1954). Barren quartz veins are common. Chapman and others (1963) report reddish-brown gossan, approximately 25 feet in diameter, on a hillside a short distance north of the mouth of Ash Creek, but they found no unweathered sulfides and no evidence of cassiterite mineralization in it. Pebbles of micaceous quartzite in Tozimoran Creek contain cassiterite and pale brown tourmaline veinlets (Chapman and others, 1963).

Alteration:

Age of mineralization:

Deposit model:

Polymetallic veins (Cox and Singer, 1986; model 22c).

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

22c

Production Status: None

Site Status: Inactive

Workings/exploration:
These occurrences apparently have not been prospected by industry geologists.

Production notes:

Reserves:

Additional comments:

References:
Thomas and Wright, 1948 (RI 4323; Wedow and others, 1952; Wedow and others, 1954; Chapman and others, 1963; Cobb, 1972; Cobb, 1977; Chapman and others, 1982.

Primary reference: Chapman and others, 1963; Cobb, 1977

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/15/2003

Site name(s): Tozimoran Creek

Site type: Mine

ARDF no.: TN022

Latitude: 65.3792 **Quadrangle:** TN B-6

Longitude: 152.7892

Location description and accuracy:

This placer mine is in the headwaters of Tozimoran Creek, which drains the northeast side of Moran Dome. The mine is in the northwest quarter of section 6, T. 6 N., R. 25 W., of the Fairbanks Meridian. It is approximately one quarter of a mile above the confluence with Chicken Creek, and 4 miles east of Moran Dome. The location is accurate within 2,000 feet. The site corresponds to location 16 of Cobb (1972), and roughly to Tozimoran Creek, U.S. Bureau of Land Management MAS number 0020480011.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

Bedrock in the Tozimoran Creek area consists of metamorphosed sedimentary rocks and mafic igneous rocks (Chapman and others, 1963). The local bedrock is mainly quartz-mica schist. Coarsely crystalline to porphyritic Cretaceous granite, cut by small granitic dikes, crops out about 5 miles north and west of the Tozimoran Creek mine (Chapman and others, 1982).

The deposit consists of a bench placer on the north side of Tozimoran Creek, and of alluvium in the present stream channel, 2,000 feet downstream from the mouth of Ash Creek (TN020) (Thomas and Wright, 1948 [RI 4323]). Both bench and stream gravels are approximately 4 feet thick, and the bench also contains 3 feet of muck, frozen in many places. Gold, along with cassiterite, is concentrated in the bottom 2 feet of the bench gravels and is evenly distributed throughout the stream gravels.

The gold and cassiterite do not appear to penetrate bedrock beyond 6 inches (Thomas and Wright, 1948 [RI 4323]). The cassiterite occurs as subangular to angular grains, pebbles, and cobbles up to three pounds; it is dark brown to black and translucent to opaque. The companion gold is clean and subangular, with reported fineness of 835 to 895 (Chapman and others, 1963).

Little mining and prospecting has actually been done on Tozimoran Creek, where gold was discovered in 1902 (Thomas and Wright, 1948 [RI 4323]). Early reports of mining in Columbe Creek, Moraine Creek, and Moran Creek (Brooks, 1908; Smith, 1932, 1933, 1936, 1937) likely refer to Tozimoran Creek (Cobb, 1977). There are no records of large-scale mining in the 1930s, only of sporadic prospecting. I.W. Purkeypile and Martin Webories hand-mined the upper portion of Tozimoran Creek from 1938 until at least 1944 (Thomas and Wright, 1948 [RI 4323]). Wright (1940) examined the property and concluded that the gold and cassiterite pay streaks were not continuous or rich enough to warrant mining. The U.S. Bureau of Mines examined the Tozimoran Creek area in 1944. The results of some of their channel sampling from the bench placer indicated an average of 0.731 pound of tin and 0.0228 ounce of gold per cubic yard in a block 650 feet long and 80 feet wide (Thomas and Wright, 1948 [RI 4323]). Purkeypile and Webories maintained active claims through at least 1967 (Heiner and others, 1968). The only reported recent activity was by Wayne Gibson, who mined placer cassiterite in the 1980's (Bundtzen and others, 1986).

Wedow and others (1952) reported silver-lead ore in the headwaters of Tozimoran Creek (TN021), where galena occurs in quartz-calcite stringers and veins that cut the quartz-mica schist. There is no cassiterite in the gravels near these veins.

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:
Only a small amount of work has been done on Tozimoran Creek. Smith (1942) reported prospecting in 1940. I.W. Purkeypile and Martin Webories hand-mined the upper portion of Tozimoran Creek from 1938 until at least 1944 (Thomas and Wright, 1948 [RI 4323]). Later reports indicate that some prospecting was done in 1942 (Thomas and Wright, 1948 [RI 4323]) and again in 1952 (Chapman and others, 1963). Purkeypile and Webories maintained active claims through at least 1967 (Heiner and others, 1968). Wayne Gibson mined placer deposits of cassiterite in the area in 1985 (Bundtzen and others, 1986). Cusac Gold Mines announced that they intended to explore in the vicinity of Moran Dome during the 2000 field season (Cusac Gold Mines, Ltd., press release, October 20,1999).

Production notes:
Production of placer gold from Tozimoran Creek has not been made public. In 1977, Cobb (1977) echoed the estimate by Thomas and Wright (1948 [RI 4323]), suggesting that production was probably was little more than a few ounces of gold and a few hundred pounds of cassiterite concentrate.

Reserves:

Additional comments:

References:
Brooks, 1908; Smith, 1932; Smith, 1933; Smith, 1936; Smith, 1937; Wright, 1940; Smith, 1942; Thomas and Wright, 1948 (RI 4323); Wedow and others, 1952; Chapman and others, 1963; Heiner and others, 1968; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1986.

Primary reference: Thomas and Wright, 1948 (RI 4323); Chapman and others,1963

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/21/2003

Site name(s): Slate Creek (junction with Tozimoran Creek)

Site type: Occurrence

ARDF no.: TN023

Latitude: 65.3826 **Quadrangle:** TN B-6

Longitude: 152.7089

Location description and accuracy:
This placer occurrence is at the junction of Slate Creek and Tozimoran Creek. The site is in the northeast quarter of section 4, T. 6 N., R. 25 W., of the Fairbanks Meridian. The occurrence includes part of Tozimoran Creek just below the mouth of Slate Creek. The location is accurate within several hundred feet. The site corresponds to location 3 of Eberlein and others (1977).

Commodities:

Main: Au, Sn

Other:

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:
Bedrock in the Tozimoran Creek area consists of metamorphosed sedimentary and mafic igneous rocks (Chapman and others, 1963). The local bedrock is mainly quartz-mica schist. Coarsely crystalline to porphyritic Cretaceous granite, cut by smaller granitic dikes, crops out about 7 miles north and west of this site (Chapman and others, 1982). Placer deposits in the Moran Dome area are alluvial deposits formed by the modern streams. Older alluvial deposits are limited in extent and occur in several places along Tozimoran Creek above its confluence with Slate Creek. The average width of alluvium in the present valley bottom of Tozimoran Creek near the mouth of Slate Creek is 250 feet (Chapman and others, 1963).

In 1942, the U.S. Geological Survey examined the Moran Dome area for cassiterite-bearing placer deposits (Chapman and others, 1963). In 1952, areas of Tozimoran Creek were drilled and trenched under a Defense Minerals Exploration Administration contract. A shaft dug in 1942 near the mouth of Slate Creek reportedly reached bedrock at a depth of 25 feet. Material from the shaft yielded $1.65 in gold (gold at $35 per ounce) and 7 pounds of 'tinstone' (cassiterite and other minerals in pebbles and cobbles). Microscope examination of the tinstone showed cassiterite, associated with pale-brown tourmaline, in narrow veinlets in micaceous quartzite (Chapman and others, 1963).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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 1942, the U.S. Geological Survey examined the Moran Dome area for cassiterite-bearing placer deposits (Chapman and others, 1963). In 1952, areas of Tozimoran Creek were drilled and trenched under a Defense Minerals Exploration Administration contract. A shaft dug in 1942 near the mouth of Slate Creek reportedly reached bedrock at a depth of 25 feet. Material from the shaft yielded $1.65 in gold (gold at $35 per ounce) and 7 pounds of 'tinstone' (cassiterite and other minerals in pebbles and cobbles). Microscope examination of the tinstone showed cassiterite, associated with pale-brown tourmaline, in narrow veinlets in micaceous quartzite (Chapman and others, 1963).

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1963; Eberlein and others, 1977; Chapman and others, 1982.

Primary reference: Chapman and others, 1963

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/5/2003

Site name(s): Schieffelin Creek; Shevlin Creek

Site type: Prospect

ARDF no.: TN024

Latitude: 65.2632 **Quadrangle:** TN B-4

Longitude: 151.5083

Location description and accuracy:

This record represents the approximate location of placer gold prospects in Schieffelin Creek. The site is approximately 3.5 miles above its junction with the Yukon River, in the north half of section 17, T. 5 N., R. 19 W., of the Fairbanks Meridian, but the prospects could be almost anywhere along this approximately 12-mile long creek. The site corresponds to location 33 of Eberlein and others (1977). It is approximately 2 miles upstream from the U.S. Bureau of Land Management location for Schieffelin Creek (MAS number 0020480098).

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock in the area of the Schieffelin Creek placer gold prospect consists of greenstone, metachert, dolomite, marble, calcareous schist, and siliceous mica schist (Chapman and others, 1982). The bedrock is complexly folded and faulted.

Brooks (1909) reported that there was prospecting for placer gold during 1907 and 1908, with discovery of gravels containing gold on Shevlin Creek. Cobb (1977) reported that there is no additional information about minerals or mining on Schieffelin Creek.

Alteration:

Age of mineralization:

Quaternary.

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:

Brooks (1909) reported that there was prospecting for placer gold during 1907 and 1908, with discovery of gravels containing gold on Shevlin Creek. Cobb (1977) reported that there is no additional information about minerals or mining on Schieffelin Creek.

Production notes:

Reserves:

Additional comments:

References:

Brooks, 1909; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982.

Primary reference: Brooks, 1909

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/4/2003

Site name(s): Maggie Creek (near Morelock Creek)

Site type: Prospect

ARDF no.: TN025

Latitude: 65.3310 **Quadrangle:** TN B-3

Longitude: 151.3754

Location description and accuracy:

This lode prospect is on Maggie Creek just above its junction with Morelock Creek (North Star Exploration, Inc., 1999 [Report 99-48]). The site is at about 650 feet elevation, near the center of section 24, T. 6 N., R. 19 W., of the Fairbanks Meridian. The location is accurate within half a mile.

Commodities:

Main: Au

Other: Ni, Sn, W

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock in the area of the Maggie Creek placer prospect consists of greenstone, metachert, dolomite, marble, calcareous schist, and siliceous mica schist (Mertie, 1934; Chapman and others, 1982).

A possible gold breccia/stockwork is at the flexure point in Morelock Creek near Maggie Creek (North Star Exploration Inc., 2000 [Highly mineralized block 20]). The bedrock in the area is interpreted by North Star Exploration, Inc., as an altered and mineralized intrusion. Their interpretation is based on low resistivity, and high radiometric and low magnetic signatures at this point, where several high-angle faults intersect, and the company believes that the highly fractured bedrock may be a good host for structurally-controlled gold mineralization. North Star Exploration, Inc. (1999 [Report 99-48]) reported that soil and sediment samples collected at this location in 1979, 1982, and 1985 contained anomalous gold, tin, tungsten, and nickel, and suggested that the gold nuggets in the gravels of Morelock Creek have a color and shape that may indicate a nearby lode source, possibly this target (North Star Exploration Inc., 2000 [Highly mineralized block 20]. A similar lode occurrence is in Morelock Creek (TN034), 2 miles downstream.

Gold and tin placer mining began on Morelock Creek one mile downstream from the junction of Maggie Creek as early as 1901 (Thomas and Wright, 1948 [RI 4322]). Morelock Creek (TN033) produced most of the 11,400 ounces of gold credited to the Gold Hills-Melozitna mining district (North Star Exploration, Inc., 1999 [Report 99-48]). The nearby Homestake Creek (TN028) and Bonanza Creek (TN030) placer deposits also produced small amounts of gold.

Alteration:

Age of mineralization:

Deposit model:

Low-sulfide Au-quartz veins(?) (Cox and Singer, 1986; model 36a).

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

36a?

Production Status: None

Site Status: Inactive

Workings/exploration:

Gold and tin placer mining began on Morelock Creek one mile downstream from the junction of Maggie Creek as early as 1901 (Thomas and Wright, 1948 [RI 4322]). North Star Exploration, Inc. (1999 [Report 99-48]) has reported that soil and sediment samples collected at the mouth of Maggie Creek in 1979, 1982, and 1985 contained anomalous gold, tin, tungsten, and nickel. The company also has conducted resistivity, radiometric, and magnetic surveys in this area.

Production notes:

Morelock Creek produced most of the 11,400 ounces of gold credited to the Gold Hills-Melozitna mining district (North Star Exploration, Inc., 1999 [Report 99-48]). The nearby Homestake Creek (TN028) and Bonanza Creek (TN030) placer deposits also produced small amounts of gold.

Reserves:

Additional comments:

Morelock and Maggie creeks flow on lands selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Mertie, 1934; Thomas and Wright, 1948 (RI 4322); Cobb, 1972; Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-48); North Star Exploration Inc., 2000 (Highly mineralized block 20).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-48)

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/15/2003

Site name(s): Boomerang

Site type: Prospect

ARDF no.: TN026

Latitude: 65.3014 **Quadrangle:** TN B-3

Longitude: 151.3734

Location description and accuracy:

The Boomerang lode prospect is just north of the Yukon River, northwest of Manley Hot Springs, in the Morelock Creek area. The exact location of the Boomerang prospect has not been made public. At least part of it reportedly is in section 36, T. 6 N., R. 19 W., of the Fairbanks Meridian (North Star Exploration, Inc., 2000 [DLR2000-17]). For this record, the site is on a ridge at an elevation of about 2,200 feet in the southwest quarter of section 36.

Commodities:

Main: Au

Other: As, Bi, Cu, Sb, Zn

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock in the Boomerang prospect area consists of Cretaceous or Lower Tertiary quartz monzonite (Chapman and others, 1982) or granite (Wilson and others,1998) that comprises two phases, one unaltered, the other altered. The country rocks are Devonian marble and Upper Proterozoic(?) or Paleozoic pelitic and quartzitic schist (Wilson and others, 1998).

North Star Exploration, Inc. (2000 [DLR2000-17]; 2000 [Reduced calcic gold skarns]) has produced a simplified, small-scale geologic map of the Boomerang prospect. In addition to ground work, the company has conducted a helicopter-borne, magnetic-EM-radiometric survey of the area. The survey defined three strong, circular magnetic anomalies associated with moderate to strong conductors (North Star Exploration, Inc., 2000 [Highly mineralized block 20]. There are abundant carbonate strata in the area, and there is a nearby intrusion. At least one conductive geophysical anomaly corresponds to copper-bearing boulders in a stream bed (North Star Exploration, Inc., 2000 [Highly mineralized block 20]. North Star has proposed that this area is the potential site of a reduced calcic gold skarn deposit, an interpretation supported by their geological, geochemical, and geophysical data. The closest historic gold placer mining was approximately one mile to the north, in Homestake Creek (TN028).

The Alaska Division of Geological and Geophysical Surveys studied the Boomerang prospect area in 1992 as part of a mineral resource evaluation of State-selected lands. A rock sample (station 92RE2042) of calcareous biotite schist contained 4,708 parts per million (ppm) manganese, 26 ppm tin, and 297 ppm zinc (Solie and others, 1993).

Alteration:

Unspecified alteration of the granitic rocks.

Age of mineralization:

Presumably Cretaceous or younger, the age of the intrusive rocks.

Deposit model:

Copper-gold skarn (after Cox and Singer, 1986; model 18b) or Porphyry copper-gold (after Cox and Singer, 1986; model 20c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
18b or 20c

Production Status: None

Site Status: Active

Workings/exploration:
In 1998-99, North Star Exploration, Inc., conducted a magnetic-EM-radiometric survey over much of the prospect area. Surface exploration identified several geochemical anomalies and copper-bearing boulders in a stream bed (North Star Exploration, Inc., 2000 [Highly mineralized block 20].
North Star Exploration, Inc., identified the Boomerang prospect as a priority target in the late 1990's, based on compilation and interpretation of regional and detailed geological, geophysical, geochemical, and Landsat data. Included in their compilation are proprietary and public-domain, helicopter-borne magnetic/resistivity/EM (electromagnetic) geophysical surveys that the company is using to identify of skarn targets (North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]).
The Alaska Division of Geological and Geophysical Surveys studied the Boomerang prospect area in 1992 as part of a mineral resource evaluation of State-selected lands. A rock sample (station 92RE2042) of calcareous biotite schist contained 4,708 parts per million (ppm) manganese, 26 ppm tin, and 297 ppm zinc (Solie and others, 1993).

Production notes:

Reserves:

Additional comments:
This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:
Chapman and others, 1982; Solie and others, 1993; Wilson and others, 1998; North Star Exploration, Inc., 2000 (Reduced calcic gold skarns); North Star Exploration, Inc., 2000 (Highly mineralized block 20]); North Star Exploration, Inc., 2000 (DLR2000-17).

Primary reference: North Star Exploration, Inc., 2000 (DLR2000-17)

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 4/9/2004

Site name(s): Quartz Creek; Bonanza King

Site type: Prospect

ARDF no.: TN027

Latitude: 65.2671 **Quadrangle:** TN B-3

Longitude: 151.3696

Location description and accuracy:
The Quartz Creek prospect is at an elevation of about 500 feet approximately 1/2 mile north of the Yukon River. The original (early 1900s) prospect, which corresponds to location 3 of Cobb (1972), is on the boundary of sections 12 and 13, T. 5 N., R. 19 W., of the Fairbanks Meridian. The location of relatively recent (post-1960) work in this area is less well known.
This site roughly corresponds to the locations of the Bonanza King (U.S. Bureau of Land Management MAS number 0020480066), and Quartz Creek (MAS number 0020480067) lode prospects.

Commodities:

Main: Ag, Au, Pb

Other: Sn, Zn

Ore minerals: Argentiferous galena, sphalerite

Gangue minerals: Calcite, quartz

Geologic description:
The Quartz Creek prospect area is underlain by Paleozoic limestone, dolomite, greenstone, and chloritic schist, along with minor amounts of phyllite, quartzite, and quartz mica schist (Chapman and others, 1982). A Tertiary or Cretaceous quartz monzonite stock is exposed approximately five miles to the east.
Silver-lead mineralization on Quartz Creek was first described by Eakin (1916). Prospectors described the deposit as a 10-foot-wide stockwork of silver-bearing galena veins that cut the limestone (Eakin, 1916). Ore specimens contained galena, quartz, calcite, and ferruginous material (Eakin, 1916). The galena forms stringers and small veins several inches apart. The gangue is chiefly milky quartz that locally is glassy at the galena contact. The galena, in turn, contains isolated clear, glassy, euhedral quartz grains. Prospectors reported that the ore contained gold and silver in profitable amounts, although this was never tested by Eakin (1916). A tunnel, visible from the Yukon River, was driven at the prospect around 1915 (Berg and Cobb, 1967; Cobb, 1977; Eberlein and others, 1977), but mining was not pursued.
Workings at the site consist of several prospect pits and two caved adits (Saunders, 1955). The portal to one adit is on a steep slope that faces south and is about 500 feet above Quartz Creek. From the size of the dump, this adit appears to have been about 50 feet long. The other adit is on the west side of the creek, about 20 feet above it, and about 100 yards downstream from the remains of an old log building. The adit enters the hill in a due west direction and the dump size indicates that the workings were 300 to 400 feet long (Saunders, 1955). The dump consists of fine-grained, dark colored, gouge-like material with small quartz pieces scattered throughout. A 10-foot-wide stockwork of galena-bearing quartz veinlets that is exposed in the upper adit strikes N10W and dips vertically (Saunders, 1955). Quartz veinlets in the stockwork vary from one to six inches wide. A sample of mineralized quartz veinlets on the surface above the upper adit contained 9.32 ounces of silver per ton, 8.0 percent lead, 1.5 percent zinc, and no detectable gold. A sample from the dump at the lower adit contained a trace of zinc, and no detectable gold, silver, or lead (Saunders, 1955).
Twelve mining claims were staked over the Quartz Creek lode prospect from 1968 to 1992 (Alaska Kardex files). Affidavits of annual labor for 1969 and 1970 list prospecting, trenching, and work at the lower adit. In 1977-78, WGM, Inc., explored the area and collected samples from a 10-foot-wide, structur-

ally-controlled (fissure?) vein containing massive argentiferous galena and accessory sphalerite (North Star Exploration, Inc., 1999 [Report 99-48]). Analyses also showed gold and tin. Affidavits of annual labor for 1999 state that an existing shaft was excavated to a depth of about 25 feet and several hundred pounds of samples were removed (Alaska Kardex files). The deposit is similar to the Wally Creek prospect (TN032).

Alteration:

Age of mineralization:

This deposit may be genetically related to a Tertiary or Cretaceous quartz monzonite stock that crops out approximately five miles to the east.

Deposit model:

Polymetallic replacement body (Cox and Singer, 1986; model 19a).

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

19a

Production Status: None

Site Status: Inactive

Workings/exploration:

Prospectors worked in the area in the early 1900's, and drove a tunnel into a 10-foot-wide stockwork. This work was soon abandoned, and there is no report of further mining. Workings on the site consist of several prospect pits and two caved adits (Saunders, 1955). The portal to one adit is on a steep slope that faces south and is about 500 feet above the Yukon River. From the size of the dump, this adit appears to have been about 50 feet long. The other adit is on the west side of the creek, about 20 feet above it, and about 100 yards downstream from the remains of an old log building. The adit enters the hill in a due west direction and the dump size indicates that the workings were 300 to 400 feet long (Saunders, 1955).

Twelve mining claims were staked over the Quartz Creek lode prospect from 1968 to 1992 (Alaska Kardex files). Affidavits of annual labor for 1969 and 1970 list prospecting, trenching, and work at the lower adit. In 1977-78, WGM, Inc,. explored in the area and collected samples from a 10-foot-wide, structurally controlled (fissure?) vein containing massive argentiferous galena and accessory sphalerite (North Star Exploration, Inc., 1999 [Report 99-48]). Affidavits of annual labor for 1999 state that an existing shaft was excavated to a depth of about 25 feet and several hundred pounds of samples were removed (Alaska Kardex files).

Production notes:

There is no record of any ore being shipped from this property (Saunders, 1955).

Reserves:

Additional comments:

References:

Eakin, 1916; Saunders, 1955; Berg and Cobb, 1967; Cobb, 1972; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-34); North Star Exploration, Inc., 1999 (Report 99-48).

Primary reference: Eakin, 1916; North Star Exploration, Inc., 1999 (Report 99-48)

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/6/2003

Site name(s): Homestake Creek

Site type: Mine

ARDF no.: TN028

Latitude: 65.3213 **Quadrangle:** TN B-3

Longitude: 151.3417

Location description and accuracy:

This placer mine is on Homestake Creek, near its junction with Morelock Creek (Cobb, 1972, location 17; Cobb, 1977). The site is in the northwest quarter of section 30, T. 6 N., R. 18 W., of the Fairbanks Meridian. The location is accurate within 500 feet. The U.S. Bureau of Land Management site for Homestake Creek (MAS number 0020480089), is approximately 1.5 miles up Homestake Creek from this site.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

Bedrock in the area of Homestake Creek consists of greenstone, metachert, dolomite, marble, calcareous schist, and siliceous mica schist (Mertie, 1934; Chapman and others, 1982). Although granitic rocks were reported by Eakin (1916), none were found in later mapping by Chapman and others (1963; 1982). The bedrock is complexly folded, faulted, and locally cut by sulfide-bearing quartz-calcite veins (Thomas and Wright, 1948 [RI 4322]; North Star Exploration, Inc.,1999 [Report 99-34]).

As early as 1901, gold and cassiterite ('tin') placer mining had begun in the Morelock Creek area (TN033), concentrated near the mouths of Bonanza (TN030) and Homestake creeks (Thomas and Wright, 1948 [RI 4322]). Brooks and Prindle (1911) reported that placer gold had been mined near the mouth of Homestake Creek, but little else is known about the site. There are no workings known on Homestake Creek, and no other reports of mining or production.

The U.S. Bureau of Mines conducted a drilling program in the area in 1943 (Thomas and Wright, 1948 [RI 4322]). At least 23 churn drill holes were tested, including two fences across Morelock Creek (TN033) and one across Bonanza Creek (TN030). In addition, the Bureau used test pits, caisson shafts, and open pit-mining to sample the Morelock Creek area. Drilling on line 8.5 showed 0.27 pound of tin and 0.0085 ounce of gold per square foot of bedrock. Line 15 (on Bonanza Creek) yielded weighted averages of 0.1492 pound of tin and 0.0328 ounce of gold per square foot of bedrock. Line 10 contained no tin or gold.

Alteration:

Age of mineralization:

Quaternary.

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 are no workings known on Homestake Creek. Brooks and Prindle (1911) reported that placer gold had been mined near the mouth of Homestake Creek, but little else is known about the site. Placer deposits in the area were worked using surface techniques; according to Smith (1939 [B 910-A, B 917-A]), open cut mining was employed.

The U.S. Bureau of Mines conducted a drilling program in the area in 1943 (Thomas and Wright, 1948 [RI 4322]). At least 23 churn drill holes were tested, including two fences across Morelock Creek (TN033) and one across Bonanza Creek (TN030). In addition, the Bureau used test pits, caisson shafts, and open pit-mining to sample the Morelock Creek area. Drilling on line 8.5 showed 0.27 pound of tin and 0.0085 ounce of gold per square foot of bedrock. Line 15 (on Bonanza Creek) yielded weighted averages of 0.1492 pound of tin and 0.0328 ounce of gold per square foot of bedrock. Line 10 contained no tin or gold.

Production notes:

North Star Exploration, Inc. (1999 [Report 99-34]) reported that Morelock Creek (which is in Block 20 of the Doyon, Limited holdings) produced most of the 11,400 ounces of gold credited to the Gold Hill-Melozitna mining district.

Reserves:

Additional comments:

Morelock Creek flows through lands selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Brooks and Prindle, 1911; Eakin, 1916; Mertie, 1934; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Thomas and Wright, 1948 (RI 4322); Chapman and others, 1963; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: Thomas and Wright, 1948 (RI 432); Cobb, 1977

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/16/2003

Site name(s): Upper Bear Creek

Site type: Prospect

ARDF no.: TN029

Latitude: 65.4139 **Quadrangle:** TN B-3

Longitude: 151.3369

Location description and accuracy:

The site of this placer prospect (Bottge, 1986) is on upper Bear Creek at an elevation of about 1,300 feet, in the south half of section 19, T. 7 N., R. 18 W., of the Fairbanks Meridian. The site roughly corresponds with the U.S. Bureau of Land Management site for Bear Creek (MAS number 0020480088). A reference to Bear Creek, with poorly known location, is in Cobb (1977).

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The upper and middle reaches of Bear Creek are underlain by Mesozoic (Rampart Group) marine metasedimentary rocks and mafic and ultramafic igneous rocks that are in thrust(?) contact with Paleozoic and/or Upper Precambrian schist, quartzite, and phyllite (Mertie, 1934; Chapman and others, 1982). The closest granitic pluton is Tertiary or Cretaceous quartz monzonite with a radiometric age of 61.8 +/- 2.5 Ma (Silberman and others, 1979), approximately 10 miles to the east. In the area around the reported placer, Bear Creek flows acros Paleozoic limestone, chert, and greenstone (Chapman and others, 1982).

The mining history of Bear Creek is uncertain. Mertie (1934) reported prospecting in 1932. Smith (1936) included Bear Creek in a list of gold producers, the rest of which are all on the eastern edge of the Tanana quadrangle. This reference, as well as the one for the following year (1935) by Smith (1937) may refer to a different Bear Creek. According to Bottge (1986), Bear Creek had produced placer gold during or before 1985.

In the 1990's, the area was explored by North Star Exploration, Inc. (North Star Exploration Inc., 2000 [DLR2000-17]), who determined that Bear Creek follows a east-southeast fault, and detected gold in stream-sediment samples. The company interpreted their geological, geophysical, and geochemical data as evidence of a potential structurally-controlled, polymetallic, tabular lode gold deposit (North Star Exploration Inc., 2000 [Highly mineralized block 20]). No follow-up work has been reported.

Alteration:

Age of mineralization:

Quaternary.

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:

Placer prospecting and possibly mining took place in the mid-1930's. North Star Exploration, Inc. explored the upper Bear Creek area for lode deposits in 1998. The nature, extent, and results of their work have not been made public.

Production notes:

Bottge (1986) reported that Bear Creek has been a placer gold producer, but there are no public records of any production.

Reserves:

Additional comments:

This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Mertie, 1934; Smith, 1936; Smith, 1937; Cobb, 1977; Silberman and others, 1979; Chapman and others, 1982; Bottge, 1986; North Star Exploration Inc., 2000 (DLR2000-17); North Star Exploration Inc., 2000 (Highly mineralized block 20).

Primary reference: North Star Exploration Inc., 2000 (DLR2000-17)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 10/31/2000

Site name(s): Bonanza Creek

Site type: Prospect

ARDF no.: TN030

Latitude: 65.3281 **Quadrangle:** TN B-3

Longitude: 151.3364

Location description and accuracy:

The Bonanza Creek placer prospect is in the south half of section 19, T. 6 N., R. 18 W, of the Fairbanks Meridian. The site also includes a portion of Bonanza Creek valley about 900 feet upstream from its mouth, which was drilled in 1943 by the U.S. Bureau of Mines (Thomas and Wright, 1948 [RI 4322]). The drill sites are on the border between sections 19 and 30, in T. 6 N., R. 18 W. The site corresponds to location 18 of Cobb (1972), and roughly to the location of Bonanza Creek, U.S. Bureau of Land Management MAS number 0020480012.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold, pyrite

Gangue minerals:

Geologic description:

Bedrock in the area of the Bonanza Creek gold-cassiterite (tin) placer deposit consists of greenstone, metachert, dolomite, marble, calcareous schist, and siliceous mica schist (Chapman and others, 1982). Although granitic rocks were reported by Eakin (1916), none were found in later mapping by Chapman and others (1963, 1982). Thomas and Wright (1948 [RI 4322]) reported that the bedrock was complexly folded and faulted, resulting in irregularities on the bedrock surface, called 'reefs.' Although this bedrock apparently is not the source of the gold or cassiterite, the reefs proved to be excellent for concentrating these heavy minerals.

The gravels in Bonanza Creek are about 6 feet thick, with only 2.5 feet of overburden. Pebbles of cassiterite commonly contain quartz, indicating that they are derived from quartz-cassiterite veins. Both cassiterite and gold are concentrated in the bottom two feet of gravel, although in places they penetrate fractures in the upper few feet of bedrock. Chapman and others (1963) did not find other metallic minerals, although they describe limonite-stained pits (presumably after pyrite) in quartz veins along the ridges bordering Bonanza Creek.

Thomas and Wright (1948 [RI 4322]) described many prospect shafts in the Bonanza Creek area that were sunk prior to a 1943 U.S. Bureau of Mines exploration project. This project included drilling on Morelock Creek (TN033) and five holes at 50-foot intervals across the Bonanza Creek valley approximately 900 feet above its mouth. The average grades were 0.1492 pound of cassiterite and 0.0328 ounce of gold per square yard of bedrock on Bonanza Creek.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer Au(-Sn) (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:
Thomas and Wright (1948 [RI 4322]) described many prospect shafts in the Bonanza Creek area that were sunk prior to a 1943 U.S. Bureau of Mines exploration project. This project included drilling on Morelock Creek (TN033) and five holes at 50-foot intervals across the Bonanza Creek valley approximately 900 feet above its mouth. The average grades were 0.1492 pound of cassiterite and 0.0328 ounce of gold per square yard of bedrock on Bonanza Creek.
Doyon, Ltd., contracted exploration in the Tanana Village Block in 1977, 1979, and 1982, and performed their own exploration in 1985. Soil(?) sampling yielded mainly copper, lead, zinc, tin, and gold anomalies (Placer Dome, 1989).

Production notes:

Reserves:

Additional comments:
Bonanza Creek feeds into Morelock Creek (TN033), which flows on lands selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:
Eakin, 1916; Thomas and Wright, 1948 (RI 4322); Chapman and others, 1963; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Placer Dome, 1989; North Star Exploration, Inc., 1999 (Report 99-48).

Primary reference: Thomas and Wright, 1948 (RI 4322)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Katey Jo-Sox

Site type: Prospects

ARDF no.: TN031

Latitude: 65.3956 **Quadrangle:** TN B-3

Longitude: 151.3246

Location description and accuracy:

This site represents about a square-mile area of lode prospects. For this record, the site of the Katey Jo-Sox prospect is at an elevation of about 1,350 feet on an unnamed south tributary of Bear Creek, in the northeast quarter of section 31, T. 7 N., R. 18 W., of the Fairbanks Meridian.

Commodities:

Main: W

Other: Au, Sn

Ore minerals: Scheelite

Gangue minerals:

Geologic description:

The country rocks in this prospect area consist of Paleozoic(?) carbonate strata that are intruded by Cretaceous or Tertiary quartz monzonite stocks (Chapman and others, 1982). Contact-metamorphic (skarn) deposits have formed along portions of the intrusion contacts.

The Katey Jo-Sox prospect consists of two tungsten skarn deposits. They were found by WGM, Inc., in 1978, at two locations in the Bear Creek drainage along the contacts of two small granitic stocks about 1 mile apart (Placer Dome, 1989). Scheelite-bearing skarn occurs for 1800 feet along the contact of the western stock, and for 4,000 feet along the contact of the eastern stock. Subsequent drilling by Union Carbide Corporation showed values of up to 0.5 percent tungsten, but the company considered the deposits to be uneconomic at that time (North Star Exploration, Inc., 1999 [Report 99-34]). These deposits also have been explored by mapping, geochemical(?), and magnetic surveys. In addition to tungsten, tin and gold geochemical(?) anomalies have also been identified (Placer Dome, 1989).

Alteration:

Contact metamorphism of carbonate strata at granitic contacts.

Age of mineralization:

Cretaceous or Tertiary, inferred from the presumed age of the granitic stocks.

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:

The Katey Jo-Sox tungsten skarn deposits were found by WGM, Inc., in 1978, at two locations in the Bear Creek drainage along the contacts of two small granitic stocks about 1 mile apart (Placer Dome, 1989). Scheelite-bearing skarn occurs for 1800 feet along the contact of the western stock, and for 4,000 feet along the contact of the eastern stock. Subsequent drilling by Union Carbide Corporation showed values of up to 0.5 percent tungsten, but the company considered the deposits to be uneconomic at that time (North Star Exploration, Inc., 1999 [Report 99-34]). These deposits also have been explored by mapping, geochemical (?), and magnetic surveys. In addition to tungsten, tin and gold geochemical(?) anomalies have also been identified (Placer Dome, 1989).

Production notes:

Reserves:

Additional comments:

The Katey Jo-Sox prospect is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Chapman and others, 1982; Placer Dome, 1989; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-34)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/30/2000

Site name(s): Wally Creek

Site type: Prospect

ARDF no.: TN032

Latitude: 65.2954 **Quadrangle:** TN B-3

Longitude: 151.3242

Location description and accuracy:

This site mainly represents an area of prospecting for lode deposits in the area of Wally Creek. For this record, the site is on Wally Creek at an elevation of about 650 feet, at the northeast corner of section 6, T. 5 N., R. 18 W., of the Fairbanks Meridian.

Commodities:

Main: Pb, Zn

Other: Ag, Cu

Ore minerals:

Gangue minerals: Quartz

Geologic description:

The Wally Creek prospect area is underlain by Paleozoic limestone, dolomite, greenstone, and chloritic schist, with minor amounts of phyllite, quartzite, and quartz mica schist (Chapman and others, 1982). A Tertiary or Cretaceous quartz monzonite stock is exposed approximately three miles to the east.

In 1976-1978, the Wally Creek area was explored for lode deposits with geological, geochemical, and geophysical surveys (Placer Dome, 1989). Geochemical anomalies included copper, lead, zinc, and silver. This prospect area is geologically similar to the nearby Quartz Creek lode prospect (TN027).

Exploration of the Wally Creek area by North Star Exploration, Inc. in 1999 revealed a zone up to 25 feet thick of folded(?), sulfide-bearing(?) quartz veins (North Star Exploration, Inc., 1999 [Report 99-34]). Base metal values in the veins reportedly are as high as 4 percent lead, 3 percent zinc, and 1 ounce of silver per ton over a ten-foot interval.

Alteration:

Age of mineralization:

Deposit model:

Sediment-hosted Pb-Zn(?) (Cox and Singer, 1986; model 30a).

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

30a(?)

Production Status: None

Site Status: Probably inactive

Workings/exploration:

In 1976-1978, the Wally Creek area was explored for lode deposits with geological, geochemical, and geophysical surveys (Placer Dome, 1989). Geochemical anomalies included copper, lead, zinc, and silver. This prospect area is geologically similar to the nearby Quartz Creek lode prospect (TN027).

Exploration of the Wally Creek area by North Star Exploration, Inc. in 1999 revealed a zone up to 25 feet thick of folded(?), sulfide-bearing(?) quartz veins (North Star Exploration, Inc., 1999 [Report 99-34]). Base metal values in the veins reportedly are as high as 4 percent lead, 3 percent zinc, and 1 ounce of silver per ton over a ten-foot interval.

Production notes:

Reserves:

Additional comments:

The Wally Creek prospect is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Chapman and others, 1982; Placer Dome, 1989; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-34)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/29/2000

Site name(s): Morelock Creek

Site type: Mine

ARDF no.: TN033

Latitude: 65.3171 **Quadrangle:** TN B-3

Longitude: 151.3220

Location description and accuracy:
This placer mine is on Morelock Creek (Cobb, 1972, location 19). For this record, the site is at the cabin adjacent to the creek, at the east edge of section 30, T. 6 N., R. 18 W., of the Fairbanks Meridian.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:
Bedrock in the area of the Morelock Creek gold-cassiterite (tin) placer deposit consists of greenstone, metachert, dolomite, marble, calcareous schist, and siliceous mica schist (Mertie, 1934; Chapman and others, 1982). Although granitic rocks were reported by Eakin (1916), none were found in later mapping by Chapman and others (1963, 1982). The bedrock is complexly folded, faulted, and locally cut by sulfide-bearing quartz-calcite veins (Thomas and Wright, 1948 [RI 4322]; North Star Exploration, Inc., 1999 [Report 99-34]).

As early as 1901, gold and tin mining had begun on Morelock Creek, mainly near the mouths of Bonanza and Homestake creeks (Thomas and Wright, 1948 [RI 4322]). The placer deposits consist of approximately 6 feet of thawed gravels that lie on an irregular bedrock surface. The gravels, which contain boulders as large as 24 inches, are overlain by 2.5 feet of organic matter.

Although the local bedrock apparently is not the source of gold or cassiterite, the irregularities in the bedrock surface are excellent sites for collecting these heavy minerals. The gold and cassiterite are concentrated in the lower two feet of the gravels and occasionally in the upper few inches of the bedrock, where they have worked into joints (Thomas and Wright, 1948 [RI 4322]).

Early reports describe mining on Morelock Creek in the years 1937 and 1938 (Smith, 1939 [B 910-A, B 917-A]). The U.S. Bureau of Mines conducted a drilling program in the area in 1943 (Thomas and Wright, 1948 [RI 4322]). At least 23 churn drill holes were tested, including two fences across Morelock Creek and one across Bonanza Creek (TN030). In addition, test pits, caisson shafts, and open-pit mining were used to sample the Morelock Creek area. Drilling on line 8.5 showed 0.27 pound of cassiterite and 0.0085 ounce of gold per square foot of bedrock. Line 15 (on Bonanza Creek) yielded weighted averages of 0.1492 pound of cassiterite and 0.0328 ounce of gold per square foot of bedrock. Line 10 contained no cassiterite or gold.

North Star Exploration, Inc. (1999 [Report 99-34]) worked Doyon block 20 in 1998, and reported that Morelock Creek (along with other prospects) had potential for stockwork and vein gold deposits. Trenching of some of the placer deposits exposed mineralized quartz-calcite veins (TN034).

Alteration:

Age of mineralization:
Quaternary.

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 Morelock Creek area was worked using surface techniques, due to the shallow depth of the placer deposits. According to Smith (1939 [B 910-A, B 917-A]), open-cut mining was employed.
The U.S. Bureau of Mines conducted a drilling program in the area in 1943 (Thomas and Wright, 1948 [RI 4322]). At least 23 churn drill holes were tested, including two fences across Morelock Creek and one across Bonanza Creek (TN030). In addition, test pits, caisson shafts, and open- pit mining were used to sample the Morelock Creek area. Drilling on line 8.5 showed 0.27 pound of cassiterite and 0.0085 ounce of gold per square foot of bedrock. Line 15 (on Bonanza Creek) yielded weighted averages of 0.1492 pound of cassiterite and 0.0328 ounce of gold per square foot of bedrock. Line 10 contained no cassiterite or gold.

Production notes:
North Star Exploration, Inc. (1999 [Report 99-34]) reported that Morelock Creek (which is in Block 20 of the Doyon holdings) produced most of the 11,400 ounces of gold credited to the Gold Hill-Melozitna mining district.

Reserves:

Additional comments:
Morelock Creek flows through lands selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:
Eakin, 1916; Mertie, 1934; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Thomas and Wright, 1948 (RI 4322); Chapman and others, 1963; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: Thomas and Wright, 1948 (RI 4322)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (in Morelock Creek)

Site type: Prospect

ARDF no.: TN034

Latitude: 65.3167 **Quadrangle:** TN B-3

Longitude: 151.3213

Location description and accuracy:

This record represents a lode prospect exposed in the placer workings in Morelock Creek (TN033) (Cobb, 1972). The site of the Morelock Creek placer mine and lode prospect is at the cabin adjacent to the creek, at the east edge of section 30, T. 6 N., R. 18 W., of the Fairbanks Meridian.

Commodities:

Main: Au

Other: Ag, Cu, Pb, Sn, W, Zn

Ore minerals: Arsenopyrite, pyrite

Gangue minerals: Calcite, quartz

Geologic description:

Bedrock in the area of the Morelock Creek gold-cassiterite('tin') placer deposit consists of greenstone, metachert, dolomite, marble, calcareous schist, and siliceous mica schist (Mertie, 1934; Chapman and others, 1982). Although granitic rocks were reported by Eakin (1916), none were found in later mapping by Chapman and others (1963, 1982). The bedrock is complexly folded, faulted, and locally cut by sulfide-bearing quartz-calcite veins (Thomas and Wright, 1948 [RI 4322]; North Star Exploration, Inc., 1999 [Report 99-34]).

WGM, Inc., and Union Carbide Corporation respectively explored the Morelock Creek area from 1975 to 1979 and in 1982. Placer Dome had a joint venture with Doyon, Ltd., in 1988-89. North Star Exploration, Inc. (1999 [Report 99-34]) explored Doyon block 20 in 1998, and reported that Morelock Creek (along with other prospects) had potential for stockwork and vein gold deposits. Trenching of some of the placer deposits exposed mineralized quartz-calcite veins. Placer Dome (1989) reported geochemical anomalies that included gold, silver, tin, tungsten, lead, zinc, and trace amounts of copper.

The Morelock Creek vein system is oriented along a northwesterly trend (Placer Dome, 1989). It is at least 500 feet long and 25 feet wide. Placer Dome described the system as heavily fractured, structurally controlled, and containing quartz, calcite, and arsenopyrite. In one 25-foot interval, the mineralization graded 0.08 ounce of gold per ton, or more than 2.5 grams of gold per ton. The highest value was 0.10 ounce of gold per ton in a 7 foot interval. A select sample containing 25 percent arsenopyrite and 15 percent pyrite reportedly contained 5,030 parts per billion gold (about 0.15 ounce of gold per ton).

Reconnaissance soil sampling to the east in the lower Morelock Creek area showed locally anomalous lead and zinc values (North Star Exploration, Inc., 1999 [Report 99-34]). Extensive stockwork vein systems have been identified in association with the faults in the Morelock Creek area, including the intersection of a northwest fault with northeast-trending faults in the Rosa Creek and Quartz Creek drainages (North Star Exploration, Inc., 1999 [Report 99-34]).

Alteration:

Age of mineralization:

Deposit model:

Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: None

Site Status: Inactive

Workings/exploration:

WGM, Inc., and Union Carbide Corporation respectively explored the Morelock Creek area from 1975 to 1979 and in 1982. Placer Dome had a joint venture with Doyon, Ltd., in 1988-89. North Star Exploration, Inc. (1999 [Report 99-34]) explored Doyon block 20 in 1998, and reported that Morelock Creek (along with other prospects) had potential for stockwork and vein gold deposits. Trenching of some of the placer deposits exposed mineralized quartz-calcite veins. Placer Dome (1989) reported geochemical anomalies that included gold, silver, tin, tungsten, lead, zinc, and trace amounts of copper.

The Morelock Creek vein system is oriented along a northwesterly trend (Placer Dome, 1989). It is at least 500 feet long and 25 feet wide. Placer Dome described the system as heavily fractured, structurally controlled, and containing quartz, calcite, and arsenopyrite. In one 25-foot interval, the mineralization graded 0.08 ounce of gold per ton, or more than 2.5 grams of gold per ton. The highest value was 0.10 ounce of gold per ton in a 7 foot interval. A select sample containing 25 percent arsenopyrite and 15 percent pyrite reportedly contained 5,030 parts per billion gold (about 0.15 ounce of gold per ton).

Production notes:

North Star Exploration, Inc. (1999 [Report 99-34]) reported that the Morelock Creek placer mine (TN033) (which is in Block 20 of the Doyon, Ltd., holdings) produced most of the 11,400 ounces of gold credited to the Gold Hill-Melozitna mining district.

Reserves:

Additional comments:

Morelock Creek flows through lands selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Eakin, 1916; Mertie, 1934; Thomas and Wright, 1948 (RI 4322); Chapman and others, 1963; Cobb, 1972; Chapman and others, 1982; Placer Dome, 1989; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: Placer Dome, 1989

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/16/2003

Site name(s): Unnamed (west of middle Forks Creek)

Site type: Prospect

ARDF no.: TN035

Latitude: 65.4361 **Quadrangle:** TN B-3

Longitude: 151.2972

Location description and accuracy:

The site of the Forks Creek lode prospect is at an elevation of 2,900 feet, on the northeast spur of a ridge about a mile west of middle Forks Creek. The site is in the northeast quarter of section 17, T. 7 N., R. 18 W., of the Fairbanks Meridian. The location is accurate within a mile.

Commodities:

Main: W

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The country rocks in the area around the Forks Creek prospect consist of Upper Proterozoic schist, quartzite, phyllite, and slate, and Paleozoic limestone, dolomite, greenstone, and chert (Chapman and others, 1982).

North Star Exploration, Inc., reports that WGM, Inc., and Union Carbide respectively explored this area from 1977 to1982 and1979 to 1981 (North Star Exploration, Inc., 1999 [Report 99-48]). In 1979, Union Carbide Corporation discovered anomalous tungsten in soils in an area approximately 500 feet wide by 1,700 feet long. Five drill holes yielded mostly negative results (North Star Exploration, Inc., 1999 [Report 99-34]). North Star Exploration, Inc. stated that both their company and WGM, Inc., felt that there was still potential for a tungsten skarn deposit in the area.

Alteration:

Age of mineralization:

Deposit model:

Tungsten skarn(?) (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:

North Star Exploration, Inc., reports that WGM, Inc., and Union Carbide respectively explored this area from 1977 to1982 and1979 to 1981 (North Star Exploration, Inc., 1999 [Report 99-48]). In 1979, Union Carbide Corporation discovered anomalous tungsten in soils in an area approximately 500 feet wide by 1,700 feet long. Five drill holes yielded mostly negative results (North Star Exploration, Inc., 1999 [Report

99-34]).

Production notes:

Reserves:

Additional comments:

This area is on land owned or selected by Doyon, Ltd. For further information, please contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-34); North Star Exploration, Inc., 1999 (Report 99-48).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-48)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/3/2000

Site name(s): Rosa Ridge

Site type: Prospects

ARDF no.: TN036

Latitude: 65.3352 **Quadrangle:** TN B-3

Longitude: 151.2965

Location description and accuracy:

These lode occurrences are along the south end of informally-named Rosa Ridge, which forms the divide between Bonanza and Rosa creeks, about 5 miles north of the Yukon River. The site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92MW415 (Solie and others, 1993), 0.25 mile northeast of the center of section 20, T. 6 N., R. 18 W., of the Fairbanks Meridian. This location is accurate within 1000 feet.

Commodities:

Main: Zn

Other: As, Au, Bi, Cu, Pb, Sb

Ore minerals: Iron oxides, pyrite

Gangue minerals: Ankerite, quartz

Geologic description:

Bedrock in the vicinity of Rosa Ridge is chiefly Paleozoic limestone, dolomite, greenstone, and chert, and lesser amounts of schist, quartzite, phyllite, and slate (Chapman and others, 1982). The rocks are structurally complex. Bedrock at the prospects is mainly greenstone, carbonate, and micaceous quartzite with minor graphitic schist (North Star Exploration Inc., 2000 [Highly mineralized block 20]).

In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Rosa Ridge area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Rocks collected in the area included gossaneous muscovite-quartz schist, altered diabase, greenstone (with pyrite), graphitic schist, and dolomitic marble. Quartz and quartz-ankerite-iron oxide veins, some brecciated or vuggy, locally are exposed on ridges in the area. Seventeen rock samples were collected for geochemical analysis by ADGGS, and 5 (at stations 92Ha219, 92Ha220, 92MW412, and 92MW415) contained the following maximum values of one or more of the following **Commodities:** 30 parts per billion (ppb) gold, 261 parts per million (ppm) arsenic, 13 ppm antimony, 22 ppm bismuth, 87 ppm lead, 34 ppm scandium, 186 ppm zinc, 1,534 ppm manganese, and 162 ppm copper (Solie and others, 1993).

In the mid- to late 1990's, the Rosa Ridge area was explored by North Star Exploration, Inc. (North Star Exploration Inc., 2000 [Highly mineralized block 20]). Mineralization exposed along the ridge occurs as quartz-ankerite stringers, and as veinlets with carbonate-altered halos, in greenstone and micaceous quartzite. Rock, soil, and stream-sediment samples collected in the vicinity of altered greenstone on a tributary of Rosa Creek are anomalous in lead and zinc. The tributary drains quartz-veined limestone on east Rosa Ridge that is anomalous in antimony and bismuth. No follow-up work has been reported.

Alteration:

Carbonate (ankerite).

Age of mineralization:

Deposit model:

Polymetallic veins(?) (Cox and Singer, 1986; model 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c

Production Status: None

Site Status: Probably inactive

Workings/exploration:
In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Rosa Ridge area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Rocks collected in the area included gossaneous muscovite-quartz schist, altered diabase, greenstone (with pyrite), graphitic schist, and dolomitic marble. Quartz and quartz-ankerite-iron oxide veins, some brecciated or vuggy, locally are exposed on ridges in the area. Seventeen rock samples were collected for geochemical analysis by ADGGS, and 5 (at stations 92Ha219, 92Ha220, 92MW412, and 92MW415) contained the following maximum values of one or more of the following commodities: 30 parts per billion (ppb) gold, 261 parts per million (ppm) arsenic, 13 ppm antimony, 22 ppm bismuth, 87 ppm lead, 34 ppm scandium, 186 ppm zinc, 1,534 ppm manganese, and 162 ppm copper (Solie and others, 1993).

In the mid- to late 1990's, the Rosa Ridge area was explored by North Star Exploration, Inc. (North Star Exploration Inc., 2000 [Highly mineralized block 20]). Mineralization exposed along the ridge occurs as quartz-ankerite stringers, and as veinlets with carbonate-altered halos, in greenstone and micaceous quartzite. Rock, soil, and stream-sediment samples collected in the vicinity of altered greenstone on a tributary of Rosa Creek are anomalous in lead and zinc. The tributary drains quartz-veined limestone on east Rosa Ridge that is anomalous in antimony and bismuth. No follow-up work has been reported.

Production notes:

Reserves:

Additional comments:

References:
Chapman and others, 1982; Solie and others, 1993; North Star Exploration Inc., 2000 (Highly mineralized block 20).

Primary reference: North Star Exploration Inc., 2000 (Highly mineralized block 20)

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/19/2004

Site name(s): Rosa Creek

Site type: Mine

ARDF no.: TN037

Latitude: 65.3047 **Quadrangle:** TN B-3

Longitude: 151.2850

Location description and accuracy:

An unnamed placer mine about a half-mile above the mouth of Rosa Creek is marked on the Tanana B-3 map (1956 ed., rev. 1970). This site is at the mine symbol, on the western edge of section 33, T. 6 N., R. 18 W., of the Fairbanks Meridian. The site corresponds to the U.S. Bureau of Land Management site for Rosa Creek (MAS number 0020480033).

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The bedrock across which Rosa Creek flows consists of Paleozoic limestone-dolomite, greenstone, chlorite schist, phyllite, quartz-mica schist, and chert (Chapman and others, 1982). The closest granitic pluton, a Tertiary quartz monzonite stock (radiometric age of 61.8 +/- 2.5 Ma), is about 1 mile to the north (Silberman and others, 1979).

The first report of placer gold production from Rosa Creek was in 1934 (Alaska minerals locations database; MAS no. 0020480033), and there was a little placer mining on the creek in about 1950-52 (Cobb, 1981). Production figures from that period have not been published, and it is likely that the production from the Rosa Creek mine was included in the totals for placer mining on Morelock Creek (TN033). Information about more recent mining on Rosa Creek has not been made public.

According to North Star Exploration, Inc. (1999 [Report 99-34]), this and other similar placer deposits seem to occur near major faults associated with quartz vein systems and stockwork veins.

Alteration:

Age of mineralization:

Quaternary.

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: Probably inactive

Workings/exploration:

The first report of placer gold production from Rosa Creek was in 1934 (Alaska minerals locations database; MAS no. 0020480033), and there was a little placer mining on the creek in about 1950-52 (Cobb, 1981). Production figures from that period have not been published, and it is likely that the production from the Rosa Creek mine was included in the totals for placer mining on Morelock Creek (TN033). Information about more recent mining on Rosa Creek has not been made public.

Production notes:

Production from the Rosa Creek mine probably is included in the totals for placer mining on Morelock Creek (TN033).

Reserves:

Additional comments:

This site is on lands selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Silberman and others, 1979; Cobb, 1981; Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: Cobb, 1981

Reporter(s): J.E. Athey (ADGGS)

Last report date: 4/3/2001

Site name(s): Unnamed (Bonanza-Rosa Ridge)

Site type: Occurrence

ARDF no.: TN038

Latitude: 65.3678 **Quadrangle:** TN B-3

Longitude: 151.2770

Location description and accuracy:
The Bonanza-Rosa Ridge lode occurrence is at an elevation of 2,600 feet on the divide at the heads of Bonanza and Rosa creeks, about 7 miles north of the Yukon River. The site is Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 92RE04 (Solie and others, 1993), in the northwest quarter of section 9, T. 6 N., R. 18 W., of the Fairbanks Meridian. This location is accurate within 1000 feet.

Commodities:

Main: Pb, Zn

Other: As, Cr, Mn, Sb

Ore minerals:

Gangue minerals: Quartz

Geologic description:
Bedrock in the vicinity of this occurrence is Paleozoic schist, quartzite, phyllite, and slate, and subordinate limestone, dolomite, greenstone, and chert (Chapman and others, 1982). The rocks are structurally complex.
In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Bonanza-Rosa Ridge area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Rocks collected in this area (at stations 92RE04 and 92MW418) included micaceous quartzite(?) and gossaneous, quartzose calcareous semischist. A sample of the quartzite(?) contained 336 parts per million (ppm) lead and 151 ppm zinc; and a sample of the semischist contained 190 ppm arsenic, 22 ppm bismuth, 2,800 ppm chromium, 1,534 ppm manganese, and 10 ppm antimony (Solie and others, 1993).

Alteration:

Age of mineralization:

Deposit model:
Polymetallic veins(?) (Cox and Singer, 1986; model 22c).

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

Production Status: None

Site Status: Inactive

Workings/exploration:
Bedrock in the vicinity of this occurrence is Paleozoic schist, quartzite, phyllite, and slate, and subordinate limestone, dolomite, greenstone, and chert (Chapman and others, 1982). The rocks are structurally complex.
In 1992, the Alaska Division of Geological and Geophysical Surveys (ADGGS) investigated the Bonanza-

Rosa Ridge area as part of a mineral resource evaluation of State-selected lands (Solie and others, 1993). Rocks collected in this area (at stations 92RE04 and 92MW418) included micaceous quartzite(?) and gossaneous, quartzose calcareous semischist. A sample of the quartzite(?) contained 336 parts per million (ppm) lead and 151 ppm zinc; and a sample of the semischist contained 190 ppm arsenic, 22 ppm bismuth, 2,800 ppm chromium, 1,534 ppm manganese, and 10 ppm antimony (Solie and others, 1993).

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; Solie and others, 1993.

Primary reference: Solie and others, 1993

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/20/2004

Site name(s): Moosehead Rack

Site type: Prospect

ARDF no.: TN039

Latitude: 65.2500 **Quadrangle:** TN B-3

Longitude: 151.2758

Location description and accuracy:
Moosehead Rack, on the south bank of the Yukon River opposite the mouth of Morelock Creek, consists of a four-square-mile terrace rising abruptly more than 200 feet above the river to an elevation of about 900 feet. The site of this approximately located prospect is at an elevation of 600 feet at the west end of Moosehead Rack, in the northwest quarter of section 21, T. 5 N., R. 18 W., of the Fairbanks Meridian. The location is accurate to within a half-mile.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals: Chalcopyrite, pyrite, pyrrhotite

Geologic description:
The country rocks in the area of this prospect include a Cretaceous or Tertiary quartz monzonite stock, Paleozoic limestone, greenstone, and chert, and undated conglomerate, sandstone, shale, and lignite (Chapman and others, 1982). Moosehead Rack is a bedrock terrace cut by the Kaltag fault, a regional east-northeast-trending, right-lateral structure. Bedrock in the area is partly covered by Quaternary loess.
The prospect consists of pyritized hornfelsed slate and highly siliceous zones of breccia adjacent to megacrystic granite porphyry (WGM, Inc., 1998). Pyrite, pyrrhotite, and chalcopyrite locally constitute up to 6 percent of the host rock(s). Panning of some of the material yielded colors of gold. The prospect is marked by a red and yellow-white color anomaly, visible from the Yukon River.

Alteration:
Oxidation of sulfide minerals.

Age of mineralization:
Cretaceous or younger, inferred from age of granitic pluton.

Deposit model:
Porphyry Cu-Au(?) (Cox and Singer, 1986; model 20c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
20c(?)

Production Status: None

Site Status: Probably inactive

Workings/exploration:
The area has been explored by WGM, Inc. (1998). Details of their work have not been made public.

Production notes:

Reserves:

Additional comments:

Although this prospect is not on Doyon, Ltd., lands, mineral exploration of the ground is reported in documents held by Doyon, Ltd., Native Corporation. For more information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Chapman and others, 1982; WGM, Inc., 1998.

Primary reference: WGM, Inc., 1998

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/28/2000

Site name(s): UCC Stockwork

Site type: Prospect

ARDF no.: TN040

Latitude: 65.3885 **Quadrangle:** AK B-3

Longitude: 151.2575

Location description and accuracy:
The site of this lode prospect, informally called UCC Stockwork, is on a 2,900-foot knoll on an east-trending ridge, in the southeast quarter of section 33, T. 7 N., R. 18 W., of the Fairbanks Meridian.

Commodities:

Main: Au, Cu

Other:

Ore minerals: Chalcopyrite

Gangue minerals: Quartz

Geologic description:
The UCC Stockwork prospect is a quartz-chalcopyrite stockwork exposed in an area of about 1,000 square feet. It is hosted in Proterozoic or Paleozoic schist, just south of a sliver of Paleozoic carbonate (Chapman and others, 1982). The prospect was examined in 1979 by Union Carbide Corporation for base metal potential. After sampling and petrographic studies, the company concluded that the deposit was not ore grade at that time.
North Star Exploration, Inc., examined this area for Doyon, Ltd., in 1998 (North Star Exploration, Inc., 1999 [Report 99-34]). The company reported anomalous gold values at the UCC Stockwork prospect (North Star Exploration Inc., 2000 [Highly mineralized block 20]), and interpreted it as a potential quartz-stockwork gold deposit similar to the one on Morelock Creek (TN033).

Alteration:

Age of mineralization:

Deposit model:
Low-sulfide Au-quartz veins(?) (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:
UCC Stockwork was examined in 1979 by Union Carbide Corporation for base metal potential (Placer Dome, 1989). After conducting sampling and petrographic studies, the company concluded that the prospect was not ore grade at that time.
North Star Exploration, Inc., examined this area for Doyon, Ltd., in 1998 (North Star Exploration, Inc., 1999 [Report 99-34]). The company reported anomalous gold values at the UCC Stockwork prospect

(North Star Exploration Inc., 2000 [Highly mineralized block 20]), and interpreted it as a potential quartz-stockwork gold deposit similar to the one on Morelock Creek (TN033).

Production notes:

Reserves:

Additional comments:

The UCC Stockwork prospect is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Chapman and others, 1982; Placer Dome, 1989; North Star Exploration, Inc., 1999 (Report 99-34); North Star Exploration Inc., 2000 (Highly mineralized block 20).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-34)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/8/2000

Site name(s): UCC Stratabound

Site type: Prospect

ARDF no.: TN041

Latitude: 65.4021 **Quadrangle:** TN B-3

Longitude: 151.2188

Location description and accuracy:

This record represents a prospect area, informally called UCC Stratabound, at least partially in sections 26 and 27, T. 7 N., R. 18 W., of the Fairbanks Meridian. For this record, the site is at an elevation of about 1,200 feet on a south tributary of Bear Creek, near the junction of three branches of the tributary, in the southeast quarter of section 27.

Commodities:

Main: Pb, Zn

Other: Ag, Au, Cu

Ore minerals: Chalcopyrite, pyrite, pyrrhotite

Gangue minerals:

Geologic description:

The country rocks in the area of the UCC Stratabound prospect consist of Paleozoic schist (Chapman and others, 1982). A Tertiary or Cretaceous quartz monzonite pluton is exposed approximately 5 miles to the southeast. The prospect was sampled in 1979 by Union Carbide Corporation, who reported up to 10 percent combined pyrite-chalcopyrite-pyrrhotite in quartz- mica schist (North Star Exploration, Inc., 1999 [Report 99-34]). They also reported anomalous gold and silver values in geochemical samples of the sulfide-bearing rocks. After examining their data, the company decided that the deposit was sub-economic at that time (Placer Dome, 1989). Although they reported no lead or zinc values, North Star Exploration, Inc., has classified the prospect as a potential stratabound lead-zinc deposit, due to its proximity to lead-zinc mineralization at Sox-Rainey (TN043) (North Star Exploration, Inc., 1999 [Report 99-34]; North Star Exploration Inc., 2000 [Highly mineralized block 20]).

Alteration:

Age of mineralization:

Deposit model:

(Metamorphosed) Sedimentary exhalative Zn-Pb(?) (Cox and Singer, 1986; model 31a).

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

31a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

The prospect was sampled by Union Carbide Corporation in 1979 (Placer Dome, 1989). North Star Exploration, Inc. (1999 [Report 99-34]) apparently has also worked on the prospect.

Production notes:

Reserves:

Additional comments:

The UCC Stratabound prospect is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Chapman and others, 1982; Placer Dome, 1989; Silberling and others, 1994; Patton and others, 1994; North Star Exploration, Inc., 1999 (Report 99-34); North Star Exploration Inc., 2000 (Highly mineralized block 20).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-34)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/29/2000

Site name(s): Windy Creek (Windy Creek-Rosa Creek)

Site type: Prospect

ARDF no.: TN042

Latitude: 65.3129 **Quadrangle:** TN B-3

Longitude: 151.2032

Location description and accuracy:
This site represents an area of prospecting for lode deposits in the headwaters of Windy Creek. The site is at an elevation of 1,500 feet on Windy Creek, in the south half of section 26, T. 6 N., R. 18 W., of the Fairbanks Meridian. The location is accurate within 0.5 mile.

Commodities:

Main: Zn

Other: Pb

Ore minerals: Pyrite, unknown zinc and lead mineral(s)

Gangue minerals:

Geologic description:
The bedrock across which Windy Creek flows consists of Paleozoic limestone-dolomite, greenstone, chlorite schist, phyllite, quartz-mica schist, and chert (Chapman and others, 1982). The closest granitic pluton, a Tertiary quartz monzonite stock (radiometric age of 61.8 +/- 2.5 Ma), is about 1 mile to the east (Silberman and others, 1979). A small-scale map by North Star Exploration, Inc. (North Star Exploration Inc., 2000 [Windy Creek zinc prospect]) shows the local geology as folded quartz mica schist and carbonate near a Cretaceous granite body, with all units cut by northeast- and northwest-trending faults.

There is no record of placer mining on this creek. In recent years, Doyon, Ltd., has employed several different exploration companies to examine Doyon block 20 for precious and base metals (Placer Dome, 1989; North Star Exploration, Inc., 1999 [Report 99-34]; also see ARDF record TN035). WGM, Inc., and Union Carbide Corporation respectively explored the block from 1975 to 1979 and in 1982. Placer Dome had a joint venture with Doyon, Ltd., in 1988-89, and North Star Exploration, Inc., explored Doyon block 20 from 1997 to 2000.

WGM, Inc., identified zinc-in-soil geochemical anomalies in the Windy Creek area in 1977 (North Star Exploration Inc., 2000 [Windy Creek zinc prospect]). The area of the anomalies extends more than 8,000 feet in a north-northeast direction and reaches a maximum width of 700 feet. Exposed mineralization is zinc-dominant. Channel samples of mineralized carbonate breccia at a few localities assayed 5.5 percent zinc and 0.07 percent lead over a width of 7 feet. Float samples of massive pyrite and high-grade zinc ore are common in the area (North Star Exploration Inc., 2000 [Highly mineralized block 20]). A float boulder from the flank of Senatis Mountain assayed 10.3 percent zinc and 0.02 percent lead.

North Star Exploration, Inc., began exploration at Windy Creek in the late 1990's. In 1997, the company contracted for a proprietary airborne geophysical survey with a line spacing of 400 feet, and acquired detailed magnetic, radiometric, and electromagnetic data. These data, especially the flightline profiles, allowed detailed interpretations of the configuration of the mineralized zone (North Star Exploration, Inc., 2000 [Windy Creek zinc prospect]).

In 1999, North Star extended the WGM geochemical anomaly at Windy Creek with additional soil sampling. The anomalous zone was extended to almost 5 miles in length, and remains open along strike in both directions. Two new areas of bedrock zinc mineralization were discovered: a carbonate breccia with assays of up to 3.6 percent zinc and 0.2 percent lead, and a gossaneous area with sample assays of up to 3.18 percent zinc (North Star Exploration, Inc., 2000 [Windy Creek zinc prospect]).

North Star Exploration, Inc. (North Star Exploration Inc., 2000 [Windy Creek zinc prospect]) interprets the Windy Creek prospect as a zinc-rich, dolomitic carbonate replacement deposit, or possibly a zinc skarn. The company asserts that the prospect is ready to be drill-tested.

Alteration:

Age of mineralization:

Thought to be Tertiary based on proximity to a Tertiary quartz monzonite stock (radiometric age of 61.8 +/- 2.5 Ma).

Deposit model:

Zinc skarn(?) (Cox and Singer, 1986; model 18c) or
Zinc replacement body(?) (Cox and Singer, 1986; model 19a).

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

18c(?) or 19a(?)

Production Status: None

Site Status: Probably inactive

Workings/exploration:

WGM, Inc., identified zinc-in-soil geochemical anomalies in the Windy Creek area in 1977 (North Star Exploration Inc., 2000 [Windy Creek zinc prospect]). The area of the anomalies extends more than 8,000 feet in a north-northeast direction and reaches a maximum width of 700 feet. Exposed mineralization is zinc-dominant. Channel samples of mineralized carbonate breccia at a few localities assayed 5.5 percent zinc and 0.07 percent lead over a width of 7 feet. Float samples of massive pyrite and high-grade zinc ore are common in the area (North Star Exploration Inc., 2000 [Highly mineralized block 20]). A float boulder from the flank of Senatis Mountain assayed 10.3 percent zinc and 0.02 percent lead.

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Production notes:

Reserves:

Additional comments:

This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Silberman and others, 1979; Chapman and others, 1982; Placer Dome, 1989; North Star Exploration, Inc., 1999 (Report 99-34); North Star Exploration Inc., 2000 (DLR2000-17); North Star Exploration Inc., 2000 (Highly mineralized block 20); North Star Exploration Inc., 2000 (Windy Creek zinc prospect).

Primary reference: North Star Exploration Inc., 2000 (Windy Creek zinc prospect)

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 6/25/2003

Site name(s): Sox-Rainey

Site type: Prospect

ARDF no.: TN043

Latitude: 65.4297 **Quadrangle:** TN B-3

Longitude: 151.1982

Location description and accuracy:

This lode occurrence, informally known as Sox-Rainey, is at an elevation of about 2,000 feet, about 0.3 mile south-southeast of the center of section 14, T. 7 N., R. 18 W., of the Fairbanks Meridian. The location is accurate within a mile.

Commodities:

Main: Cu, Pb, Zn

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The Sox-Rainey area is underlain by Mesozoic marine metasedimentary rocks and mafic and ultramafic igneous rocks that are in thrust(?) contact with Paleozoic or Upper Precambrian schist, quartzite, and phyllite (Mertie, 1934; Chapman and others, 1982). The closest granitic pluton is Tertiary or Cretaceous (K-Ar age date of 61.8 +/- 2.5 Ma) quartz monzonite (Silberman and others, 1979), approximately 7 miles to the southeast.

This prospect is listed on Doyon, Ltd., proprietary maps as a potential lead-zinc-copper deposit like the UCC Stratabound prospect (TN041), but no specific information about the Sox-Rainey prospect has been made public (North Star Exploration, Inc., 1999 [Report 99-34]).

Alteration:

Age of mineralization:

Deposit model:

(Metamorphosed) Sedimentary exhalative Zn-Pb(?) (Cox and Singer, 1986; model 31a).

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

31a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

North Star Exploration, Inc., explored the Sox-Rainey area under an agreement with Doyon, Ltd., for Doyon Block 20 lands. This prospect is listed on Doyon, Ltd., proprietary maps as a potential lead-zinc-copper deposit like the UCC Stratabound prospect (TN041), but no specific information about the Sox-Rainey prospect has been made public (North Star Exploration, Inc., 1999 [Report 99-34]).

Production notes:

Reserves:

Additional comments:

This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 1 Doyon Place, Suite 300, Fairbanks, Alaska, 99701-2941.

References:

Mertie, 1934; Silberman and others, 1979; Chapman and others, 1982; North Star Exploration, Inc., 1999 (Report 99-34).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-34)

Reporter(s): J.E. Athey (ADGGS)

Last report date: 4/3/2001

Site name(s): Unnamed (near Garnet Creek)

Site type: Occurrence

ARDF no.: TN044

Latitude: 65.3476 **Quadrangle:** TN B-1

Longitude: 150.4566

Location description and accuracy:
This site represents a rock sample collected by the Alaska Division of Geological and Geophysical Surveys (ADGGS) from the west side of Garnet Creek at 1000-foot elevation, approximately 0.5 mile downstream from the junction of Garnet and Rock creeks (sample 96KC192A, Liss and others, 1997). The sample location is in the northwest quarter of section 16, T. 6 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 1000 feet.

Commodities:

Main: Au

Other: Sb

Ore minerals: Limonite

Gangue minerals:

Geologic description:
Bedrock in the Garnet Creek area consists of Triassic to Mississippian Rampart Group basalt, gabbro, and sedimentary rocks in fault contact with Tertiary basalt and rhyolite (Reifenstuhl and others, 1997 [RI-15a]). Garnet Creek appears to follow the trace of a high-angle fault. At this site, the west side of the creek is bordered by steep cliffs of volcanic rocks (Karen Clautice, unpub. field notes, 1996).
A sample (96KC192A) of a 10-inch-wide zone of orange-brown limonite in light gray aphanitic rhyolite contained 227 parts per billion gold and 14 parts per million antimony (Liss and others, 1997). The limonite appears to coat an east-trending joint that dips 70N. A cribbed shaft near the junction of Garnet and Rock creeks about 0.5 mile from this site indicates placer gold prospecting.

Alteration:

Age of mineralization:
Tertiary or younger, inferred from the age of the volcanic host rocks.

Deposit model:
Low-sulfide Au-quartz veins(?) (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:
A sample (96KC192A) of a 10-inch-wide zone of orange-brown limonite in light gray aphanitic rhyolite contained 227 parts per billion gold and 14 parts per million antimony (Liss and others, 1997). The limo-

nite appears to coat an east-trending joint that dips 70N. A cribbed shaft near the junction of Garnet and Rock creeks about 0.5 mile from this site indicates placer gold prospecting.

Production notes:

Reserves:

Additional comments:

References:

Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Liss and others, 1997

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 7/8/2003

Site name(s): Unnamed (Sixmile Creek Headwaters)

Site type: Occurrence

ARDF no.: TN045

Latitude: 65.3839 **Quadrangle:** TN B-1

Longitude: 150.3883

Location description and accuracy:
This occurrence is at an elevation of about 2,000 feet on a ridge at the head of Sixmile Creek. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 96BT274 (Liss and others, 1997), at the southwest corner of section 35, T. 7 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Ag, Cu, Pb

Other: Bi, Cd, Zn

Ore minerals: Malachite, sulfides

Gangue minerals: Quartz

Geologic description:
The headwaters of Sixmile Creek drain an area underlain by Triassic to Mississippian, Rampart Group gabbro sills intercalated with basaltic flows, diabase, and diverse sedimentary rocks (Reifenstuhl and others, 1997 [RI 97-15a]). The rocks locally are penetratively deformed, regionally metamorphosed to low greenschist grade, fractured, sheared, and altered, and display mylonitic fabric. The Rampart Group rocks are both unconformably overlain by, and in high-angle fault contact with, Tertiary basalt and rhyolite.
A sample (96BT274) of a 3-inch-thick, malachite-stained, quartz-sulfide vein in slightly chloritized greenstone/diabase at the head of Sixmile Creek contained 33.6 parts per million (ppm) silver, 4,637 ppm copper, 4,107 ppm zinc, 11.8 ppm cobalt, and 62.1 ppm bismuth (Liss and others, 1997). There is no record of exploration or mining at this site.

Alteration:
Chlorite.

Age of mineralization:

Deposit model:
Quartz-sulfide vein(?), polymetallic vein(?) (Cox and Singer, 1986; model 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c?

Production Status: None

Site Status: Inactive

Workings/exploration:
A sample (96BT274) of a 3-inch-thick, malachite-stained, quartz-sulfide vein in slightly chloritized greenstone/diabase at the head of Sixmile Creek contained 33.6 parts per million (ppm) silver, 4,637 ppm

copper, 4,107 ppm zinc, 11.8 ppm cobalt, and 62.1 ppm bismuth (Liss and others, 1997). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Liss and others, 1997

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/18/2004

Site name(s): Avnet; Buzby

Site type: Prospect

ARDF no.: TN046

Latitude: 65.2610 **Quadrangle:** TN B-1

Longitude: 150.3701

Location description and accuracy:

The Avnet prospect is at an elevation of about 2,850 feet on a ridge separating the Rock and Granite creeks drainages, 4 miles southwest of Baldry Mountain. It is in the northeast quarter of section 14, T. 5 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within several hundred feet. The site corresponds to location 7 of Cobb (1972), and roughly to the site for Avnet, U.S. Bureau of Land Management MAS number 0020480009.

Commodities:

Main: Mn

Other: Ag

Ore minerals: Psilomelane, pyrolusite

Gangue minerals: Quartz

Geologic description:

The country rocks at the Avnet manganese prospect include Paleozoic limestone, slate, chert, and greenstone that grade into calcareous schist, quartz-mica schist, and quartzite (Thomas, 1965). The prospect is at or near a northeast-trending thrust fault in the chert unit (Reifenstuhl and others, 1997 [RI 97-15a]).

This poorly exposed deposit reportedly was discovered in 1952 by Paul Bittner (Thomas, 1965). Frost-heaved rock chips at the surface presumably represent rock directly beneath. The rubble reportedly is light colored, weakly calcareous quartzite, schist, and phyllite. Development work consists of a trench 40 feet long, 3-feet wide, and 2 feet deep, two caved pits, and some surface scrapings (Thomas, 1965).

The ore mineral at the Avnet prospect is psilomelane (manganese oxide), which occurs as small, frost-heaved fragments in a zone 3,000 feet long and 600 feet wide at the crest and on the northwest side of a ridge. The psilomelane is in the quartzite, where it forms small, irregular masses up to 3 inches in largest dimension, and in vein quartz, where it forms lattices of thin seams. It also coats some of the rubble. Thomas (1965) speculated that the psilomelane is hydrothermal in origin. Minor pyrolusite occurs with the psilomelane (Foley, 1992).

Thomas (1965) collected 32 samples of frost-heaved material in 1964. They assayed 0.64 to 34.4 percent manganese, with an an average value of 15.78 percent. Silver values ranged from below the limit of detection to 0.28 ounce per ton. The samples were assayed for gold but all were below the detection limit. Liss and others (1997) collected a sample (96KC096) of manganese-rich quartz veins in tan, sugary quartzite rubble near a prospect pit. It contained more than 20,000 parts per million (ppm) manganese, and 499 ppm gallium, 195 ppm copper, 220 ppm zinc, and 10.2 ppm cadmium Values of other elements were not anomalous.

Alteration:

Age of mineralization:

The mineralization presumably is younger than the Ordovician age assigned to many of the local rocks in the area (Chapman and others, 1982).

Deposit model:
Epithermal Mn (Cox and Singer, 1986; model 25g) or Volcanogenic Mn (Cox and Singer, 1986; model 24c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
24c or 25g

Production Status: None

Site Status: Inactive

Workings/exploration:
Workings consisted of one trench and two pits, since caved (Thomas, 1965).

Production notes:

Reserves:

Additional comments:

References:
Thomas, 1965; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Foley, 1992; Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Thomas, 1965

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/21/2003

Site name(s): Unnamed (Northwest Baldry Mountain)

Site type: Occurrence

ARDF no.: TN047

Latitude: 65.3185 **Quadrangle:** TN B-1

Longitude: 150.3566

Location description and accuracy:

This occurrence is at an elevation of about 2,800 feet on a ridge approximately 1.5 miles northwest of Baldry Mountain. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 96KC067 (Liss and others, 1997), at the west-central edge of section 25, T. 6 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Zn

Other: Cu, Mn?, Mo, Pb

Ore minerals: Limonite

Gangue minerals: Quartz

Geologic description:

This occurrence is near the axis of a northeast-trending, overturned syncline composed mainly of lower Paleozoic(?) sericitic chert and siliceous argillite (Reifenstuhl and others, 1997 [PDF 97-15a]). The chert and argillite are cut by northeast-trending thrust faults.

A sample (96KC067) of vuggy, limonite- and manganese(?)-stained quartz in black quartzite or chert on a ridge northwest of Baldrey Mountain contained 240 parts per million (ppm) copper, 419 ppm molybdenum, 114 ppm lead, and 560 ppm zinc (Liss and others, 1997). There is no record of exploration or mining at this site.

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: None

Site Status: Inactive

Workings/exploration:

A sample (96KC067) of vuggy, limonite- and manganese(?)-stained quartz in black quartzite or chert on a ridge northwest of Baldrey Mountain contained 240 parts per million (ppm) copper, 419 ppm molybdenum, 114 ppm lead, and 560 ppm zinc (Liss and others, 1997). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Liss and others, 1997

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/18/2004

Site name(s): Baldry Mountain

Site type: Prospect

ARDF no.: TN048

Latitude: 65.3055 **Quadrangle:** TN B-1

Longitude: 150.3412

Location description and accuracy:

This manganese lode occurrence is about 1.1 miles west of the top of Baldry Mountain. The site is at an elevation of 2,500 feet, just north of the center of section 36, T. 6 N., R. 14 W., of the Fairbanks Meridian. The site corresponds to location 10 of Cobb (1972), and roughly to the U.S. Bureau of Land Management site for Baldry Mountain (MAS number 0020480008). The location is accurate within 2 miles.

Commodities:

Main: Mn

Other:

Ore minerals: Psilomelane

Gangue minerals:

Geologic description:

This lode occurrence is near the axis of a northeast-trending, overturned syncline mainly of gray, finely laminated, recrystallized sericitic chert and siliceous argillite, commonly with phyllitic argillite partings (Reifenstuhl and others, 1997 [PDF 97-15a]). The rocks are assigned an early Paleozoic or Proterozoic age based on tentative correlation with the Livengood Dome Chert. The chert and argillite are cut by northeast-trending thrust faults.

Burand and Saunders (1966) reported some exploration of a manganese (psilomelane) deposit west of Baldry Mountain.

Alteration:

Age of mineralization:

Deposit model:

Epithermal Mn (Cox and Singer, 1986; model 25g) or Replacement Mn (Cox and Singer, 1986; model 19b).

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

25g or 19b

Production Status: None

Site Status: Inactive

Workings/exploration:

Burand and Saunders (1966) reported some exploration of a manganese (psilomelane) deposit west of Baldry Mountain.

Production notes:

Reserves:

Additional comments:

References:

Burand and Saunders, 1966; Cobb, 1972; Chapman and others, 1982; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Burand and Saunders, 1966

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 7/16/2003

Site name(s): Unnamed (north of Granite Creek)

Site type: Occurrence

ARDF no.: TN049

Latitude: 65.2575 **Quadrangle:** TN B-1

Longitude: 150.3273

Location description and accuracy:
This occurrence is at an elevation of 2,500 feet, on a south-facing ridge approximately 3.5 miles south-southwest of Baldry Mountain and 3 miles northwest of Eureka Dome. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 96RB038 (Liss and others, 1997), near the east edge of the southeast quarter of section 13, T. 5 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Zn

Other: As

Ore minerals:

Gangue minerals:

Geologic description:
Bedrock in the Granite Creek area consists of Proterozoic(?) or Lower Cambrian(?) cherty argillite, chert, greenstone, and limestone in thrust fault contact with Ordovician chert, cherty argillite, limestone, and basaltic to intermediate metavolcanic rocks (Reifenstuhl and others, 1997 [PDF 97-15a]). No plutonic rocks are mapped in the local area. The rocks are cut by northwest-trending thrust faults and northeast- and northwest-trending high-angle faults.
A sample (96RB038) of argillite interbedded with limy mudstone on a ridge between Baldry Mountain and Eureka Dome contained 422 parts per million (ppm) zinc and 457 ppm arsenic (Liss and others, 1997). There is no record of exploration or mining at this site.

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:
A sample (96RB038) of argillite interbedded with limy mudstone on a ridge between Baldry Mountain and Eureka Dome contained 422 parts per million (ppm) zinc and 457 ppm arsenic (Liss and others, 1997). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Liss and others, 1997

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/19/2004

Site name(s): Unnamed (near Ruby Creek)

Site type: Occurrence

ARDF no.: TN050

Latitude: 65.3911 **Quadrangle:** TN B-1

Longitude: 150.2623

Location description and accuracy:

This site represents a sample of a copper-quartz-gold vein on the ridge northwest of middle Ruby Creek, 4 miles upstream of its confluence with Minook Creek, and 3 miles upstream from the placer workings on Ruby Creek (TN053; Reifenstuhl and others, 1997 [PDF 97-29h]). The site is at an elevation of 2,000 feet, in the northeast quarter of section 32, T. 7 N., R. 13 W., of the Fairbanks Meridian. The location is accurate.

Commodities:

Main: Au

Other: Ag, Cu

Ore minerals: Malachite

Gangue minerals: Quartz

Geologic description:

The ridge between Russian Creek and Ruby Creek is underlain by pelitic schist and subordinate marble and quartzite, in high-angle fault contact with Triassic (Rampart Group) argillite and chert, gabbro, and diverse schists (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The area is cut by the northeast-trending Victoria Creek fault zone, a major dextral fault connecting the Tintina and Kaltag faults (Reifenstuhl and others, 1997 [RI 97-15a]).

In 1996, the Alaska Division of Geological and Geophysical Surveys sampled a 3-foot wide, quartz breccia zone in quartzite on Ruth Creek ridge, about 3.5 miles upstream from the Ruby Creek (TN053) placer deposit (Liss and others, 1997). The sample (number 96RN191) contained 42 parts per billion gold, 3,678 parts per million (ppm) copper, 8.7 ppm silver, 100 ppm cobalt, and 2.1 ppm tellurium. The breccia zone strikes N50E and is marked by prominent copper staining. White mica (sericite) from a quartz vein in this breccia zone yielded an Ar/Ar isotopic age of 61.2 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]). Such veins may be the source of some of the placer gold in Ruby Creek.

Alteration:

Age of mineralization:

White mica (sericite) from a quartz vein in this breccia zone yielded an Ar/Ar isotopic age of 61.2 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]).

Deposit model:

Low-sulfide Au-quartz veins(?) (Cox and Singer, 1986; model 36a).

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

36a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

In 1996, the Alaska Division of Geological and Geophysical Surveys sampled a 3-foot wide, quartz breccia zone in quartzite on Ruth Creek ridge, about 3.5 miles upstream from the Ruby Creek (TN053) placer deposit (Liss and others, 1997). The sample (number 96RN191) contained 42 parts per billion gold, 3,678 parts per million (ppm) copper, 8.7 ppm silver, 100 ppm cobalt, and 2.1 ppm tellurium.

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; Liss and others, 1997; Reifenstuhl and others, 1997 (PDF 97-29h); Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Reifenstuhl and others, 1997 (PDF 97-29h)

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/15/2003

Site name(s): Granite Creek

Site type: Prospect

ARDF no.: TN051

Latitude: 65.2791 **Quadrangle:** TN B-1

Longitude: 150.2046

Location description and accuracy:
Mining claims were staked in 1973, followed by placer mining, along Granite Creek and on Boulder Creek at its junction with Granite Creek (Alaska Kardex files). The location given in the U.S. Bureau of Land Management MAS system (MAS number 0020480079) is in the northwest quarter of section 10, T. 5 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within about 500 feet.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:
Bedrock in the Granite and Boulder creeks area consists of Triassic or Permian siliceous and locally carbonaceous argillite in thrust contact with Proterozoic(?) or Cambrian(?) cherty argillite, chert, and limestone (Reifenstuhl and others, 1997 [RI 97-15a]). No igneous rocks are mapped in the local area. The rocks are cut by northwest-trending, high-angle faults.
Mining claims were staked in 1973 along Granite Creek and at the junction of Boulder Creek with Granite Creek (Alaska Kardex files). Eight to fifteen claims were worked intermittently from 1974 to at least 1993. Affidavits of annual labor list prospecting, test sluicing, and test pitting. There is no record of production.

Alteration:

Age of mineralization:
Quaternary.

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: Probably inactive

Workings/exploration:
Mining claims were staked in 1973 along Granite Creek and at the junction of Boulder Creek with Granite Creek (Alaska Kardex files). Eight to fifteen claims were worked intermittently from 1974 to at least 1993. Affidavits of annual labor list prospecting, test sluicing, and test pitting.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/7/2004

Site name(s): Slate Creek

Site type: Mine

ARDF no.: TN052

Latitude: 65.3629 **Quadrangle:** TN B-1

Longitude: 150.1683

Location description and accuracy:

The Slate Creek placer mine is mainly in section 11, T. 6 N., R. 13 W., of the Fairbanks Meridian. The workings probably extend upstream for about a mile from a point about a mile above the junction of Minook Creek. The site is at the approximate midpoint of the workings, near the center of section 11. The location is accurate. The site corresponds to location 44 of Cobb (1972), and includes the location of Slate Creek, U.S. Bureau of Land Management MAS number 0020480035.

Commodities:

Main: Au

Other: Ag, Ba, Cu

Ore minerals: Barite, gold, native copper, native silver

Gangue minerals:

Geologic description:

Bedrock in the Slate Creek area consists chiefly of northeast-trending, lower Paleozoic or Proterozoic cherty argillite, calcareous siltstone and sandstone, chert, metavolcanic rocks, and limestone (Mertie, 1934; Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The rocks are cut and stacked by a series of thrust faults. The creek follows a fault for much of its length.

Slate Creek heads in lower Paleozoic chert, cherty argillite, and limestone. As the creek takes a northeasterly course and follows a fault, the north bank is calcareous siltstone and sandstone and the south bank is mainly chert. The placer deposit is centered at the approximate intersection of the northeasterly fault with a north-trending fault.

Slate Creek has a V-shaped valley near its mouth and an open valley farther upstream. According to Hess (1908), there are numerous quartz veins that he believed were the source of the gold. The gravels consist mainly of various sedimentary and metasedimentary rocks, along with some vein quartz and greenstone.

Mining began in 1902 (Collier, 1903) and was concentrated about 2 miles above the mouth of the creek. Drifting techniques were used initially (Hess, 1908). Prindle and Hess (1905) reported that the gravels were up to 26 feet thick with the gold concentrated in the bottom 3 feet of gravel and top 1.5 feet of bedrock. The gold-bearing gravels are both in bench and stream placers. The bench placers are only on the northwest side of the creek, 15 to 20 feet above the current channel, and consist of 5 feet of worn gravel overlain by 10-12 feet of muck. Mertie (1934) reported that the weathered bedrock contains clayey material that is yellowish brown and may contain gold. He hypothesized that much of the gold appears to have been derived from this bedrock.

The gold recovered from Slate Creek included nuggets that were several ounces in size (Mertie, 1934), and had a fineness of 915. Sluicing is aided by the usually good supply of water (one measurement equaled 560 miners inches) (Avnet, 1948). The placer also reportedly contains cobbles of barite, and nuggets of native silver and native copper (Prindle and Hess, 1905).

One property, mined on Slate Creek from 1912 continuously until 1941, consisted of 13 placer claims and stretched from the mouth of the creek upstream for 3.25 miles (Avnet, 1948). In the approximately 30 years that the property was mined, about 46,000 square feet of placer ground was mined by sluicing to wash away gravels to bedrock. Exposed nuggets were picked up by hand. This property subsequently was sold to Hilliard Avnet. By 1948, approximately 450,000 square feet of placer ground remained to be mined below the old workings. Two small deposits of gravel, one 205 square feet in surface area and the other a 17-cubic-yard body in a drift mine, respectively produced $141.69 and $121.00 in gold (gold at $35 per ounce) (Avnet, 1948). Assessment work by Hilliard Avnet was performed in 1957.

There were active mining claims on Slate Creek in 1967 (Heiner and others, 1968), and William Anderson ran a bulldozer on the creek in 1975 (Carnes, 1976). In 1984, Thanksgiving Mining Company used a backhoe to trench placer ground on Slate and Thanksgiving (TN118) creeks (Eakins and others, 1985). John Shilling sluiced on Slate Creek in 1990 (Swainbank and others, 1991). In 1997, Slate Creek Mining explored for placer gold and Don Harris mined (Swainbank and others, 1998). Don Harris stripped 5,000 cubic yards of overburden with bulldozers and a backhoe, and sluiced 6,500 cubic yards of gravel (Alaska Kardex files). Szumigala and Swainbank (1999) reported active mining on Slate Creek by Slate Creek Mining in 1998.

The only published estimate of production from Slate Creek was $15,000 worth of gold (about 725 ounces at $20.67 per ounce), mined through the fall of 1904 (Hess, 1908).

Newberry and Clautice (1997) analyzed four gold grains from Slate Creek by electron microprobe. Two of the grains are not zoned, contain bismuth-tellurium inclusions, and have respective silver and mercury compositions of 20 percent and 1 percent. They concluded that the grains were derived from a plutonic gold source like that at Elephant Mountain (TN067).

Alteration:

Age of mineralization:
Quaternary.

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: Active?

Workings/exploration:

Both drift and surface workings occur on Slate Creek. Initial drift mining two miles from the mouth of Slate Creek was in gravels 26 feet thick (Prindle and Hess, 1905). Later reports (including Mertie, 1934) describe surface workings and ground sluicing operations. Mining on Slate Creek was reported from 1902-1916 and 1926-1941.

One property, mined on Slate Creek from 1912 continuously until 1941, consisted of 13 placer claims and stretched from the mouth of the creek upstream for 3.25 miles (Avnet, 1948). In the approximately 30 years that the property was mined, about 46,000 square feet of placer ground was mined by sluicing to wash away gravels to bedrock. Exposed nuggets were picked up by hand. This property subsequently was sold to Hilliard Avnet. By 1948, approximately 450,000 square feet of placer ground remained to be mined below the old workings. Two small deposits of gravel, one 205 square feet in surface area and the other a 17-cubic-yard body in a drift mine, respectively produced $141.69 and $121.00 in gold (gold at $35 per ounce) (Avnet, 1948).

There were active mining claims on Slate Creek in 1967 (Heiner and others, 1968), and William Anderson ran a bulldozer on Slate Creek in 1975 (Carnes, 1976). In 1984, Thanksgiving Mining Company used a backhoe to trench placer ground on Slate and Thanksgiving Creeks (Eakins and others, 1985). John Shilling sluiced on Slate Creek in 1990 (Swainbank and others, 1991). In 1997, Slate Creek Mining explored for placer gold and Don Harris mined (Swainbank and others, 1998). Don Harris stripped 5,000 cubic yards of overburden with bulldozers and a backhoe, and sluiced 6,500 cubic yards of gravel (Alaska Kardex files). Szumigala and Swainbank (1999) reported active mining on Slate Creek by Slate Creek Mining in 1998.

Production notes:

Early records reported estimated recovery of $15,000 (or 725 ounces) worth of gold (at $20.67 per ounce) mined by the fall of 1904 (Hess, 1908).

Reserves:

Additional comments:

References:

Collier, 1903; Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Avnet, 1948; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Chapman and others, 1982; Eakins and others, 1985; Swainbank and others, 1991; Newberry and Clautice, 1997; Reifenstuhl and others, 1997 (RI 97-15a); Swainbank and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 2/10/2004

Site name(s): Ruby Creek

Site type: Mine

ARDF no.: TN053

Latitude: 65.4042 **Quadrangle:** TN B-1

Longitude: 150.1484

Location description and accuracy:

The Ruby Creek placer mine is on lower Ruby Creek, about 0.5 mile from its confluence with Minook Creek. The site is at the mine symbol near the western edge of section 25, T. 7 N., R. 13 W., of the Fairbanks Meridian. The location is accurate. The location corresponds to map number 46 of Cobb (1972), and to Ruby Creek, U.S. Bureau of Land Management MAS number 0020480036.

Commodities:

Main: Au

Other: Ag, Bi, Cu, garnet, Pb

Ore minerals: Galena, garnet, gold, native bismuth, native copper, native silver

Gangue minerals:

Geologic description:

Ruby Creek drains an area underlain by Triassic (Rampart Group) argillite and chert, Triassic gabbro, and diverse schists (Mertie, 1934; Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The placer mine is at the easternmost point of contact between Ruby Creek and the gabbro. The lower portion of the creek is deeply incised, and contains alluvial deposits 300 to 500 feet wide and 5 to 7 feet thick (Mertie, 1934).

Mining on Ruby Creek was first reported by Collier (1903). The gold is concentrated on the bedrock surface and is evenly distributed across the entire width of the gravel deposits (Mertie, 1934). The deposits extend a mile and a half upstream from the mouth of Ruby Creek (Hess, 1908). The gold from Ruby Creek is iron-stained and rougher than the gold from Minook (TN054) and Hunter (TN062) creeks (Mertie, 1934).

Other heavy minerals in the placer concentrates included garnet, barite, and silver nuggets up to 2 ounces (Cobb, 1973). Burand and Saunders (1966) described native bismuth in a concentrate and also referred to reports of native copper and galena. Ruby Creek contains unfractured, euhedral garnets of possible gem quality (T.K. Bundtzen, oral commun., 2001).

Mining in the area was intermittent from 1902 to 1916. Production through the fall of 1904 was worth about $13,500 in gold (Hess, 1908), equivalent to about 650 ounces of gold at $20.67 per ounce. Harry Havrilack mined on Ruby Creek 1/4 mile from the mouth in 1957 and 1962 (Saunders, 1957 [MR 194-17]; Saunders, 1962), and mining was underway in 1967 (Heiner and others, 1968). Harry Havrilack operated a bulldozer on Ruby Creek in 1975 (Carnes, 1976). There is no record of further activity until Bundtzen and others (1992) reported that Williams Mining operated on Ruby Creek in 1991.

An auriferous, copper-bearing quartz vein (TN050) 3.5 miles upstream from the Ruby Creek placer deposit yielded an Ar40/Ar39 isotopic age of 61.2 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]). Such veins may be the source of some of the placer gold. Hess (1908) speculated that the gold was locally derived from carbonaceous slate containing disseminated pyrite.

Alteration:

Age of mineralization:

Quaternary.

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 on Ruby Creek was first reported by Collier (1903). The placer workings on Ruby Creek appear to have been surficial. At least one report describes using a hydraulic plant in mining (Brooks, 1907). Harry Havrilack mined on Ruby Creek 1/4 mile from the mouth in 1957 and 1962 (Saunders, 1957 [MR 194-17]; Saunders, 1962), and mining was underway in 1967 (Heiner and others, 1968). Harry Havrilack operated a bulldozer on Ruby Creek in 1975 (Carnes, 1976). In 1991, Williams Mining Company operated on Ruby Creek (Bundtzen and others, 1992).

Production notes:
Production through the fall of 1904 was worth about $13,500 in gold (Hess, 1908), equivalent to about 650 ounces of gold at $20.67 per ounce.

Reserves:

Additional comments:

References:
Collier, 1903; Prindle and Hess, 1905; Prindle, 1906; Brooks, 1907; Hess, 1908; Mertie, 1934; Saunders, 1957 (MR 194-17); Saunders, 1962; Burand and Saunders, 1966; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1973; Chapman and others, 1982; Bundtzen and others, 1992; Reifenstuhl and others, 1997 (PDF 97-29h); Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/7/2000

Site name(s): Minook Creek

Site type: Mine

ARDF no.: TN054

Latitude: 65.3839 **Quadrangle:** TN B-1

Longitude: 150.1255

Location description and accuracy:

Placer gold has been mined from a two mile stretch of Minook Creek between the junctions of Ruby (TN053) and Slate (TN052) creeks. The site is at the approximate midpoint of the workings, in the southeast quarter of section 36, T. 7 N., R. 13 W., of the Fairbanks Meridian. The site corresponds to location 45 of Cobb (1972), and roughly to Minook Creek, U.S. Bureau of Land Management MAS number 0020480085.

Commodities:

Main: Au

Other: Ag

Ore minerals: Gold, native silver

Gangue minerals:

Geologic description:

Minook Creek is in a steeply incised, V-shaped valley, and has several gold-bearing tributaries. On the east, they include Hunter (TN062), Little Minook (TN066), Hoosier (TN059), Chapman (TN056), Little Minook Jr. (TN064), and Florida (TN058) creeks. On the west, they include Ruby (TN053) and Slate (TN052) creeks. It is possible that much of the reported mining on Minook Creek was on tributaries.

Minook Creek flows along a high-angle fault, with indicated west-side uplift (Reifenstuhl and others, 1997 [RI 97-15a]). In the vicinity of the placer mining, the creek flows across Lower Paleozoic or Proterozoic calcareous siltstone, sandstone, chert, and quartzite (Chapman and others, 1982).

Mining on Minook Creek started around 1902 (Collier, 1903). The gold is not in the present stream bed, but in multiple, variously developed terraces ranging from several feet to approximately 800 feet above the present channel (Eakin, 1913). The lowest bench is 25 feet above the present stream bed and has proved to be the most productive. Hess (1908) reported that most of the gold was taken from tributaries, where small sections contained as much as $3-$4 per cubic yard (gold at $20.67 per ounce). The gradient on Minook Creek is approximately 40 feet per mile in the lower stretches where gold has been reported (Waters, 1934). Native silver nuggets also occur in the placers (Hess, 1908).

Around 1931, after the early period of small-scale mining, larger scale mining was considered (Mertie, 1934), but none was ever undertaken, because the distance to water for sluicing is too great. Mining has remained small-scale, and the last recorded activity was in 1967 (Smith, 1942; Saunders, 1962; Heiner and others, 1968). The only production specific to Minook Creek was $10,000 through the fall of 1904 (Hess, 1908), equivalent to approximately 485 ounces of gold (Cobb, 1977).

White mica from a quartz vein one mile west of Minook Creek, and due west of McDonald Bar has an Ar40/Ar39 plateau age of 73.1 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]). The sample site is downstream from the Minook Creek placer, but similar quartz veins upstream may be the source of some of the placer gold.

Alteration:

Age of mineralization:

Quaternary.

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:
Minook Creek was mined by surface workings, including hydraulicking (Mertie, 1934). The mining appears to have been spotty, predominantly in the lowest, best-formed benches. Hess (1908) stated that most of the production was from tributaries of Minook Creek, and that gold from Minook Creek came from the central portion of the valley, partly by bar diggings and partly by drifting.

Around 1931, after the early period of small-scale mining, larger scale mining was considered (Mertie, 1934), but none was ever undertaken, because the distance to water for sluicing is too great. Mining has remained small-scale, and the last recorded activity was in 1967 (Smith, 1942; Saunders, 1962; Heiner and others, 1968).

Production notes:
By 1904, Minook Creek had produced approximately $10,000 in gold (Hess, 1908), equivalent to approximately 485 ounces of gold (Cobb, 1977).

Reserves:

Additional comments:

References:
Collier, 1903; Hess, 1908; Eakin, 1913; Mertie, 1934; Waters, 1934; Smith, 1942; Saunders, 1962; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1997 (PDF 97-29h); Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Mertie, 1934; Cobb, 1977

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (Rampart road, lower Minook Creek)

Site type: Occurrence

ARDF no.: TN055

Latitude: 65.4918 **Quadrangle:** TN B-1

Longitude: 150.1157

Location description and accuracy:

This occurrence is at an elevation of about 600 feet on the west side of Minook Creek, and 380 feet above the Rampart road. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 96SL220 (Liss and others, 1997), about at the middle of the west boundary of section 30, T. 8 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Cu

Other:

Ore minerals: Malachite, pyrite

Gangue minerals:

Geologic description:

Bedrock in the lower Minook Creek area consists of Lower Tertiary rhyolite and basalt that unconformably overlie Triassic to Mississippian Rampart Group argillite, chert, gabbro, and diverse sedimentary and low-grade metasedimentary rocks (Reifenstuhl and others, 1997 [PDF 97-15a]). No plutonic rocks are mapped in the area, which is cut by northeast- and north-trending high-angle faults. The bedrock at this occurrence is light-colored rhyolite that on the west side of Minook Creek is mostly covered by Quaternary unconsolidated deposits.

A sample (96SL220) of [Rampart Group] copper stained, altered volcanic rock from the west side of the Rampart road about 0.5 mile below the junction of Hunter and Minook creeks contained 971 parts per million (ppm) copper and 6 ppm bismuth (Liss and others, 1997). A sample (96SL219) of Rampart Group pyritic volcanic(?) rock contained 128 ppm copper. There is no record of exploration or mining at this site.

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:

A sample (96SL220) of [Rampart Group] copper stained, altered volcanic rock from the west side of the Rampart road about 0.5 mile below the junction of Hunter and Minook creeks contained 971 parts per million (ppm) copper and 6 ppm bismuth (Liss and others, 1997). A sample (96SL219) of Rampart Group pyritic volcanic(?) rock contained 128 ppm copper. There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Liss and others, 1997

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/19/2004

Site name(s): Chapman Creek

Site type: Mine

ARDF no.: TN056

Latitude: 65.3179 **Quadrangle:** TN B-1

Longitude: 150.1145

Location description and accuracy:

The Chapman Creek placer mine is at the west edge of section 30, T. 6 N., R. 12 W., of the Fairbanks Meridian. The site corresponds to location 43 of Cobb (1972), and is approximately 1 mile downstream from the U.S. Bureau of Land Management location of Chapman Creek (MAS number 0020480081).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Chapman Creek drains an area underlain by Triassic to Cretaceous sandstone, shale, and argillite (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). Granite of unknown age crops out in the headwaters of Chapman Creek (Burand and Saunders, 1966). The main channel follows a high-angle fault.

Very little has been published about placer mining on Chapman Creek. Ellsworth (1910) reported prospecting on the creek in 1909. In 1912, four men mined on Chapman Creek (Ellsworth and Davenport, 1913). No other information about mining or production has been made public.

Burand and Saunders (1966) reported a stibnite occurrence (TN070) in the headwaters of Chapman Creek near the granite, and confirmed that placer mining had taken place on the creek.

Alteration:

Age of mineralization:

Quaternary.

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:

Very little work has been reported on Chapman Creek. According to Ellsworth (1910), values from earlier placer prospecting were sufficient to attract other prospectors, and he reported some development work. In 1912, Ellsworth and Davenport (1913) reported that 4 men mined there.

Production notes:

Reserves:

Additional comments:

References:

Ellsworth, 1910; Ellsworth and Davenport, 1913; Burand and Saunders, 1966; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Cobb, 1972

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (Miller Gulch; Mynook Creek)

Site type: Occurrences

ARDF no.: TN057

Latitude: 65.4576 **Quadrangle:** TN B-1

Longitude: 150.1034

Location description and accuracy:

These mineral occurrences are described by Spurr (1898) as being on Miller Gulch, half a mile above Little Mynook (Minook) Creek, and near the mouth of the (Miller) gulch on the main Mynook (Minook) Creek. Miller Gulch in the Minook Creek area is not named on the topographic map, and it probably was renamed at a later date, possibly as Little Minook Jr. Creek. For this record, the site is assumed to be on Minook Creek approximately half a mile upstream from its junction with Little Minook Creek, in the southwest quarter of section 6, T. 7 N., R. 12 W., of the Fairbanks Meridian. The location, although uncertain, probably is accurate within 3,000 feet.

Commodities:

Main: Ag, Au

Other: Cu

Ore minerals: Chalcopyrite, copper silicate, pyrite

Gangue minerals: Calcite, quartz, siderite

Geologic description:

Bedrock in the area of Little Minook Jr. Creek consists of gabbro, mafic volcanic and volcaniclastic rocks, argillite, chert, and limestone of the Triassic Rampart Group (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The drainage area of the creek includes the Tertiary gravel-covered California and Idaho bars. Minook Creek generally follows the trace of a high-angle normal fault (Reifenstuhl and others, 1997 [RI 97-15a]). Spurr (1898) describes many shear zones in massive rock on Miller Gulch and Mynook Creek.

On Miller Gulch, half a mile above Little Mynook (Minook) Creek, and near the mouth of Miller Gulch on the main Mynook (Minook) Creek are many shear zones impregnated with sulfides (Spurr, 1898). An outcrop of hard, aphanitic, green slate on Minook Creek is altered up to 17 feet wide and sheared along joint and stratification surfaces. The outcrop is stained yellow by iron oxides and green by a mixture of calcite and copper silicate (Spurr, 1898). The outcrop also contain calcareous sandstone, described as a vein, containing occasional broken bits of mica. Abundant chalcopyrite and pyrite, possibly replacing calcite, fill interstices between quartz grains. Small clumps of siderite are also present. An assay of a rock sample from the outcrop contained a trace of gold and 0.2 ounce of silver per ton (Spurr, 1898). It is claimed that previous samples have shown considerable quantities of precious metals, with one assay up to $296 to the ton (gold at $20.67 per ounce, and silver at $0.60 per ounce) (Spurr, 1898). A sample of one of the deposits in Miller Gulch contained 0.01 ounce of gold to the ton and a trace of silver (Spurr, 1898).

Alteration:

Silicification.

Age of mineralization:

Deposit model:

Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: None

Site Status: Inactive

Workings/exploration:
On Miller Gulch, half a mile above Little Mynook (Minook) Creek, and near the mouth of Miller Gulch on the main Mynook (Minook) Creek are many silicified shear zones impregnated with sulfides (Spurr, 1898). An outcrop of hard, aphanitic, green slate on Minook Creek is altered up to 17 feet wide and sheared along joint and stratification surfaces. The outcrop is stained yellow by iron oxides and green by a mixture of calcite and copper silicate (Spurr, 1898). The outcrop also contain calcareous sandstone, described as a vein, containing occasional broken bits of mica. Abundant chalcopyrite and pyrite, possibly replacing calcite, fill interstices between quartz grains. Small clumps of siderite are also present. An assay of a rock sample from the outcrop contained a trace of gold and 0.2 ounce of silver per ton (Spurr, 1898). It is claimed that previous samples have shown considerable quantities of precious metals, with one assay up to $296 to the ton (gold at $20.67 per ounce, and silver at $0.60 per ounce) (Spurr, 1898). A sample of one of the deposits in Miller Gulch contained 0.01 ounce of gold to the ton and a trace of silver (Spurr, 1898).

Production notes:

Reserves:

Additional comments:

References:
Spurr, 1898; Chapman and others, 1982; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Spurr, 1898

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/27/2004

Site name(s): Florida Creek

Site type: Mine

ARDF no.: TN058

Latitude: 65.4155 **Quadrangle:** TN B-1

Longitude: 150.0921

Location description and accuracy:
For this record, the site of the Florida Creek placer mine is at a cabin on upper Florida Creek, in the southeast quarter of section 19, T. 7 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within a half mile. The site corresponds to location 47 in Cobb (1972), and roughly to the site for Florida Creek, U. S. Bureau of Land Management MAS number 0020480076.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Bedrock along Florida Creek consists predominantly of diabase (Hess, 1908). The general area is underlain by Paleozoic or Proterozoic siltstone and sandstone, which is in fault contact with Triassic gabbro (Reifenstuhl and others, 1997 [RI 97-15a]). These rocks in turn are overlain by Tertiary gravel terraces, such as the one on McDonald Bar (Chapman and others, 1982).
Placer gold production was reported around 1904 on Florida Creek (Prindle and Hess, 1905). The deposits proved to be very narrow, but as deep as 15 to 20 feet. Through 1904, less than 100 ounces had been mined, and production diminished after that (Hess, 1908). Mining was reported in 1939 and 1940. Frank Dinan drift mined in 1951 on his claims on Florida Creek (Williams, 1951).

Alteration:

Age of mineralization:
Quaternary.

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 earliest date of placer mining on Florida Creek is unknown. However, less than 100 ounces of gold had been mined by 1904, and no records have been published of subsequent production. Mining activity was reported in 1939 and 1940 (Smith, 1941; Smith, 1942). Frank Dinan drift-mined in 1951 on his claims

on Florida Creek (Williams, 1951).

Production notes:
Less than 100 ounces of gold had been mined by 1904. No records have been published of subsequent production. Cobb (1977) speculated that total production probably was no more than 200-300 ounces of gold.

Reserves:

Additional comments:

References:
Prindle and Hess, 1905; Hess, 1908; Smith, 1941; Smith, 1942; Williams, 1951; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Hess, 1908

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Hoosier Creek

Site type: Mine

ARDF no.: TN059

Latitude: 65.4490 **Quadrangle:** TN B-1

Longitude: 150.0911

Location description and accuracy:
The Hoosier Creek placer mine is marked by tailings, starting from about 0.5 mile from the mouth of the creek, upstream for about 2 miles (Cobb, 1972). The site is at about the midpoint of the tailings, in the northeast quarter of section 7, T. 7 N., R. 12 W., of the Fairbanks Meridian. The location is accurate. The site corresponds to location 48 of Cobb (1972), and roughly to the site for Hoosier Creek, U.S. Bureau of Land Management MAS number 0020480078.

Commodities:

Main: Au

Other: Cu, Hg, Pb, W

Ore minerals: Barite, cinnabar, galena, gold, hematite, ilmenite, magnetite, native copper, pyrite, scheelite

Gangue minerals:

Geologic description:
Hoosier Creek drains an area underlain upstream by Cambrian or late Proterozoic quartzite, feldspathic quartzite, grit, calcareous siltstone, limestone, and chert (Reifenstuhl and others, 1997 [RI 97-15a]). The placer operations are underlain by Triassic(?) Rampart Group mafic and intermediate volcanic and intrusive rocks, chert, and tuff.
Gold was discovered before 1902 (Mertie, 1934), and by 1904 preparations were made for hydraulicking 2 miles above the mouth of the creek (Prindle and Hess, 1905). The dimensions of the pay zone were never well defined, but averaged between 100 and 150 feet wide (Mertie, 1934).
By 1928, Hoosier Creek was being drift mined, mostly during the winter, because there was not enough water or enough gradient in the stream to run the sluiceboxes during the summer (Mertie, 1934). U.S. Geological Survey reports describe mining on the stream fairly continuously through 1938 (Smith, 1939 [B 917-A]; Cobb, 1977).
In 1957, Saunders (1957 [MR 194-17]) reported that the Weisner Trading Company intended to mine on Hoosier Creek, and implied that mining had occurred on the creek in the recent past. Mining or mining claims were active in 1967 (Heiner and others, 1968). Eakin and others (1985) and Bundtzen and others (1987) reported that the Hoosier Creek Mining Company was successful. In 1988, Willford Mining cleared ground, stripped overburden and constructed settling ponds in preparation for mining, and mined into 1990 (Green and others, 1989; Bundtzen and others, 1990; Swainbank and others, 1991).
In 1991, Lucas Mining, and in 1992, Jimmy Dale, operated on Hoosier Creek (Bundtzen and others, 1992; Swainbank and others, 1993). Mining was reported on Hoosier and Little Hoosier creeks in 1996 (Swainbank and others, 1997), and in 1997, Frank Willford mined a tributary to Hoosier Creek (Swainbank and others, 1998).
Some of the gold mined was coarse, including a $250 nugget (gold at $20.67? per ounce). The gold was about 941 fine (Mertie, 1934). The heavy minerals collected with the gold included hematite, ilmenite, barite, magnetite, pyrite, garnet, picotite, scheelite, zircon, native copper and cinnabar (Mertie, 1934; Waters, 1934). The stream gradient is 100 feet per mile.
Eight gold grains, including several small nuggets and one large nugget from Hoosier Creek were analyzed by electron microprobe (Newberry and Clautice, 1997). Five of the grains had nearly identical com-

positions characterized by cores with fineness of 800 to 810, Cu and Hg below detection, and Bi and Te at detection levels. Two other grains had cores of higher fineness, and rims with finenesses up to 990. Most of the grain compositions are similar to those of the gold recovered from the nearby Elephant Mountain (TN067) deposit (Newberry and Clautice, 1997).

Diabase bedrock in Hoosier Creek (TN063) contains auriferous quartz-pyrite veins that possibly are the source of some of the placer gold (Hess, 1908). The diabase is covered by 6 to 15 feet of alluvium. White mica from one of the veins yielded an Ar40/Ar39 age of 72.2 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]).

Alteration:

Age of mineralization:

Quaternary.

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:

Mining on Hoosier Creek began sometime before 1904. Both hydraulicking and drift mining techniques were used, but the stream gradient was not high enough for sluicing in midsummer (Mertie, 1934). Mining activity appears to have been continuous through 1938. Annual reports were not published by the U.S. Geological Survey after 1940 and reporting became sporadic (Cobb, 1977). Saunders (1957 [MR 194-17]) reported that the Weisner Trading Company intended to mine on Hoosier Creek in 1957 and implied that mining had occurred on the creek in the recent past. Mining or mining claims were active in 1967 (Heiner and others, 1968). Eakin and others (1985) and Bundtzen and others (1987) reported that the Hoosier Creek Mining Company successfully mined on Hoosier Creek in 1984 and 1986. In 1988, Willford Mining cleared and stripped overburden and constructed settling ponds in preparation for mining in 1990 (Green and others, 1989; Bundtzen and others, 1990; Swainbank and others, 1991).

In 1991, Lucas Mining, and in 1992, Jimmy Dale, operated on Hoosier Creek (Bundtzen and others, 1992; Swainbank and others, 1993). Mining was reported on Hoosier and Little Hoosier creeks in 1996 (Swainbank and others, 1997), and in 1997, Frank Willford mined a tributary (Swainbank and others, 1998).

Production notes:

By 1904, $2,000 worth of gold (at $20.67 per ounce) had been produced from Hoosier Creek (Hess, 1908). By 1931, claims 13 and 14 above Discovery produced a total of $50,000 worth of gold (at $20.67 per ounce) (Mertie, 1934). The gold was about 941 fine.

Reserves:

Additional comments:

References:

Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Waters, 1934; Smith, 1939 (B 917-A); Saunders, 1957 (MR 194-17); Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Eakins and others, 1985; Bundtzen and others, 1987; Green and others, 1989; Bundtzen and others, 1990; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993; Newberry and Clautice, 1997; Reifenstuhl and others, 1997 (PDF 97-29h); Reifenstuhl and others, 1997 (RI 97-15a); Swainbank and oth-

ers, 1997; Reifenstuhl and others, 1998; Swainbank and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Aloha

Site type: Prospect

ARDF no.: TN060

Latitude: 65.2680 **Quadrangle:** TN B-1

Longitude: 150.0911

Location description and accuracy:

This site represents a lode exploration area on Elephant Mountain that extends from Aloha Creek east into the Livengood quadrangle (North Star Exploration, Inc., 2000 [DLR2000-17]). For this record, the site is on the west flank of Elephant Mountain along Aloha Creek at an elevation of about 1,700 feet, in the southeast quarter of section 7, T. 5 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within about 0.5 mile.

Commodities:

Main: Au

Other: As, Bi, Cu, Sb

Ore minerals:

Gangue minerals:

Geologic description:

The Aloha prospect area straddles the Tanana and Livengood quadrangles, on and around Elephant Mountain. Elephant Mountain is underlain by a Cretaceous granite stock that mainly intrudes Jurassic or Cretaceous quartzite, sandstone, siltstone, and shale (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). North Star Exploration, Inc,. has mapped a rind of hornfels [and marble] around the granite stock, and high-angle faults that cut all units (North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]).

Aeromagnetic surveys of the area indicate that the stock has fairly low magnetic signatures and the surrounding rocks have variable signatures (Staff and others, 1997). Potential exploration targets, which fall on the outer edge of the hornfels zone, have very high magnetic signatures at high resolution. The hornfels zone generally has a magnetic high coincident with EM (electromagnetic) conductors along its outer edge, near the marble (North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]). The North Star report further states that this is a typical geophysical signature for a reduced gold skarn.

North Star Exploration, Inc., has not published results of their exploration in this area. However, based on its data, including anomalous gold, arsenic, antimony, copper, and bismuth in samples from the prospect, the company is modeling the prospect potentially as a reduced calcic gold skarn deposit (North Star Exploration, Inc., 2000 [DLR2000-17]; North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]). North Star Exploration, Inc., believes that this site is drill-ready.

Alteration:

Contact metamorphism of country rocks peripheral to Cretaceous granite stock.

Age of mineralization:

Cretaceous or younger, inferred from age of granite stock.

Deposit model:

Au-Cu skarn(?) (Cox and Singer, 1986; model 18b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
18b(?)

Production Status: None

Site Status: Active?

Workings/exploration:
There have been geological and geophysical surveys by the Alaska Division of Geological and Geophysical Surveys (Staff and others, 1997; Reifenstuhl and others, 1997 [RI 97-15a]).
North Star Exploration, Inc., identified the Aloha prospect as a priority target in the late 1990's based on compilation and interpretation of regional and detailed geological, geophysical, geochemical, and Landsat data. Included in this compilation are proprietary and public domain, helicopter-borne magnetic/resistivity/EM (electromagnetic) geophysical surveys that the company is using to identify skarn targets (North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]).

Production notes:

Reserves:

Additional comments:

References:
Chapman and others, 1982; Reifenstuhl and others, 1997 (RI 97-15a); Staff and others, 1997; North Star Exploration, Inc., 2000 (DLR2000-17); North Star Exploration, Inc., 2000 (Reduced calcic gold skarns).

Primary reference: North Star Exploration, Inc., 2000 (Reduced calcic gold skarns)

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 4/9/2003

Site name(s): Unnamed (lower Little Minook Creek)

Site type: Occurrence

ARDF no.: TN061

Latitude: 65.4568 **Quadrangle:** TN B-1

Longitude: 150.0575

Location description and accuracy:

The exact location of this lode occurrence is unknown but is presumed to be near the Discovery claim on Little Minook Creek, about 7,000 feet upstream from the mouth of the creek (Mertie, 1934). The site is at the downstream end of placer tailings on Little Minook Creek, in the southeast quarter of section 5, T. 7 N., R. 12 W., of the Fairbanks Meridian. The site is included in location 12 of Cobb (1972) and briefly described in Cobb (1977).

Commodities:

Main: Au

Other:

Ore minerals: Chalcopyrite, gold, pyrite

Gangue minerals: Quartz

Geologic description:

Little Minook Creek drains a relatively small area of about 6 square miles. It is straight, V-shaped, and is incised to a depth of 500-700 feet (Hess, 1908). The bedrock consists of Triassic Rampart Group mafic intrusive and volcanic rocks and sedimentary rocks (Reifenstuhl and others, 1997 [RI 97-15a]). All are considerably jointed throughout and sheared (Spurr, 1898). The shear zones, and to a lesser degree the joints and bedding planes, are mineralized with pyrite and chalcopyrite and the adjacent rock is altered to jasperoid. These zones of mineralization are common through the lower part of Little Minook Creek and on Minook Creek above the mouth of Little Minook Creek (Spurr, 1898).

In the vicinity of Little Minook Creek, Spurr (1898) reported that a 6-foot- wide quartz vein, locally with vugs lined with quartz crystals and thought to fill a shear zone, was staked by a miner named Sinclair. Panned samples of the vein yielded a small quantity of fine gold. This occurrence is a possible lode source for the placer deposits along Little Minook Creek (TN066).

Alteration:

The country rock adjacent to the shear zones is altered to jasperoid.

Age of mineralization:

Deposit model:

Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

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

36a

Production Status: None

Site Status: Inactive

Workings/exploration:

In the vicinity of Little Minook Creek, Spurr (1898) reported that a 6-foot wide quartz vein, locally with vugs lined with quartz crystals and thought to fill a shear zone, was staked by a miner named Sinclair. Panned samples of the vein yielded a small quantity of fine gold.

Production notes:

Reserves:

Additional comments:

References:

Spurr, 1898; Hess, 1908; Mertie, 1934; Cobb, 1972; Cobb, 1973; Cobb, 1977; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Spurr, 1898

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/12/2003

Site name(s): Hunter Creek

Site type: Mine

ARDF no.: TN062

Latitude: 65.4774 **Quadrangle:** TN B-1

Longitude: 150.0510

Location description and accuracy:

The Hunter Creek placer mine in the Tanana B-1 quadrangle is marked by tailings in sections 32, 33, and 34, T. 8 N., R. 12 W., of the Fairbanks Meridian. The site is at the cabin near the east boundary of section 32. The site corresponds to locations 51 and 52 of Cobb (1972). Cobb's location 52 extends into the adjacent Livengood quadrangle (ARDF site LG185 in Freeman and Schaefer, 1999). This site also corresponds with the location of Hunter Creek, U.S. Bureau of Land Management MAS number 0020480024.

Commodities:

Main: Au

Other: Ag, Cu, Hg, Sn

Ore minerals: Cassiterite, cinnabar, copper, galena, gold, mercurian silver, pyrite

Gangue minerals:

Geologic description:

Hunter Creek is a deeply incised tributary of Minook Creek, which it joins about 3 miles above its junction with the Yukon River. It was named for William Hunter, who discovered gold there in 1896. The discovery claim is approximately 8,000 feet upstream from the confluence with Minook Creek (Waters, 1934). The original mining claims apparently stretched at least several miles up the creek into the feeder creeks, and into the adjacent Livengood quadrangle (Freeman and Schaefer, 1999; ARDF site LG185).

Reifenstuhl and others (1997 [RI 97-15a]) mapped the underlying bedrock as undivided Triassic Rampart Group gabbro and intermediate plutonic and volcanic rocks, tuff and chert. These rocks locally are weakly foliated and metamorphosed. Tertiary volcanic rocks lie nearby to the north and west.

Mining on Hunter Creek began in 1896 (Spurr, 1898). Spurr reported that gold was found throughout the stream but that mining initially took place 1.25 miles above the mouth. Mining quickly spread upstream into the Livengood quadrangle (Freeman and Schaefer, 1999).

Hunter Creek also contains the only bench placer deposit known in the Rampart district (Mertie, 1934). The discovery claim was 16 feet above the creek and the gravels were 5 to 12 feet thick with up to 40 feet of muck overburden (Mertie, 1934). The gold was concentrated in the upper 18 inches of fractured diabase and quartzite bedrock. The gold was mostly smooth and fine-grained, although some nuggets weighed as much as 10 ounces. A bench south of the valley mined in 1957 produced coarser gold than the middle and north parts of the valley, where the stream now flows (Saunders, 1957 [MR 194-17]). Barite, cassiterite, magnetite, ilmenite, cinnabar, pyrite, galena, silver, hematite, and native copper also occur in the placer concentrates (Prindle and Hess, 1905; Hess, 1908; Waters, 1934).

Three nuggets of mercurian to nearly pure silver were examined by the Alaska Division of Geological & Geophysical Surveys (Forbes and Cannon, 1991). One nugget was compositionally similar to silver from a Bonanza-type silver deposit (such as the Chanarcillo deposit in Chile; Guilbert and Park, 1986), which suggests the possibility of a silver lode nearby.

Eleven gold grains, including several small nuggets and one large nugget from Hoosier Creek were analyzed by electron microprobe (Newberry and Clautice, 1997). Seven of the grains had Ag-Hg depleted rims indicative of significant residence in the near-surface environment; the other 4 grains were essentially unzoned (Newberry and Clautice, 1997). One of the gold grains contained up to 2 percent copper and inclusions of bornite-chalcocite and galena.

From about 1900 to 1940, Hunter Creek was mined by surface methods (Cobb, 1977). Hydraulic mining on Hunter Creek in the late 1920s was the largest operation in the Rampart district. Williams (1951) reported that Emil and Albert Swanson were mining on lower Hunter Creek in the early 1950's. They mined six cuts covering about 80,000 square feet of bedrock. Bill Thomas (T and T Mining Company) mined the left-limit bench on lower Hunter Creek in 1957, using hydraulic giants (Saunders, 1957 [MR 194-17]). In 1962, the Idaho Bar Mining Company was preparing to mine Idaho Bar, a ridge between Hunter and Little Minook Creeks (TN066) (Saunders, 1962). Mining claims were held or worked by Hunter and Swenson in 1967 (Heiner and others, 1968). William Carlo operated a hydraulic giant on Hunter Creek in 1975 (Carnes, 1976).

More recent mining on Hunter Creek includes work in 1989 by Bill Carlo and Steve Losonsky, and in 1991 by Bob Bettisworth (Bundtzen and others, 1990, 1992). In 1996, Green Mining and Exploration operated upstream from Losonsky's smaller operation. Losonsky continued mining in 1997 (Swainbank and others, 1998).

Alteration:

Age of mineralization:

Quaternary.

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:

Gold was discovered in Hunter Creek in 1896. By 1911 four claims were being worked using two hydraulic plants. By 1914, the creek was the largest producer and competed over time with Little Minook Creek (TN066) for this honor. Hunter Creek was a major producer through 1940, after which monitoring placer gold production in this area became limited.

Williams (1951) reported that Emil and Albert Swanson were mining on lower Hunter Creek in the early 1950s. They mined six cuts covering about 80,000 square feet of bedrock. Bill Thomas (T and T Mining Company) mined the left-limit bench on lower Hunter Creek in 1957, using hydraulic giants (Saunders, 1957 [MR 194-17]). In 1962, the Idaho Bar Mining Company was preparing to mine Idaho Bar, a ridge between Hunter and Little Minook Creeks (Saunders, 1962). Mining claims were held or worked by Hunter and Swenson in 1967 (Heiner and others, 1968). William Carlo operated a hydraulic giant on Hunter Creek in 1975 (Carnes, 1976).

More recent mining on Hunter Creek includes work in 1989 by Bill Carlo and Steve Losonsky, and in 1991 by Bob Bettisworth (Bundtzen and others, 1990, 1992). In 1996, Green Mining and Exploration operated upstream from Losonsky's smaller operation. Losonsky continued mining in 1997 (Swainbank and others, 1998).

Production notes:

The amount of gold recovered from the part of Hunter Creek in the Tanana quadrangle is not known.

Reserves:

Additional comments:

References:

Spurr, 1898; Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Waters, 1934; Smith, 1942; Williams, 1951; Saunders, 1957 (MR 194-17); Saunders, 1962; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Guilbert and Park, 1986; Bundtzen and others, 1990; Forbes and Cannon, 1991; Bundtzen and others, 1992; Newberry and Clautice, 1997; Reifenstuhl and others, 1997 (RI 97-15a); Swainbank and others, 1998; Freeman and Schaefer, 1999.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/8/2000

Site name(s): Unnamed (near Hoosier Creek)

Site type: Occurrences

ARDF no.: TN063

Latitude: 65.4206 **Quadrangle:** TN B-1

Longitude: 150.0419

Location description and accuracy:
This occurrence is near the junction of Fortyseven Pup and Hoosier Creek and represents one of 3 mineralized bedrock samples along a 2-mile stretch of Hoosier Creek. The site represents Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 96KC225 (Reifenstuhl and others, 1997 [PDF 97-29h]), near the midpoint of Hoosier Creek, and is in the northwest quarter of section 21, T. 7 N., R. 12 W., of the Fairbanks Meridian. The location is accurate. The site is included in location 48 of Cobb (1972).

Commodities:

Main: Au

Other: As

Ore minerals: Pyrite, sulfides

Gangue minerals: Carbonate, quartz, siderite

Geologic description:
Hoosier Creek drains an area underlain by Cambrian or upper Proterozoic quartzite, feldspathic quartzite, grit, calcareous siltstone, limestone, and chert, and by Triassic Rampart Group gabbro and diabase, and intermediate igneous rocks, chert, and tuff (Reifenstuhl and others, 1997 [RI 97-15a]).
Diabase bedrock in Hoosier Creek contains quartz veins up to 18 inches wide, and pyrite is disseminated in the adjacent rock (Hess, 1908). White mica from a similar vein one mile north of this location yielded an Ar/Ar age of 72.2 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]). A sample of Rampart Group altered gabbro (96KC225), with sulfides and quartz-carbonate-siderite veins, contained no anomalous elements; another gabbro sample (96KC230), with calcite veins and a trace of disseminated chalcopyrite, contained 160 parts per million (ppm) copper (Liss and others, 1997). A sample (96RN202) of a nearby altered granite dike with minor disseminated sulfides contained 27 parts per billion gold and 1,690 ppm arsenic.

Alteration:

Age of mineralization:
White mica from a similar vein one mile north of this location yielded an Ar/Ar age of 72.2 +/- 0.3 Ma (Reifenstuhl and others, 1997 [PDF 97-29h]).

Deposit model:
Low-sulfide Au-quartz veins(?) (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

A sample of Rampart Group altered gabbro (96KC225), with sulfides and quartz-carbonate-siderite veins, contained no anomalous elements; another gabbro sample (96KC230), with calcite veins and a trace of disseminated chalcopyrite, contained 160 parts per million (ppm) copper (Liss and others, 1997). A sample (96RN202) of a nearby altered granite dike with minor disseminated sulfides contained 27 parts per billion gold and 1,690 ppm arsenic. There is no record of exploration by industry at these occurrences.

Production notes:

Reserves:

Additional comments:

References:

Hess, 1908; Liss and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a); Reifenstuhl and others, 1997 (PDF 97-29h).

Primary reference: Hess, 1908

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/8/2003

Site name(s): Little Minook Jr. Creek

Site type: Mine

ARDF no.: TN064

Latitude: 65.4472 **Quadrangle:** TN B-1

Longitude: 150.0409

Location description and accuracy:

The Little Minook Jr. Creek placer mine is in section 9, T. 7 N., R. 12 W., of the Fairbanks Meridian. According to Cobb (1972, location 49), the mine workings are at least a mile long, near the headwaters of the creek. The site is at the cabin and mine symbol near the head of the creek. This site roughly corresponds with the site for Little Minook Jr. Creek, U.S. Bureau of Land Management MAS number 0020480075.

Commodities:

Main: Au

Other: Pb

Ore minerals: Barite, galena, gold, hematite, ilmenite, magnetite, pyrite

Gangue minerals:

Geologic description:

Bedrock in the area of Little Minook Jr. Creek consists of gabbro, mafic volcanic and volcaniclastic rocks, argillite, chert, and limestone of the Triassic Rampart Group (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The drainage area of the creek includes the Tertiary, gravel-covered California and Idaho bars, and the placer deposit is along the contact between Rampart Group rocks and the Tertiary gravels (Reifenstuhl and others, 1997 [RI 97-15a]).

The gold is mainly in the present stream channel, but some is also in local benches. On one claim, the upper 1.5 feet of irregular greenstone bedrock surface contained most of the gold. Overlying this pay streak was 4 to 5 feet of frozen gravel, overlain in turn by 18 to 25 feet of frozen muck and slide rock (Mertie, 1934). The stream gradient is 385 feet per mile.

The gold is flattened, suggesting that it probably was reconcentrated from bench placers (Hess, 1908). According to Mertie (1934), the gold is of comparable fineness to that of Little Minook Creek (TN066). The largest nugget was worth $200 (gold at $18 per ounce). Heavy-mineral concentrates contained pyrite, hematite, ilmenite, barite, magnetite, and galena (Waters, 1934).

Both drifting and surface mining techniques have been used in Little Minook Jr. Creek. Excess water hampered the drift mining, and a meager summer water supply hampered washing (Mertie, 1934). Mining reportedly was continuous on Little Minook Jr. Creek until 1935 (Smith, 1937; Cobb, 1977). In 1957, Saunders (1957 [MR 194-17]) reported that the Weisner Trading Company intended to mine on Little Minook Jr. Creek during that year and implied that mining had occurred on the creek in the recent past. Reports of more recent work are incomplete. Fairbanks Mining Company mined for 90 days in 1997 using a JD450 tractor and backhoe (Alaska Kardex files).

As of 1904, Little Minook Jr. Creek had produced a total of $150,000 worth of gold (Hess, 1908), equivalent to approximately 7,250 ounces of gold (at $20.67 per ounce). Production since then has not been made public.

Six placer gold grains from Little Minook Jr. Creek were analyzed by electron microprobe (Newberry and Clautice, 1997). They found three different composition populations, but all grains examined exhibited evidence for extensive leaching. Several grains contained native nickel inclusions.

Alteration:

Age of mineralization:
Quaternary.

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 on Little Minook Jr. Creek was first reported by Prindle and Hess (1905; Cobb, 1977). Mining appears to have been continuous through 1913, and after an apparent hiatus, again in the early 1930's. Miners used both surface and drift mining techniques (Mertie, 1934). In 1957, Saunders (1957 [MR 194-17]) reported that the Weisner Trading Company intended to mine on Little Minook Jr. Creek during that year and implied that mining had occurred on ththe creek in the recent past. Reports of more recent work are incomplete. Fairbanks Mining Company mined for 90 days in 1997 using a JD450 tractor and backhoe (Alaska Kardex files).

Production notes:
Hess (1908) reported total production through the fall of 1904 to be $150,000, equivalent to approximately 7,250 ounces of gold at $20.67 per ounce.

Reserves:

Additional comments:

References:
Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Waters, 1934; Smith, 1937; Saunders, 1957 (MR 194-17); Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Newberry and Clautice, 1997; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/7/2000

Site name(s): Unnamed (west of Elephant Gulch)

Site type: Occurrence

ARDF no.: TN065

Latitude: 65.2525 **Quadrangle:** TN B-1

Longitude: 150.0373

Location description and accuracy:

This occurrence is at an elevation of 2,400 feet, on a small southern spur of Elephant Mountain west of Elephant Gulch. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97KC080 (Liss and others, 1998), on the boundary between sections 16 and 21, T. 5 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Sb, Zn

Other:

Ore minerals:

Gangue minerals:

Geologic description:

Elephant Mountain is underlain by Cretaceous granite that intrudes Jurassic or Cretaceous quartzite, sandstone, siltstone, and shale (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The Elephant Mountain pluton is one of several 90 Ma alkalic plutons that crop out in the eastern Tanana, central Livengood, and western Circle quadrangles. It apparently is a northeast-trending, dikelike body about a mile wide and 5 miles long in outcrop, cut off by high-angle faults at its northeastern and southwestern ends (Reifenstuhl and others, 1997 [RI 97-15a]). Most of the pluton is trachytoidal, quartz-free syenite and subequigranular quartz syenite, with a core of altered, equigranular quartz syenite, granite, and pegmatite.

Bedrock in the Elephant Gulch area is Lower Cretaceous graywacke, sandstone, conglomerate, and shale. The bedded rocks locally are hornfelsed, with development of unoriented crystals or rosettes of muscovite and biotite. The area is cut by west-northwest-trending, high-angle faults.

A sample (96KC080) of dark gray, matrix-supported conglomerate, sandstone, and quartzite from the west side of upper Elephant Gulch contained 134 parts per million (ppm) antimony and 260 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

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:

A sample (96KC080) of dark gray, matrix-supported conglomerate, sandstone, and quartzite from the west side of upper Elephant Gulch contained 134 parts per million (ppm) antimony and 260 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; McCoy and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a); Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/20/2004

Site name(s): Little Minook Creek

Site type: Mine

ARDF no.: TN066

Latitude: 65.4562 **Quadrangle:** TN B-1

Longitude: 150.0332

Location description and accuracy:

The Little Minook Creek placer mine is marked by about 2 miles of tailings that extend upstream from a point 1.5 miles from the mouth of the creek. The site is at the approximate midpoint of the workings, which stretch from the western half of sections 3 and 10, through section 4, to the southeast quarter of section 5, T. 7 N., R. 12 W., of the Fairbanks Meridian. The site corresponds to location 50 of Cobb (1972), and roughly to the location of Little Minook Creek, U.S. Bureau of Land Management MAS number 0020480007.

Commodities:

Main: Au

Other: Ag, Ba, Cr, Cu, Pb, W

Ore minerals: Barite, chalcopyrite, chromite, galena, gold, hematite, ilmenite, magnetite, native copper, native sulfur, pyrite, scheelite, silver, tetradymite

Gangue minerals:

Geologic description:

Little Minook Creek drains a relatively small area of about 6 square miles. It is straight, V-shaped, and is incised to a depth of 500-700 feet (Hess, 1908). The bedrock consists of Triassic Rampart Group mafic intrusive and volcanic rocks and sedimentary rocks (Reifenstuhl and others, 1997 [RI 97-15a]). California and Idaho Bars, respectively to the south and north, were mapped by Chapman and others (1982) as covered by Tertiary gravels.

Gold was discovered on Little Minook Creek in 1893 by John Minook, and was mined continuously from 1896 (Hess, 1908) to 1940 (Smith, 1942). The gold in the stream placers may be reconcentrations of gold in bench placers (Hess, 1908). Spurr (1898) reported that crushed quartz veins in shear zones contained a small amount of gold. Native copper and silver were found in concentrates (Spurr, 1898).

The stream placer deposits ranged from 100 to 150 feet wide and contained coarse, flattened gold (Mertie, 1934). At least one report described brown material sticking to the gold, making it difficult to clean (Williams, 1951). Williams hypothesized that this material was a natural cement. One placer gold sample had a fineness of 920 (Mertie, 1934).

As of 1904, Prindle and Hess (1905) reported that approximately $475,000 worth of gold (about 23,000 ounces) had been mined (Cobb, 1977), all from the lowest 3 miles. Claim 8 above Discovery (approximately three miles from the mouth of Little Minook Creek) reportedly was the richest claim, producing $1,000,000 worth of gold (about 48,400 ounces) by 1931 (Mertie, 1934). Claims 1 and 2 below Discovery contained coarse cobbles and 5 to 6 feet of gravels covered by only a few feet of muck. Native copper occurred on many of the claims, as well as some native sulfur, hematite, barite, pyrite, galena, and chromite (Mertie, 1934; Waters, 1934). A placer concentrate sample from claim 1 above Discovery contained hematite, ilmenite, pyrite, magnetite, barite, tetradymite, galena, gold, native copper, picotite, argentite, and scheelite (Mertie, 1934; Waters, 1934).

Following World War II, public reports on mining activity were sporadic. In 1951, the Little Minook Mining Company worked a pay streak 100 feet wide and reportedly had been moving downstream approximately 1,000-1,200 feet per year, with enough ground for several more years of mining (Williams, 1951).

In 1957, Saunders (1957 [MR 194-17]) reported intent of the Weisner Trading Company to mine on Little Minook Creek during that year and implied that recent mining had occurred. Cunningham & Associates, Langford, and/or Minook Ltd. were active in 1967 (Heiner and others, 1968). Weisner Trading Company was operating a bulldozer on Little Minook Creek in 1975 (Carnes, 1976). In 1991 Munsell Mining, a new operator, started working on Little Minook Creek (Bundtzen and others, 1992).

Alteration:

Age of mineralization:
Quaternary.

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:
Mining began in Little Minook Creek around 1896. The first placer claim in the Rampart region was located and worked in 1896 on Little Minook Creek by F.S. Langford, although gold previously had been discovered and mined by John Minook (Hess, 1908). During the early years of mining, most of the work was done by drift mining. However, by 1931, Mertie (1934) reported that open mining techniques were dominant, including employing a splash-dam and shoveling in. Little Minook Creek was a major producer until at least 1940, when records became sporadic. In 1951, Little Minook Mining Company worked a pay streak 100 feet wide and reportedly had been moving downstream approximately 1,000-1,200 feet per year, with enough ground for several more years of mining (Williams, 1951). In 1957, Saunders (1957 [MR 194-17]) reported intent of the Weisner Trading Company to mine on Little Minook Creek during that year and implied that mining had recently occurred. Cunningham & Associates, Langford, and/or Minook Ltd. were active in 1967 (Heiner and others, 1968). Weisner Trading Company was operating a bulldozer on Little Minook Creek in 1975 (Carnes, 1976). The most recent mining took place in 1991, when Munsell Mining, a new operator, started working on Little Minook Creek (Bundtzen and others, 1992).

Production notes:
Prindle and Hess (1905) reported that production through 1904 was worth approximately $475,000, equivalent to approximately 23,000 ounces of gold (Cobb, 1977). According to Mertie (1934), Little Minook Creek was the largest producer in the Rampart district through 1931; about $1,000,000 worth of gold, equivalent to about 48,000 ounces of gold, was recovered from one claim.

Reserves:

Additional comments:
A manganese lode (TN069) occurs at the upstream end of the Little Minook Creek placer operations (Burand and Saunders,1966; Cobb, 1972 [MF-371]). The deposit crops out along the creek, and contains rhodochrosite or rhodonite.

References:
Spurr, 1898; Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Waters, 1934; Smith, 1942; Williams, 1951; Saunders, 1957 (MR 194-17); Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1992; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/8/2000

Site name(s): Elephant Mountain

Site type: Prospects

ARDF no.: TN067

Latitude: 65.2742 **Quadrangle:** TN B-1

Longitude: 150.0279

Location description and accuracy:

The Elephant Mountain lode prospect is at an elevation of about 3,500 feet on Elephant Mountain at the head of Aloha Creek. It is just east of the center of section 9, T. 5 N., R. 12 W., of the Fairbanks Meridian. The site is the location of drilling in 1999-2001 on a claim block consisting of 140 state mining claims and 7 prospecting sites that stretched from the junction of Aloha and Minook creeks on the west, to the headwaters of Chapman Creek on the north, and into the Livengood quadrangle on the east. This claim block, called the Orion claims, covers the southwest half of a broad, flat-topped ridge system that includes Elephant Mountain. The location is accurate within 1000 feet.

Commodities:

Main: Au

Other: As, Bi, Mo, Sb

Ore minerals: Arsenopyrite, bismuth, gold, molybdenite, stibnite

Gangue minerals: Quartz

Geologic description:

Elephant Mountain is underlain by a Cretaceous pluton that intrudes Jurassic or Cretaceous quartzite, sandstone, siltstone, and shale (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). The pluton is one of several 90 Ma alkalic plutons in the eastern Tanana, central Livengood, and western Circle quadrangles. Contacts of the Elephant Mountain pluton indicate that it is a northeast-trending, dikelike body about a mile wide and 5 miles long, cut off by high-angle faults at the northeastern and southwestern ends (Reifenstuhl and others, 1997 [RI 97-15a]). Its composition ranges from diorite to granite, but it mostly is trachytoidal, quartz-free syenite and subequigranular quartz syenite. The pluton is zoned, and has a core of altered, equigranular quartz syenite, granite, and granite pegmatite (Reifenstuhl and others, 1997 [RI 97-15a]).

Placer Dome, Inc., discovered visible gold in an outcrop of altered granite on Elephant Mountain in 1991 (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Their soil sampling defined an open-ended linear zone of gold and arsenic geochemical anomalies that extends for over 6,000 feet and is up to 1,500 feet wide. Gold contents in soil samples ranged up to 1,540 parts per billion (ppb) (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]. The mineralized zone is structurally controlled, with prominent northeast- and northwest-trending, and weaker north-trending, patterns. Soil sampling by North Star Exploration, Inc., in 1999 indicated that the anomalous zone continues northeast for at least another 2,000 feet (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]).

A rock sample of altered granite (sample number 96RN185) collected in 1996 by the Alaska Division of Geological and Geophysical Surveys contained 164 ppb gold, 2211 ppm arsenic, and 61 ppm antimony (Liss and others, 1997). Samples of quartz veins collected by industry contained up to 12.2 ounces of gold per ton (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]), and analyses of drill core showed values of up to 1,740 ppb gold and several thousand parts per million (ppm) arsenic (Harry Noyes, oral commun., 1996).

Aeromagnetic surveys of the area by the Alaska Division of Geological and Geophysical Surveys indicate that the plutonic rocks have fairly low magnetic signatures, whereas the surrounding rocks are more variable (Staff and others, 1997).

North Star Exploration, Inc., conducted a helicopter-borne, magnetic-electromagnetic-radiometric survey over Elephant Mountain (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). The results show that the Elephant Mountain pluton is a nearly featureless, low-magnetic plateau that has coincident high resistivity. Resistivity data at higher frequencies show linears that are inferred by North Star to be the effects of surface weathering of fault/fracture zones in the pluton. Some of the soil geochemical anomalies coincide with these linears.

Placer Dome conducted ground geophysical surveys over portions of Elephant Mountain after a gold-sulfide association was identified while logging drill core (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Their geophysical surveys included magnetics, VLF, gradient induced polarization (IP) resistivity, and limited dipole-dipole IP. A large chargeable zone (1,500 feet wide and 4,500 feet long) was detected between the drilled areas, which Placer Dome's geophysicists attributed to a large volume of material containing a relatively low concentration of sulfides, with a small increase in sulfide content at depth.

In 1992, Placer Dome, Inc., dug 6,000 feet of trenches and diamond drilled 10 diamond core holes totaling 4,000 feet (Swainbank and others, 1993). The drill logs indicate that higher gold values are associated with fractured and crushed zones, which often become stockwork in nature (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Visible gold also occurs in the drill core. Gold is primarily associated with pervasive silicification and quartz veinlets. Arsenopyrite, molybdenite, and stibnite occur in the silicified zones, and there is a strong gold-arsenic correlation. Gold is associated in some drill holes with bismuth (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Placer Dome's best hole was DDH-2, grading an average of 0.015 ounce of gold per ton over 326 feet that bottomed in mineralization. Other drill results include 334 feet grading 0.010 ounce of gold per ton in hole DDH-8, 340 feet grading 0.008 ounce of gold per ton in hole DDH-1, and 225 feet grading 0.005 ounce of gold per ton in hole DDH-4 (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]).

In 2000, North Star Exploration, Inc., drilled two core holes totaling 631 feet at Elephant Mountain and encountered arsenopyrite with geochemically anomalous gold in silicified granite (North Star Exploration, Inc., 2001 [Alaska exploration opportunities]; Szumigala and others, 2001). The drilling area is in a broad, flat swale along the main ridgeline at 3,300 feet elevation.

Alteration:

Silicification.

Age of mineralization:

Cretaceous, assumed to be contemporaneous with the 89 +/- 1 Ma age of the Elephant Mountain pluton (Reifenstuhl and others, 1997 [RI 97-15a]).

Deposit model:

Porphyry Cu-Au (Cox and Singer, 1986; model 20c); Alaskan plutonic-related gold deposit (McCoy and others, 1997).

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

20c

Production Status: None

Site Status: Active?

Workings/exploration:

Placer Dome, Inc., discovered visible gold in an outcrop of altered granite on Elephant Mountain in 1991 (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Their soil sampling defined an open-ended linear zone of gold and arsenic geochemical anomalies that extends for over 6,000 feet and is up to 1,500 feet wide. Gold contents in soil samples ranged up to 1,540 parts per billion (ppb) (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]. The mineralized zone is structurally controlled, with prominent northeast- and northwest-trending, and weaker north-trending, patterns. Soil sampling by North Star Exploration, Inc., in 1999 indicated that the anomalous zone continues northeast for at least another 2,000 feet (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]).

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North Star Exploration, Inc., conducted a helicopter-borne, magnetic-electromagnetic-radiometric survey over Elephant Mountain (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). The results show that the Elephant Mountain pluton is a nearly featureless, low-magnetic plateau that has coincident high resistivity. Resistivity data at higher frequencies show linears that are inferred by North Star to be the effects of surface weathering of fault/fracture zones in the pluton. Some of the soil geochemical anomalies coincide with these linears.

Placer Dome conducted ground geophysical surveys over portions of Elephant Mountain after a gold-sulfide association was identified while logging drill core (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Their geophysical surveys included magnetics, VLF, gradient induced polarization (IP) resistivity, and limited dipole-dipole IP. A large chargeable zone (1,500 feet wide and 4,500 feet long) was detected between the drilled areas, which Placer Dome's geophysicists attributed to a large volume of material containing a relatively low concentration of sulfides, with a small increase in sulfide content at depth.

In 1992, Placer Dome, Inc., dug 6,000 feet of trenches and diamond drilled 10 diamond core holes totaling 4,000 feet (Swainbank and others, 1993). The drill logs indicate that higher gold values are associated with fractured and crushed zones, which often become stockwork in nature (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Visible gold also occurs in the drill core. Gold is primarily associated with pervasive silicification and quartz veinlets. Arsenopyrite, molybdenite, and stibnite occur in the silicified zones, and there is a strong gold-arsenic correlation. Gold is associated in some drill holes with bismuth (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]). Placer Dome's best hole was DDH-2, grading an average of 0.015 ounce of gold per ton over 326 feet that bottomed in mineralization. Other drill results include 334 feet grading 0.010 ounce of gold per ton in hole DDH-8, 340 feet grading 0.008 ounce of gold per ton in hole DDH-1, and 225 feet grading 0.005 ounce of gold per ton in hole DDH-4 (North Star Exploration, Inc., 2000 [Elephant Mountain intrusion-hosted gold prospect]).

In 2000, North Star Exploration, Inc., drilled two core holes totaling 631 feet at Elephant Mountain and encountered arsenopyrite with geochemically anomalous gold in silicified granite (North Star Exploration, Inc., 2001 [Alaska exploration opportunities]; Szumigala and others, 2001).

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982; Swainbank and others, 1993; Liss and others, 1997; McCoy and others, 1997; Reifenstuhl and others, 1997 (RI 97-15a); Staff and others, 1997; North Star Exploration, Inc., 2000 (Elephant Mountain intrusion-hosted gold prospect); North Star Exploration, Inc., 2001 (Alaska exploration opportunities); Szumigala and others, 2001.

Primary reference: North Star Exploration, Inc., 2000 (Elephant Mountain intrusion-hosted gold prospect)

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/5/2003

Site name(s): Idaho Bar

Site type: Mine

ARDF no.: TN068

Latitude: 65.4580 **Quadrangle:** TN B-1

Longitude: 150.0104

Location description and accuracy:

This site represents an area of placer mining on Idaho Bar, the upland between Hunter and Little Minook creeks. Placer prospecting and mining have been described on the south slopes of Idaho Bar near Little Minook Creek, extending into the adjacent Livengood quadrangle (Freeman and Schaefer, 1999 [LG186]). For this record, the site is on a small tributary of Little Minook Creek, known locally as Pup 8, in the southwest quarter of section 3, T. 7 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within 1000 feet. This site roughly corresponds with the site for Idaho Bar, U.S. Bureau of Land Management MAS number 0020480074.

Commodities:

Main: Au

Other:

Ore minerals: Gold, hematite, ilmenite, magnetite

Gangue minerals:

Geologic description:

Bedrock, poorly exposed in the Idaho Bar area, consists of volcanic and sedimentary rocks of the Triassic to Mississippian, Rampart Group (Reifenstuhl and others, 1997 [RI 97-15a]). The sedimentary rocks include argillite, phyllitic argillite, volcaniclastic rocks, chert, and impure limestone. Tertiary rhyolite flows or domes are on the western slopes of Idaho Bar and Minook Creek, and on the northern slopes of Hunter Creek. Coarse and shotty gold occurs in Pliocene(?) gravels about 1,000 feet higher in elevation than the mouth of Little Minook Creek (Mertie, 1934). The coarse gravels contain quartzite, quartzite breccia, vein quartz, and chert (Prindle and Hess, 1905). Boulders 2 to 3 feet in diameter are common. Heavy minerals include ilmenite, hematite, and magnetite (Mertie, 1934).

Although there was not enough water for large-scale mining, prospecting occurred in 1913, the late 1920's, and the 1930's (Wimmler, 1926; Mertie, 1934; Smith, 1934; Smith, 1936; Smith, 1937). Sporadic mining at Idaho Bar took place from 1953 through 1989 (Alaska Kardex files). Idaho Bar Mining Co., operated by Ace Parker and Kosta Melinkoff, began a new operation in 1962 on Idaho Bar (Saunders, 1962). Their preparatory work included planning to pump water for mining from the upper part of Little Minook Creek. Stripping overburden and mining with a bulldozer occurred in 1972 and 1973 (Alaska Kardex files). Resource Associates of Alaska, Inc. (RAA) trenched and sampled in 1981, and stripped, mined, and tested the gold content of the gravels in 1984.

Alteration:

Age of mineralization:

Pliocene?

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:
Although there was not enough water for large-scale mining, prospecting occurred in 1913, the late 1920's, and the 1930's (Wimmler, 1926; Mertie, 1934; Smith, 1934; Smith, 1936; Smith, 1937). Sporadic mining at Idaho Bar took place from 1953 through 1989 (Alaska Kardex files). Idaho Bar Mining Co., operated by Ace Parker and Kosta Melinkoff, began a new operation in 1962 on Idaho Bar (Saunders, 1962). Their preparatory work included planning to pump water for mining from the upper part of Little Minook Creek. Stripping overburden and mining with a bulldozer occurred in 1972 and 1973 (Alaska Kardex files). Resource Associates of Alaska, Inc. (RAA) trenched and sampled in 1981, and stripped, mined, and tested the gold content of the gravels in 1984.

Production notes:

Reserves:

Additional comments:

References:
Prindle and Hess, 1905; Wimmler, 1926; Mertie, 1934; Smith, 1934; Smith, 1936; Smith, 1937; Saunders, 1962; Reifenstuhl and others, 1997 (RI 97-15a); Freeman and Schaefer, 1999.

Primary reference: Mertie, 1934; this report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/5/2004

Site name(s): Unnamed (upper Little Minook Creek)

Site type: Occurrence

ARDF no.: TN069

Latitude: 65.4518 **Quadrangle:** TN B-1

Longitude: 150.0039

Location description and accuracy:

This manganese lode corresponds to location 12 of Cobb (1972). It is on Little Minook Creek 3 miles upstream from the junction of Minook Creek, near the upstream end of the Little Minook Creek placer operations (TN066). The site is in the north half of section 10, T. 7 N., R. 12 W., of the Fairbanks Meridian (Burand and Saunders,1966). This location is accurate within 2000 feet.

Commodities:

Main: Mn

Other:

Ore minerals: Rhodochrosite or rhodonite

Gangue minerals:

Geologic description:

The bedrock in Little Minook Creek consists of Triassic Rampart Group mafic intrusive and volcanic rocks and sedimentary rocks (Reifenstuhl and others, 1997 [RI 97-15a]). A manganese deposit is at the upstream end of the Little Minook Creek placer operations (TN066) (Burand and Saunders,1966; Cobb, 1972). The deposit crops out along the creek, and contains rhodochrosite or rhodonite. A stream-sediment sample collected a short distance upstream from this location contained no anomalous metals (Burand and Saunders,1966).

Alteration:

Age of mineralization:

Deposit model:

Epithermal Mn (Cox and Singer, 1986; model 25g) or Replacement Mn (Cox and Singer, 1986; model 19b).

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

25g or 19b

Production Status: None

Site Status: Inactive

Workings/exploration:

A stream-sediment sample collected a short distance upstream from this location contained no anomalous metals (Burand and Saunders,1966).

Production notes:

Reserves:

Additional comments:

References:

Burand and Saunders, 1966; Cobb, 1972; Chapman and others, 1982; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Burand and Saunders,1966

Reporter(s): J.E. Athey (ADGGS)

Last report date: 3/16/2001

Site name(s): Unnamed (near Chapman Creek)

Site type: Occurrence

ARDF no.: TN070

Latitude: 65.3158 **Quadrangle:** TN B-1

Longitude: 150.0034

Location description and accuracy:
This lode prospect is about 3 miles upstream from the Chapman Creek placer mine (TN056). It is in the southeast quarter of section 27, T. 6 N., R. 12 W., and corresponds to location 11 of Cobb (1972). The location is accurate within half a mile.

Commodities:

Main: Au, Sb

Other:

Ore minerals: Stibnite

Gangue minerals:

Geologic description:
Chapman Creek drains an area underlain by Mesozoic sandstone, shale, and argillite (Chapman and others, 1982; Reifenstuhl and others, 1997 [RI 97-15a]). Granite of unknown age crops out in the headwaters of the creek (Burand and Saunders, 1966). The main channel follows a high-angle fault.
Burand and Saunders (1966) reported a stibnite occurrence in the headwaters, near the granite. Swainbank and others (1995) report that exploration by ASA, Inc., and Montague Gold NL at the Chapman Creek prospect in 1994 found a swarm of monzonite dikes marked by intense sericite, dolomite, and silica alteration. Samples of this material contained up to 0.035 ounce of gold per ton. Gold-in-soil anomalies indicate the potential for substantial mineralization.

Alteration:
Intense sericite, dolomite, and silica alteration.

Age of mineralization:

Deposit model:
Simple Sb deposits (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:
Swainbank and others (1995) report that exploration by ASA, Inc., and Montague Gold NL at the Chapman Creek prospect in 1994 found a swarm of monzonite dikes marked by intense sericite, dolomite, and silica alteration. Samples of this material contained up to 0.035 ounce of gold per ton. Gold-in-soil anomalies indicate the potential for substantial mineralization. ASA, Inc., recommended drilling for 1995.

Production notes:

Reserves:

Additional comments:

References:

Burand and Saunders, 1966; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Swainbank and others, 1995; Reifenstuhl and others, 1997 (RI 97-15a).

Primary reference: Burand and Saunders, 1966

Reporter(s): J.E. Athey (ADGGS)

Last report date: 3/13/2001

Site name(s): Grant Creek

Site type: Mine

ARDF no.: TN071

Latitude: 65.2345 **Quadrangle:** TN A-6

Longitude: 152.8551

Location description and accuracy:

The Grant Creek placer mine is marked by tailings at the junction of Grant and Monday creeks, in the northwest quarter of section 26, T. 5 N., R. 26 W., of the Fairbanks Meridian. The site corresponds to location 15 of Cobb (1972), and roughly to the site for Grant Creek, U.S. Bureau of Land Management MAS number 0020480010.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

Bedrock in the area of Grant Creek consists of complexly folded and metamorphosed upper Precambrian or lower Paleozoic schist, limestone, quartzite, and greenstone (Wedow and others, 1954). The depth to bedrock ranges from more than 130 feet downstream to 30 feet near the head.

Mining in the area began in 1909. According to Maddren (1910), gravel deposits were 5-7 feet thick and more than 100 feet wide. Eakin (1913) reported gold values of $10-$12 (gold at $20.67 per ounce) per yard of ground on Lynx Creek, the principal eastern tributary of Grant Creek.

Mining in Grant Creek was sporadic from 1909 into the 1940's. Although initial reports indicated that the pay dirt was extremely rich, most records indicate prospecting without significant gold production. A dragline was operated for the entire season in 1938, and mining may have continued into the early 1940s, before the miner died (Wedow and others, 1954). More recent placer mining on Grant Creek is unknown.

Doyon, Ltd., conducted exploration drilling in 1964 with an 8-inch reverse-circulation drill mounted on a Nodwell, to define placer gold reserves on Grant Creek between its junctions with Monday and Lynx creeks (Alaska Kardex files). Overburden averaged 12 feet thick. Doyon planned to bulk-sample placer gravels and conduct additional reconnaissance drilling in 1997 on Grant Creek and proposed to drill on Lynx Creek between its junctions with Grant and Windy creeks (Alaska Kardex files).

There is ambiguity about economic minerals other than gold on Grant Creek. Smith (1932, 1933) reported that cassiterite was mined during 1929 and 1930. However, Chapman and others (1963) state that no cassiterite is known. Uranium ore (pitchblende) reportedly was found by a placer miner in the 1940's, but Wedow and others (1954) concluded that there was no pitchblende in the area, and that hematite might have been misidentified.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer Au(-Sn) (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 on Grant Greek began in 1909 (Brooks, 1910) and continued sporadically until 1938 and possibly to the middle 1940's. Most of the activity was prospecting, and only minor mining. Large scale mining, however, occurred in 1938, when a dragline operated for a full season (Smith, 1939 [B 917-A]).

Doyon, Ltd., conducted exploration drilling in 1964 with an 8-inch reverse-circulation drill mounted on a Nodwell, to define placer gold reserves on Grant Creek between its junctions with Monday and Lynx creeks (Alaska Kardex files). Overburden averaged 12 feet thick. Doyon planned to bulk sample placer gravels and conduct additional reconnaissance drilling in 1997 on Grant Creek and proposed to drill on Lynx Creek between its junctions with Grant and Windy creeks (Alaska Kardex files).

Production notes:
There are no records of the total production of gold from Grant Creek (Cobb, 1977).

Reserves:

Additional comments:

References:
Brooks, 1910; Ellsworth, 1910; Maddren, 1910; Eakin, 1913; Smith, 1932; Smith, 1933; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Joesting, 1942; Wedow and others, 1954; Chapman and others, 1963; Cobb, 1972; Cobb, 1977.

Primary reference: Wedow and others, 1954

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Gold Hill

Site type: Prospect

ARDF no.: TN072

Latitude: 65.2014 **Quadrangle:** TN A-6

Longitude: 152.7659

Location description and accuracy:

The Gold Hill lode prospect is on the north bank of the Yukon River, about half a mile west of the mouth of Lancaster Creek. The site is on the border between sections 1 and 2, T. 4 N., R. 26 W., of the Fairbanks Meridian. The location is accurate within half a mile. The site corresponds to location 2 of Cobb (1972), and roughly to the site for Gold Hill, U.S. Bureau of Land Management MAS number 0020480053.

Commodities:

Main: Au

Other: Ag

Ore minerals: Gold, silver

Gangue minerals: Quartz, talc(?)

Geologic description:

The country rocks in the area of the Gold Hill lode prospect are upper Precambrian or lower Paleozoic schist, quartzite, phyllite, and slate, and Cretaceous granite (Chapman and others, 1982). The deposit consists of a 2- to 3-foot-wide, rusty quartz vein in talcose schist (Maddren, 1910). Maddren describes this as the first attempt in Interior Alaska to develop a lode mine.

Around 1890, miners began working on this vein, tunneling 110 feet into Gold Hill before abandoning their work because the vein was narrow, low grade, and faulted (Spurr, 1898). A random sample assayed 0.05 ounce of gold and 0.3 ounce of silver per ton (Maddren, 1910).

Alteration:

The talcose host rock of the vein may be hydrothermal in origin (Maddren, 1910).

Age of mineralization:

The deposit may be genetically related to the Cretaceous granite.

Deposit model:

Low-sulfide gold-quartz vein (Cox and Singer, 1986; model 36a).

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

36a

Production Status: Undetermined.

Site Status: Inactive

Workings/exploration:

Around 1890, miners began working on this vein, tunneling 110 feet into Gold Hill before abandoning their work because the vein was narrow, low grade, and faulted (Spurr, 1898).

Production notes:

Reserves:

Additional comments:

References:

Spurr, 1898; Maddren, 1910; Cobb, 1972; Chapman and others, 1982.

Primary reference: Spurr, 1898

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Lancaster Creek

Site type: Mine

ARDF no.: TN073

Latitude: 65.2051 **Quadrangle:** TN A-6

Longitude: 152.7485

Location description and accuracy:

The Lancaster Creek placer gold prospect is on the north bank of the Yukon River. The site is where a tractor trail crosses Lancaster Creek at an elevation of about 200 feet. It is in the north half of section 1, T. 4 N., R. 26 W., of the Fairbanks Meridian. The location is approximate. This site roughly corresponds with the site for Lancaster Creek, U.S. Bureau of Land Management MAS number 0020480097.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The country rocks in the Lancaster Creek area are upper Precambrian or lower Paleozoic schist, quartzite, phyllite, and slate, and Cretaceous granite (Chapman and others, 1982).

An open cut was made on Lancaster Creek in 1917 (Martin, 1919). No production was reported. Cobb (1977) does not describe any other work at this site.

Alteration:

Age of mineralization:

Quaternary.

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:

An open cut was made on Lancaster Creek in 1917 (Martin, 1919). Cobb (1977) does not describe any other work at this site.

Production notes:

Reserves:

Additional comments:

References:

Maddren, 1910; Martin, 1919; Cobb, 1977; Chapman and others, 1982.

Primary reference: Martin, 1919

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/5/2003

Site name(s): Moose Creek (includes lower Boulder Creek; Value Creek)

Site type: Mines

ARDF no.: TN074

Latitude: 65.1377 **Quadrangle:** TN A-3

Longitude: 151.2503

Location description and accuracy:

Mining claims were staked in the 1960's, followed by placer mining, along Moose Creek, lower Boulder Creek, and Value Creek (Alaska Kardex files). The discovery claim notice for Moose Creek states that one of the corner claim posts is 150 feet from L.E. Anderson's old cabin. This cabin is presumed to be the one at the junction of Moose and Boulder creeks. Mining claim location notices show 18 claims in this claim block. The site is in the southeast quarter of section 29, T. 4 N., R. 18 W., of the Fairbanks Meridian. The location is accurate within about 500 feet.

This site closely corresponds with the site for Moose Creek, U.S. Bureau of Land Management MAS number 0020480115. This record also includes information about Value Creek, MAS number 0020480116.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Moose Creek area is underlain mainly by Jurassic or Cretaceous clastic sedimentary rocks, and by Paleozoic limestone, dolomite, greenstone, and chlorite schist (Chapman and others, 1982). Serpentine Ridge, 1.5 miles to the south, consists of serpentinite and of mafic intrusive rocks that cut Mesozoic, predominantly marine sedimentary rocks.

Eighteen or nineteen mining claims were staked between 1963 and 1966 by J & M Mining Co. along Moose Creek, Value Creek, and the part of Boulder Creek between Moose and Value creeks (Alaska Kardex files). The location notices state that gold was found on the discovery claim. Affidavits of annual labor from 1964 to 1993 list sampling, prospect holes, drilling, stripping, and sluicing. Recorded placer mining included 150 days in 1980, 40 days sluicing in 1981, 50 days sluicing in 1982, 20,000 feet of open cut in 1984, 22,000 feet of open-cut in 1985, and mining in 1990 and 1991. There is no record of production.

Alteration:

Age of mineralization:

Quaternary.

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:

Eighteen or nineteen mining claims were staked between 1963 and 1966 by J & M Mining Co. along Moose Creek, Value Creek, and the part of Boulder Creek between Moose and Value creeks (Alaska Kardex files). The location notices state that gold was found on the discovery claim. Affidavits of annual labor from 1964 to 1993 list sampling, prospect holes, drilling, stripping, and sluicing. Recorded placer mining included 150 days in 1980, 40 days sluicing in 1981, 50 days sluicing in 1982, 20,000 feet of open cut in 1984, 22,000 feet of open-cut in 1985, and mining in 1990 and 1991.

Production notes:

Reserves:

Additional comments:

References:

Chapman and others, 1982.

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/11/2004

Site name(s): American Creek (includes California Gulch and Colorado Gulch)

Site type: Mine

ARDF no.: TN075

Latitude: 65.1008 **Quadrangle:** TN A-3

Longitude: 151.1732

Location description and accuracy:

For this record, the site representing the American Creek placer mine is on the creek at the intersection of a tractor trail, and adjacent to an airstrip, in the southeast quarter of section 10, T. 3 N., R. 18 W., of the Fairbanks Meridian. Placer mining along at least 3 miles of American Creek is marked by tailings in sections 10, 11, 16, and 21. This site also includes areas of placer gold mining on California Gulch and Colorado Gulch.

The site corresponds to location 20 of Cobb (1972), and roughly to the site for Colorado Gulch, U.S. Bureau of Land Management MAS number 0020480070. The MAS site for American Creek, MAS number 0020480002, is 1.5 miles downstream, in section 16, T. 3 N., R. 18 W. (shown by tailings symbol on USGS Tanana A-3 quadrangle, 1953 ed., rev. 1966).

Commodities:

Main: Au

Other: Cr

Ore minerals: Barite, chromite, gold, hematite, ilmenite, magnetite, pyrite

Gangue minerals:

Geologic description:

American Creek drains the south side of Serpentine Ridge, and has been placer mined both above and below its junction with New York Gulch (TN077). The valley has an asymmetrical shape for much of its length, where the creek flows along the strike of bedding in bedrock.

Serpentine Ridge consists of serpentinite and mafic intrusive rocks that apparently intrude Mesozoic, predominantly marine sedimentary rocks, through which the stream channel cuts (Chapman and others, 1982).

Gold was discovered on American Creek in 1911 (Eakin, 1912). Depth to pay dirt was shallow (12 to 15 feet) in the upper stretches of the creek, and it quickly became a major producer in the Hot Springs mining district. Mining initially consisted of drifting and open cuts. The reports by Smith (1930) and Cobb (1977) of Ness operating a hydraulic mine in the Eureka Creek area may instead refer to Ed Ness, who operated on American Creek in 1925 and 1926 (Wimmler, 1926). Small-scale mining was reported on California Gulch (Creek) in 1932 (Smith, 1934; Cobb, 1977).

In 1927, the American Creek Dredging Company began mining downstream from just below the mouth of Colorado Gulch (Smith, 1930). Parts of the placer ground consisted of 7 to 8 feet of gravels below 5 to 7 feet of muck. The lower 4 feet of the gravels was unusually coarse, and carried gold throughout, while the upper few feet of bedrock also proved rich (Mertie, 1934). The ground was frozen and had to be thawed before dredging, which continued sporadically through 1940, when the rich ground was mined out.

A contiguous claim block varying from 33 to 108 claims on New York Gulch, American Creek (TN075), and tributaries of American Creek was worked by American Creek Partners from at least 1981 to 1992 (Alaska Kardex files). Placer development, using Caterpillar D-9 and D-6 bulldozers, took place over a 3 to 5 month period during those years. Gold production from this mining is not known. More recent work on American Creek included Orval McCormach's and Delima Placer's work in 1990 (Swainbank and others, 1991). In 1992 and 1994, Don Delima Placer, Inc., continued working on American Creek (Swainbank and others, 1993; Swainbank and others, 1995). In 1994, 40,000 cubic yards of material were mined. Ross Novak and Jay Hodges both recovered gold during the 1997 season (Swainbank and others, 1998). Hodges also mined in 1998 (Szumigala and Swainbank, 1999). In 1997, Stardust Mining, Inc., staked 14 state mining claims on Colorado Gulch near its mouth and planned to cut 50 small trenches across the gulch (Alaska Placer Mining Application F999579; Alaska Kardex files). Stardust Mining also planned to process a bulk sample of bench gravels from near the mouth of Colorado Gulch to determine the placer gold potential of the bench deposits.

According to Mertie (1934), American Creek produced $702,000 in gold, estimated by Cobb (1977) to equal about 34,000 ounces of gold at $20.67 per ounce. This included a $600 nugget recovered in 1951 (gold at $35 per ounce) (Williams, 1951). According to Waters (1934), the associated heavy minerals included magnetite, pyrite, ilmenite, barite, chromite, hematite, garnet, and one piece of tourmaline. The source of the placer gold may be quartz-carbonate veins associated with an east-trending shear zone, against which the pay streak appears to terminate (Cobb, 1981).

Alteration:

Age of mineralization:

Quaternary.

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: Active?

Workings/exploration:

Gold was discovered in American Creek in 1911. Mining began almost immediately due to the shallow depth to pay dirt and the high gold content. In 1914, 30 men were reportedly working on American Creek (Brooks, 1915), and by 1919 American Creek was the second highest producer of gold in the Hot Springs district. Dredging by American Creek Dredging Company began in 1927 and continued until 1940, when the last of the rich ground was mined (Smith, 1942). About $600,000 worth of gold (at $20.67 per ounce) was mined prior to dredging, and through 1931, the dredge reportedly recovered $102,000 worth of gold (Mertie, 1934).

A contiguous claim block varying from 33 to 108 claims on New York Gulch, American Creek (TN075), and tributaries of American Creek was worked by American Creek Partners from at least 1981 to 1992 (Alaska Kardex files). Placer development, using Caterpillar D-9 and D-6 bulldozers, took place over a 3 to 5 month period during those years. Placer gold production from this mining is not known. More recent work on American Creek included Orval McCormach's and Delima Placer's work in 1990 (Swainbank and others, 1991). In 1992 and 1994, Don Delima continued working on American Creek (Swainbank and others, 1993; Swainbank and others, 1995). In 1994, 40,000 cubic yards of material was mined. Ross Novak and Jay Hodges both recovered gold during the 1997 season (Swainbank and others, 1998). Hodges also mined in 1998 (Szumigala and Swainbank, 1999). Stardust Mining, Inc., staked 14 state mining claims on Colorado Gulch near its mouth and planned to cut 50 small trenches across the gulch (Alaska Placer Mining Application F999579; Alaska Kardex files). Stardust Mining also planned to process a bulk sample of bench gravels from near the mouth of Colorado Gulch to determine the placer gold potential of the bench deposits.

Production notes:

Total production through 1931 was $102,000 worth of gold from dredging and $600,000 in gold from drifting and open-cut mining prior to dredging (Mertie, 1934). At the fixed price of $20.67 per ounce at that time, the weights in refined gold respectively would equal approximately 4,935 and 29,025 ounces of gold. Production records are not available for the more recent mining activity.

Reserves:

Additional comments:

References:

Eakin, 1912; Brooks, 1915; Wimmler, 1926; Smith, 1930; Mertie, 1934; Waters, 1934; Smith, 1934; Smith, 1942; Williams, 1951; Cobb, 1972; Cobb, 1977; Cobb, 1981; Chapman and others, 1982; Swainbank and others, 1991; Swainbank and others, 1993; Swainbank and others, 1995; Swainbank and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 5/6/2004

Site name(s): Trail Creek; Salt Creek; Dry Creek

Site type: Mines

ARDF no.: TN076

Latitude: 65.1482 **Quadrangle:** TN A-3

Longitude: 151.1584

Location description and accuracy:

This record represents placer gold prospects in the Boulder Creek drainage, chiefly its tributaries Trail Creek, Salt Creek, and Dry Creek, an unnamed branch of Trail Creek (Chapin, 1919). The site is at the junction of Salt Creek and Trail Creek, in the northwest quarter of section 26, T. 4 N., R. 18 W., of the Fairbanks Meridian. The location is accurate, but it was not plotted by Cobb (1972). The site roughly corresponds with the U.S. Bureau of Land Management location for Salt Creek (MAS number 0020480073).

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The Salt Creek-Dry Creek area is underlain by Jurassic or Cretaceous clastic sedimentary rocks and by Paleozoic limestone, dolomite, greenstone, and chloritic schist, with minor amounts of phyllite, quartzite, and quartz mica schist (Chapman and others, 1982; Reifenstuhl and others, 1998). Serpentine Ridge, 1.5 miles to the south, consists of serpentinite and mafic intrusive rocks that intrude Mesozoic, predominantly marine sedimentary rocks, (Chapman and others, 1982).

Chapin (1919) reported mining in Dry Creek in 1917. The gravels are angular, 3 to 6 feet thick, and consist of black slate, graywacke, quartzite, and schist. Water was not plentiful, but the ground was easily worked. Heiner and others (1968) reported mining in 1967, and that claims on Dry Creek were held or worked by Scotty Anderson, Farrell, Heiner and Wolff, and Higgins.

Salt Creek and the immediate area of the junction of Salt Creek with Trail Creek was under claim and mined sporadically from 1973 to 1993 (Alaska Kardex files). Twelve claims were staked in the area in 1973, with 10 placer claims on Salt Creek and 2 placer claims downstream from the junction of Salt and Trail creeks. Mining was a bulldozer and loader sluicebox operation.

Alteration:

Age of mineralization:

Quaternary.

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:

Chapin (1919) reported mining in Dry Creek in 1917. The gravels are angular, 3 to 6 feet thick, and consist of black slate, graywacke, quartzite, and schist. Water was not plentiful, but the ground was easily worked. Heiner and others (1968) reported mining in 1967, and that claims on Dry Creek were held or worked by Scotty Anderson, Farrell, Heiner and Wolff, and Higgins.

Salt Creek and the immediate area of the junction of Salt Creek with Trail Creek was under claim and mined sporadically from 1973 to 1993 (Alaska Kardex files). Twelve claims were staked in the area in 1973, with 10 placer claims on Salt Creek and 2 placer claims downstream from the junction of Salt and Trail creeks. Mining was a bulldozer and loader sluicebox operation.

Production notes:

Reserves:

Additional comments:

References:

Chapin, 1919; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Chapin, 1919

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/23/2004

Site name(s): New York Gulch; New York Creek

Site type: Mine

ARDF no.: TN077

Latitude: 65.1031 **Quadrangle:** TN A-3

Longitude: 151.1579

Location description and accuracy:

The site of the New York Gulch placer mine is on the gulch at an elevation of about 550 feet, in the northwest quarter of section 11, T. 3 N., R. 18 W., of the Fairbanks Meridian. The site corresponds to location 21 of Cobb (1972), and roughly to the site for New York Gulch, U.S. Bureau of Land Management MAS number 0020480093, but the MAS site is approximately 0.5 mile downstream.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

New York Gulch is in the Hot Springs mining district, approximately 15 miles west of the old town of Tofty. It drains the south side of Serpentine Ridge, and flows into American Creek (TN075).

Serpentine Ridge consists of serpentinite and mafic intrusive rocks that apparently intrude Mesozoic, predominantly marine, sedimentary rocks, through which the stream channel cuts (Chapman and others, 1982).

There is little in the public record about the placer deposit in New York Gulch. Prospecting or mining occurred in 1921 (Cobb, 1977); Smith (1939 [B 910-A]) reported mining there in 1926; and Wimmler (1929) reported open-cut mining during 1929. Waters (1934) stated that the mineral content of the placer deposit is similar to that of samples from American Creek (TN075). The concentrates included gold, magnetite, barite, ilmenite, and picotite (Mertie, 1934). A contiguous claim block varying from 33 to 108 claims on New York Gulch, American Creek (TN075), and tributaries of American Creek was worked by American Creek Partners from at least 1981 to 1992 (Alaska Kardex files). Placer development, using Caterpillar D-9 and D-6 bulldozers, took place over a 3 to 5 month period during those years. Placer gold production from this mining is not known.

Newberry and Clautice (1997) analyzed three small, irregularly-shaped nuggets from New York Gulch by electron microprobe. Each of the nuggets had a different composition, probably indicating different sources and/or degrees of exposure to erosion. One of the nuggets contained electrum and another nugget contained a tiny inclusion of native nickel.

Alteration:

Age of mineralization:

Quaternary.

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:

Little work was done in the New York Gulch area. Prospecting or mining occurred in 1921 (Cobb, 1977); Smith (1939 [B 910-A]) reported mining there in 1926; and Wimmler (1930) reported open-cut mining during 1929.

A contiguous claim block varying from 33 to 108 claims on New York Gulch, American Creek (TN075), and tributaries of American Creek was worked by American Creek Partners from at least 1981 to 1992 (Alaska Kardex files). Placer development, using Caterpillar D-9 and D-6 bulldozers, took place over a 3 to 5 month period during those years. Placer gold production from this mining is not known.

Production notes:

Unknown amount of placer gold production.

Reserves:

Additional comments:

References:

Wimmler, 1929; Mertie, 1934; Waters, 1934; Smith, 1939 (B 910-A); Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Newberry and Clautice, 1997.

Primary reference: Mertie, 1934; Cobb, 1972

Reporter(s): G.E. Graham (ADGGS)

Last report date: 1/15/2001

Site name(s): Unnamed (near junction of Boulder Creek and Little Boulder Creek)

Site type: Mines

ARDF no.: TN078

Latitude: 65.1476 **Quadrangle:** TN A-3

Longitude: 151.0945

Location description and accuracy:

This site represents an area of placer mining on Boulder Creek near its junction with Little Boulder Creek. The site is at a (placer) mine symbol in the northwest quarter of section 30, T. 4 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within several hundred feet. The site corresponds to location 22 of Cobb (1972).

Commodities:

Main: Au

Other: Cr, REE, U

Ore minerals: Chromite, gold, monazite, uraninite

Gangue minerals:

Geologic description:

The Boulder Creek area is underlain by Jurassic or Cretaceous clastic sedimentary rocks, which have been intruded and contact metamorphosed by the Cretaceous monzodiorite to granite Roughtop Mountain pluton (Chapman and others, 1982; Reifenstuhl and others, 1998). Locally, the area is covered by unconsolidated Quaternary deposits (Chapman and others, 1982).

Published descriptions of the placer deposits, and of the locations of workings, on Boulder and Little Boulder creeks are ambiguous. The following description herein is assumed to apply to the placer deposits in the area of this site. Mining on Boulder Creek was first reported in 1915 (Brooks, 1916). The creek has an asymmetrical valley (Chapin, 1919); the south side is steep with no gravels, and the north side is flat with alluvium 8 to 12 feet thick. The placer extends for several miles, with a workable width of 1,200 feet. In 1917, over 200,000 feet of bedrock were cleaned (Chapin, 1919). A hydraulic plant was operated in 1931 from May to September, and 7,000 square feet of bedrock was cleaned from a bench of Boulder Creek (Mertie, 1934). Gold 818 fine from this operation reportedly had an assay value of $16.90 per ounce (at $20.67 per ounce). There was relatively consistent small-scale production in the 1930's from Boulder Creek, although the amount of gold recovered was not made public.

Early references to Little Boulder Creek reported that the placer ground was thin, with low gold grades (Brooks, 1918). Chapin (1919) reported prospecting the following year in 6 to 12 feet of alluvium consisting of silt with layers and lenses of angular slate fragments.

Waters (1934) and Moxham (1954) reported that, in addition to gold, the placer concentrates contained magnetite, ilmenite, zircon, rutile, garnet, sphene, and monazite. In 1949, pan concentrates assayed 0.21 percent equivalent uranium oxide, whose source was speculated to be the pluton at Roughtop Mountain (Moxham, 1954). Moxham also identified chromite float in Boulder Creek, whose source is probably serpentinite on Serpentine Ridge (TN079), south of the creek (Berg and Cobb, 1967).

In 1967, two properties on Boulder Creek were being intensely prospected and another property was to be mined in 1968 (Heiner and others, 1968). Farrell & Higgins were also active on Little Boulder Creek in 1967. Boulder Creek Mining Company (Les and Dorthy Fickes) worked a cut on Boulder Creek during 1986 (Bundtzen and others, 1987). In 1992, R. Schroder and Beatrice Schafer both mined on Boulder Creek (Swainbank and others, 1993). Placer Mine Services mined along the creek in 1997 (Swainbank and others, 1998), and Richard Wilder mined in 1998 (Szumigala and Swainbank, 1999).

In 1990, J.L. Wood and Vern Petefish worked on Little Boulder Creek. In 1991, Wood continued to work in Little Boulder Creek, while Windy Hill Mining prospected some areas (Bundtzen and others, 1992). Wood also mined on Little Boulder Creek in 1997-98 (Swainbank and others, 1998; Szumigala and Swainbank, 1999).

Alteration:

Age of mineralization:
Quaternary.

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: Active?

Workings/exploration:

The first reports of placer mining on Boulder Creek were in 1915 (Brooks, 1916), and the deposits were worked nearly continuously through the 1930's. There is no public record of the amount of gold recovered during this period.

More recently, there has been placer mining on both Boulder and Little Boulder creeks. In 1967, two properties on Boulder Creek were being prospected and another property was to be mined in 1968 (Heiner and others, 1968). Farrell & Higgins were also active on Little Boulder Creek in 1967. Boulder Creek Mining Company (Les and Dorthy Fickes) worked a cut on Boulder Creek during 1986 (Bundtzen and others, 1987). In 1992, R. Schroder and Beatrice Schafer both mined on Boulder Creek (Swainbank and others, 1993). Placer Mine Services mined along the creek in 1997 (Swainbank and others, 1998), and Richard Wilder mined in 1998 (Szumigala and Swainbank, 1999).

In 1990, J.L. Wood and Vern Petefish worked on Little Boulder Creek. In 1991, Wood continued to work in Little Boulder Creek, while Windy Hill Mining prospected some areas (Bundtzen and others, 1992). Wood also mined on Little Boulder Creek in 1997-98 (Swainbank and others, 1998; Szumigala and Swainbank, 1999).

Production notes:

Reserves:

Additional comments:

References:
Brooks, 1916; Brooks, 1918; Chapin, 1919; Mertie, 1934; Waters, 1934; Moxham, 1954; Berg and Cobb, 1967; Heiner and others, 1968; Cobb, 1972; Chapman and others, 1982; Bundtzen and others, 1987; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993; Reifenstuhl and others, 1998; Swainbank and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Mertie, 1934; Cobb, 1972

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/4/2003

Site name(s): Unnamed (on Serpentine Ridge; Boulder)

Site type: Occurrence

ARDF no.: TN079

Latitude: 65.1320 **Quadrangle:** TN A-3

Longitude: 151.0787

Location description and accuracy:

This site represents a chromite occurrence on locally-named Serpentine Ridge. For this record, the site is on a tractor trail at an elevation of about 1,500 feet, in the northeast quarter of section 31, T. 4 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within a mile. This site is Cobb's (1972) location 4, and roughly corresponds with the U.S. Bureau of Land Management site for Boulder (MAS number 0020480001). The MAS report for Boulder also lists Mo and Au as commodities, but there are no reports of those metals at this site elsewhere in the literature.

Commodities:

Main: Cr

Other:

Ore minerals: Chromite

Gangue minerals:

Geologic description:

The Boulder Creek area is underlain by Jurassic or Cretaceous clastic sedimentary rocks, which are intruded and contact metamorphosed by the Cretaceous monzodiorite and granite Roughtop Mountain pluton (Chapman and others, 1982; Reifenstuhl and others, 1998). Serpentine Ridge, on the south side of the creek, is upper Cretaceous(?) serpentinite, diabase, and gabbro that is in thrust-fault contact with the clastic sedimentary rocks.

Moxham (1954) identified chromite float on the south slopes of the ridge between Woodchopper and Boulder creeks, and small lenses and stringers of chromite that are in place on the ridge top. Berg and Cobb (1967) reported chromite disseminated in serpentinite on Serpentine Ridge and pieces of chromite float up to 6 inches in diameter.

Alteration:

Age of mineralization:

Late Cretaceous?

Deposit model:

Podiform chromite (Cox and Singer, 1986; model 8a) or (metamorphosed) Bushveld Cr(?) (Cox and Singer, 1986; model 2a).

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

8a or 2a(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

Moxham (1954) identified chromite float on the south slopes of the ridge between Woodchopper and Boulder creeks, and small lenses and stringers of chromite that are in place on the ridge top. Berg and Cobb (1967) reported chromite disseminated in serpentinite on Serpentine Ridge and pieces of chromite float up to 6 inches in diameter.

Production notes:

Reserves:

Additional comments:

References:

Moxham, 1954; Berg and Cobb, 1967; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Moxham, 1954

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/16/2003

Site name(s): Little Boulder Creek (includes Queen Twin Creek and 4 unnamed tributaries)

Site type: Mines

ARDF no.: TN080

Latitude: 65.1540 **Quadrangle:** TN A-3

Longitude: 151.0589

Location description and accuracy:

This site represents an area of placer mining on Little Boulder Creek and its northern tributaries (Queen Twin Creek and 4 unnamed tributaries) that extends approximately 5 miles in an east-to-northeast direction. The site is in the southwest quarter of section 20, T. 4 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within several hundred feet. This site roughly corresponds with the site for Little Boulder Creek, U.S. Bureau of Land Management MAS number 0020480072.

Commodities:

Main: Au

Other:

Ore minerals: Gold, scheelite

Gangue minerals:

Geologic description:

The Little Boulder Creek area is underlain mainly by Jurassic or Cretaceous clastic sedimentary rocks, which are intruded and contact metamorphosed by the Cretaceous monzodiorite to granite Roughtop Mountain pluton (Chapman and others, 1982; Reifenstuhl and others, 1998). Locally, Triassic or Permian phyllitic argillite, sandstone, and shale are in thrust contact with the Jurassic or Cretaceous sedimentary rocks (Reifenstuhl and others, 1998). North-trending, high-angle faults cut all of the rocks.

Early references to Little Boulder Creek reported that the placer ground was thin, with low gold grades (Brooks, 1918). Chapin (1919) described 6 to 12 feet of alluvium consisting of silt with layers and lenses of angular slate fragments.

Farrell & Higgins were active on Little Boulder Creek in 1967 (Heiner and others, 1968). Other placer mining-related activities from 1967 to 1983 included overburden stripping, trenching, test hole digging, and portable sluicebox sampling (Alaska Kardex files). Sample cuts were made with a bulldozer in 1989 and gold and scheelite were recovered from the samples. In 1990, J.L. Wood and Vern Petefish worked on Little Boulder Creek. In 1991, Wood continued to work the creek, while Windy Hill Mining prospected some areas (Bundtzen and others, 1992). Placer mining continued through the 1990's, including sluicing 9,000 cubic yards of material with a bulldozer-backhoe operation in 1992 (Alaska Kardex files). Wood also mined on Little Boulder Creek in 1997-98 (Swainbank and others, 1998; Szumigala and Swainbank, 1999) and planned mining through 2002 (Swainbank and others, 2000; Szumigala and others, 2001; Swainbank and others, 2002; Szumigala and others, 2003).

Alteration:

Age of mineralization:

Quaternary.

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

Site Status: Active

Workings/exploration:
The first reports of placer mining on Little Boulder Creek were in 1917 (Brooks, 1918), and the deposits were worked nearly continuously through the 1930's.
Farrell & Higgins were active on Little Boulder Creek in 1967 (Heiner and others, 1968). Other placer mining-related activities from 1967 to 1983 included overburden stripping, trenching, test hole digging, and portable sluicebox sampling (Alaska Kardex files). Sample cuts were made with a bulldozer in 1989 and gold and scheelite were recovered from the samples. In 1990, J.L. Wood and Vern Petefish worked on Little Boulder Creek. In 1991, Wood continued to work the creek, while Windy Hill Mining prospected some areas (Bundtzen and others, 1992). Placer mining continued through the 1990's, including sluicing 9,000 cubic yards of material with a bulldozer-backhoe operation in 1992 (Alaska Kardex files). Wood also mined on Little Boulder Creek in 1997-98 (Swainbank and others, 1998; Szumigala and Swainbank, 1999) and planned mining through 2002 (Swainbank and others, 2000; Szumigala and others, 2001; Swainbank and others, 2002; Szumigala and others, 2003).

Production notes:
The first reports of placer mining on Little Boulder Creek were in 1917 (Brooks, 1918), and the deposits were worked nearly continuously through the 1930's. There is no public record of the amount of gold recovered during this period, or from any of the work from 1967 to 2003.

Reserves:

Additional comments:

References:
Brooks, 1918; Chapin, 1919; Heiner and others, 1968; Chapman and others, 1982; Bundtzen and others, 1992; Reifenstuhl and others, 1998; Swainbank and others, 1998; Szumigala and Swainbank, 1999; Swainbank and others, 2000; Szumigala and others, 2001; Swainbank and others, 2002; Szumigala and others, 2003.

Primary reference: Szumigala and others, 2003; this report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/5/2004

Site name(s): Woodchopper Creek

Site type: Mine

ARDF no.: TN081

Latitude: 65.0516 **Quadrangle:** TN A-3

Longitude: 151.0122

Location description and accuracy:

This site represents about a square-mile area of placer mines, centered on the abandoned town of Woodchopper. For this record, the site is at the junction of Woodchopper Creek and Deep Creek, in the southeast quarter of section 28, T. 3 N., R. 17 W., of the Fairbanks Meridian. The site corresponds to location 25 of Cobb (1972), and to the site for Woodchopper Creek, U.S. Bureau of Land Management MAS number 0020480016.

Commodities:

Main: Au

Other: Ag, Sn

Ore minerals: Cassiterite, gold, ilmenite, magnetite, pyrite, silver

Gangue minerals:

Geologic description:

The Woodchopper Creek placer mine marks the western end of the Tofty tin belt, a 12-mile long area of cassiterite- and gold-bearing placer deposits that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The pay gravels on Woodchopper Creek occupy a deep channel and lie as deep as 200 feet below the surface (Brooks, 1918). Mertie (1934) described one of the mines on the east side of Woodchopper Creek as containing 20 feet of gravel on bedrock, overlain by 20 feet of muck, then 40 feet more of gravel, capped in turn by 40 feet of muck. These gravels consist predominantly of light phyllite, dark phyllite, and quartzite, with sandstone increasing downstream (Wayland, 1961). Tourmaline-bearing quartz boulders occur in the tailings (Thomas, 1957).

The gold and cassiterite generally occur together. However, Wayland (1961) reported that drilling between 1926 and 1941 by Adolph Brock yielded 5 holes with cassiterite and no gold. Through 1956, Thomas (1957) reported the total production of Woodchopper Creek to be 28,501 ounces of gold, 3,402 ounces of silver, and 40,300 pounds of cassiterite concentrate. The cassiterite generally occurs as rounded pebbles, and at least some of the gold is coarse (Wayland, 1961). Other heavy minerals include ilmenite, picotite, pyrite, and magnetite (Mertie, 1934).

Cobb (1977) has summarized the mining history on Woodchopper Creek. Mining on the creek started in 1913 with the discovery of gold gravels near the mouth of the creek (Chapin, 1914). There was large-scale drift mining from 1915 to 1916, employing more than 100 men (Brooks, 1918). This project disbanded, but mining on different claims continued through 1941, and many prospecting holes were dug by different people (Wayland, 1961). Woodchopper Creek was the most productive creek in the Hot Springs district in 1926 (Smith, 1929). The Woodchopper Mining Company drift mined from a 167-foot-deep shaft on the Loraine Claim in 1951 (Williams, 1951). Seven groups held active mining claims on Woodchopper Creek in 1967 (Heiner and others, 1968). Jack Neubauer mined in the area in 1997 (Swainbank and others, 1998).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:
Cobb (1977) has summarized the mining history on Woodchopper Creek. Mining on the creek started in 1913 with the discovery of gold gravels near the mouth of the creek (Chapin, 1914). There was large-scale drift mining from 1915 to 1916, employing more than 100 men (Brooks, 1918). This project disbanded, but mining on different claims continued through 1941, and many prospecting holes were dug by different people (Wayland, 1961). Woodchopper Creek was the most productive creek in the Hot Springs district in 1926 (Smith, 1929). The Woodchopper Mining Company drift mined from a 167-foot-deep shaft on the Loraine Claim in 1951 (Williams, 1951). Seven groups held active mining claims on Woodchopper Creek in 1967 (Heiner and others, 1968). Jack Neubauer mined in the area in 1997 (Swainbank and others, 1998).

Production notes:
Thomas (1957) reported that 28,501 ounces of gold, 3,402 ounces of silver, and 40,300 pounds of cassiterite concentrate (60 percent tin) were produced from Woodchopper Creek through 1956.

Reserves:

Additional comments:

References:
Chapin, 1914; Brooks, 1918; Smith, 1929; Mertie, 1934; Williams, 1951; Thomas, 1957; Wayland, 1961; Heiner and others, 1968; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998; Swainbank and others, 1998.

Primary reference: Mertie, 1934; Thomas, 1957; Wayland, 1961; Cobb, 1977

Reporter(s): G.E. Graham (ADGGS)

Last report date: 1/15/2001

Site name(s): Deep Creek and tributaries

Site type: Mine

ARDF no.: TN082

Latitude: 65.0619 **Quadrangle:** TN A-2

Longitude: 150.9862

Location description and accuracy:

This site represents an approximately 1.5-mile-long area of placer mining that includes upper Deep Creek and the lower parts of its tributaries, Innesvale Gulch and Hokeley Gulch (Thomas, 1957). For this record, the site is at the junction of Deep Creek and Hokeley Gulch, in the northwest quarter of section 27, T. 3 N., R. 17 W., of the Fairbanks Meridian. The location is accurate. The site corresponds to location 26 of Cobb (1972, 1977), and roughly to U.S. Bureau of Land Management MAS number 0020480003.

Commodities:

Main: Au

Other: Ag, Cr, Nb, REE, Sn, W

Ore minerals: Aeschynite, cassiterite, chromite, columbite, ellsworthite, gold, ilmenite, magnetite, monazite, picotite, pyrite, rutile, scheelite, unknown silver mineral, zircon

Gangue minerals:

Geologic description:

The placer mines on Deep Creek and its tributaries are part of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The placer deposits on Deep Creek and its tributaries stretch for more than a mile along the trace of an east-northeast-striking thrust fault. The bulk of the mining, from 1913 until at least 1941, appears to have been on benches about 1/4 of a mile south of the present channel of Deep Creek (Wayland, 1961). Although most of the gold was in gravel on the bedrock surface, gold and cassiterite ('tin') were also identified in overlying lenses of gravel. The cassiterite occurs chiefly as well-rounded to subangular particles that range in size from microscopic to several inches across. The larger sizes often are accompanied by vein quartz and tourmaline, as well as by fragments of sedimentary country rock. The smaller sizes generally are free of impurities (Thomas,1957). Other minerals identified in placer concentrates include aeschynite, chromite, columbite, ellsworthite, ilmenite, magnetite, monazite, picotite, pyrite, rutile, scheelite, an unknown silver mineral, and zircon (Waters, 1934; Thomas, 1957; Cobb, 1977). A gold grain analyzed by electron microprobe contained a tiny inclusion of native nickel (Newberry and Clautice, 1997).

The area of placer deposits has been divided into two sections, known locally as the Hokeley Gulch section (the western portion), and the Innesvale Gulch section (the eastern portion). The Hokeley Gulch placers were discovered in 1913 by Adolph Bock, and the first mining was reported by Eakin (1915). The shafts in the pay zone are 130 feet deep, with 6 to 8 feet of gravels lying on bedrock (Eakin, 1915). The gravels consist of angular phyllite, sandstone, and quartz boulders, along with minor quartz-tourmaline rock, chromite, and coarse-grained biotite granite. The gold is smooth and fine, suggesting that it is well traveled (Wayland, 1961).

The Innesvale Gulch section was initially mined in 1918, when Bock, Handson and Albrecht did much of the work. One of the claims worked in 1931 was visited by Mertie (1934), who noted that the occurrence of the gold and cassiterite differs from that in the Hokeley Gulch section, in that the depth to bedrock is only about 65 feet, and the gravels are 5 to 6 feet thick. Irregularities in the bedrock surface trapped the cassiterite and gold. The gravels are similar in composition to those in the Hokeley Gulch section, but lack granite and include a small amount of metadiorite (Wayland, 1961).

Through 1956, production from the Deep Creek placers was 7,684 ounces of gold, 653 ounces of silver, and 64,200 pounds of cassiterite concentrate (Thomas, 1957). Barton (1962) reported that the placer tailings contained 0.1 to 5.0 percent niobium, and Kauffman and Holt (1965) published analyses of concentrates that showed 1 to 5 percent zircon. At least one sample of the concentrates below Hokeley Gulch contained 10 percent chromite (Cobb, 1973).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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 Hokeley Gulch placers were discovered in 1913 by Adolph Bock, and were worked through 1916. The shafts in the pay zone are 130 feet deep, with 6 to 8 feet of gravels lying on bedrock (Eakin, 1915). The Innesvale Gulch placers were initially mined in 1918. One of the claims worked in 1931 was visited by Mertie (1934), who noted that the occurrence of the gold and cassiterite differs from that in the Hokeley Gulch placers, in that the depth to bedrock is only about 65 feet, and the gravels are 5 to 6 feet thick.

Production notes:
Thomas (1957) reported that 6,864 ounces of gold, 653 ounces of silver, and 64,200 pounds of cassiterite concentrate (60 percent tin) were produced from Deep Creek through 1956.

Reserves:

Additional comments:
The stream gradient of Deep Creek is 50 to100 feet per mile.

References:
Eakin, 1915; Mertie, 1934; Waters, 1934; Thomas, 1957; Wayland, 1961; Barton, 1962; Kauffman and Holt, 1965; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Newberry and Clautice, 1997; Reifenstuhl and others, 1998.

Primary reference: Wayland, 1961

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 2/14/2004

Site name(s): Unnamed (upper Idaho Gulch)

Site type: Occurrence

ARDF no.: TN083

Latitude: 65.0927

Quadrangle: TN A-2

Longitude: 150.9369

Location description and accuracy:

This lode occurrence is in Idaho Gulch at an elevation of about eight hundred feet. The site is in the northeast quarter of section 14, T. 3 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within a half mile. The site corresponds to location 5 of Cobb (1972), and very roughly to the location of Sullivan Creek, U.S. Bureau of Land Management MAS number 0020480061. The MAS site is listed as a gold lode.

Commodities:

Main: Ce, Nb

Other: Ag, REE, U

Ore minerals: Aeschynite, apatite, magnetite, monazite, pyrite, niobium-, rare-earth-, or radioactive-bearing minerals, rutile, zircon

Gangue minerals: Calcite, goethite, hematite, limonite

Geologic description:

This lode occurrence is in an area of placer deposits, known as the Tofty tin belt, which contain significant amounts of cassiterite and gold (Thomas, 1957). These deposits are along a 12 mile trend that strikes approximately S70W on the north side of Patterson and Sullivan creeks, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). These two features are underlain by granitic plutons respectively of Cretaceous and Tertiary age.

The Tofty tin belt lies along a major thrust fault which juxtaposes Triassic argillite, sandstone and shale to the northwest over Cretaceous sandstone, siltstone and shale to the southeast (Reifenstuhl and others, 1998). Carbonatite bodies occur in the Triassic sedimentary rocks at the head of Idaho Gulch, as well as across the length of most of the Tofty tin belt (Reifenstuhl and others, 1998). Wayland (1961) describes an exposure of carbonatite as a 100-foot thick lens of pale yellow limestone containing minor magnetite and apatite crystals exposed near the head of Harter Gulch. Small exposures of serpentinized mafic rocks have been mapped around the town of Tofty.

At least two types of lode deposits occur in the Idaho Gulch area. One consists of gossan in quartzite. A sample from this gossan contained 1.34 ounces of silver per ton but no gold (Wayland, 1961). The other consists of radioactive- and rare-earth-bearing minerals in carbonatite bodies in Triassic sedimentary rocks (Warner and others, 1986; Reifenstuhl and others, 1998). The carbonatite forms two bodies of iron-rich regolith that are conformable to N60E-trending wall rocks (Warner and others, 1986).

Moxham (1954) reported aeschynite, zircon, and niobium-bearing minerals in the area of Idaho, Miller, and Harter gulches. In 1956 and again in 1984, the U.S. Bureau of Mines explored the area around Idaho Gulch with nine trenches and nine diamond drill holes, searching for a lode source of the gold and cassiterite in the Tofty tin belt. This work led to the discovery of the carbonatite.

Warner and others (1986) reported that concentrates from churn drill cuttings in Miller and Idaho gulches contained 0.2 to 7.0 percent niobium-bearing minerals and up to 0.6 percent CeO_2 and 1.8 percent Nb_2O_5. The regolith contains hematite, limonite, magnetite, apatite, rutile, zircon, and trace amounts of monazite (high cerium-lanthanum and low yytrium-thorium variety), columbite, aeschynite, xenotime, and brewsterite (?) (Warner and others, 1986).

Warner and others (1986) identified two carbonatite bodies, 3 to 80 feet thick, dipping about 45NW. These bodies are characteristically dark red, sponge-like masses of siliceous hematite containing up to 40 percent finely crystalline apatite. This amount of apatite is distinct from other marble units in this area, and, along with trace element geochemistry, support the carbonatite model. Warner and others (1986), however, point out that the geologic setting differs significantly from that of classic carbonatite occurrences.

A random U.S. Geological Survey rock sample from a small gossan in the Idaho Gulch area contained 1.34 ounces of silver per ton, with no gold detected (Eberlein and others, 1977). Analytical results from a rock sample of weathered carbonatite in Miller Gulch include more than15 percent Fe and 10,000 parts per million (ppm) phosphorus; 2,100 ppm strontium, 51 ppm scandium, 740 ppm lanthanum, 433 ppm vanadium, and 40 ppm uranium (Liss and others, 1998). Several carbonatite samples from the same body in Harter Gulch had maximum anomalous analytical results of 952 ppm arsenic, 403 ppm chromium, 120 ppm lanthanum, 4,120 ppm manganese, more than 10,000 ppm phosphorus, 2,900 ppm strontium, 17 ppm scandium, and 117 ppm vanadium (Liss and others, 1998). Reanalysis of magnetite-bearing carbonate (carbonatite) from U.S. Bureau of Mines drill core by the Alaska Division of Geological and Geophysical Surveys (ADGGS) indicated the unusual nature of the carbonatite, with maximum values of 542 ppm niobium, 7,245 ppm strontium, 39 ppm yttrium, 281 ppm zirconium, 26 ppm gallium, 3416 ppm nickel, and 638 ppm zinc (ADGGS unpublished data). A whole-rock sample of altered phyllite adjacent to carbonatite in the Idaho Gulch area yielded an Ar40/Ar39 age of 193 +/- 15 Ma, with a reset age of about 55 Ma (Reifenstuhl and others, 1998). The reset age may represent the age of emplacement of the carbonatite.

Alteration:

Alteration consists of chemical weathering of carbonatite. This alteration extends 200 to 250 feet down dip, where unweathered magnetite-pyrite-apatite-zircon-bearing carbonatite was encountered in drill core (Warner and others, 1986).

Age of mineralization:

A whole-rock sample of altered phyllite adjacent to carbonatite in the Idaho Gulch area yielded an Ar40/Ar39 age of 193 +/- 15 Ma, with a reset age of about 55 Ma (Reifenstuhl and others, 1998). The reset age may represent the age of emplacement of the carbonatite.

Deposit model:

Carbonatite deposits (Cox and Singer, 1986; model 10).

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

10

Production Status: None

Site Status: Inactive

Workings/exploration:

Placer mining and prospecting has occurred throughout the Tofty area since around 1900. Later work focused on the rare-earth-bearing lode deposits in the area. In 1956, the U.S. Bureau of Mines trenched in upper Idaho Gulch and identified two bodies of radioactive, ferruginous regolith, subsequently interpreted as carbonatite. Reanalysis and work on the area continued in 1984, as part of a program to determine the availability of critical and strategic minerals in Alaska. Diamond drilling outlined the bodies (Warner and others, 1986). Mapping by Reifenstuhl and others (1998) extended the known outcrop area of the carbonatite. Geochemical sample results accompanying the geologic mapping are presented in Liss and others (1998). North Star Exploration, Inc., drilled 2,723 feet in 8 diamond drill holes at the Tofty Ridge prospect (TN099) during 2000 (North Star Exploration, Inc., 2001 [Alaska exploration opportunities]). Portions of the core were geochemically anomalous for niobium, rare-earth elements, and yttrium.

Production notes:

Reserves:

Estimated reserves of approximately 100,000 pounds of niobium (as Nb2O5) are present in placer tailings in upper Idaho Gulch (Southworth, 1984). More recent work shows that the carbonatite body is much more extensive than previously thought; it thus is likely that the niobium resources of the area were underestimated by several orders of magnitude (Reifenstuhl and others, 1998).

Additional comments:

References:

Moxham, 1954; Thomas, 1957; Wayland, 1961; Cobb, 1972; Eberlein and others, 1977; Chapman and others, 1982; Southworth, 1984; Warner and others, 1986; Liss and others, 1998; Reifenstuhl and others, 1998; North Star Exploration, Inc., 2001 (Alaska exploration opportunities).

Primary reference: Warner and others, 1986

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/21/2003

Site name(s): Patterson Creek

Site type: Mine

ARDF no.: TN084

Latitude: 65.0432 **Quadrangle:** TN A-2

Longitude: 150.9341

Location description and accuracy:
This site represents an area of placer mining on or near Patterson Creek, near its junction with Sullivan and Cache creeks. For this record, the site is at the junction of Patterson, Sullivan, and Cache creeks, on the boundary of sections 35 and 36, T. 3 N., R. 17. W., of the Fairbanks Meridian. Cobb (1972) lists locations 25 to 33 as Patterson Creek, but the specific locations are tributaries to Patterson Creek. The location probably is accurate within a mile or so.

Commodities:

Main: Au

Other: Ag, Sn

Ore minerals: Cassiterite, gold, unknown silver mineral

Gangue minerals:

Geologic description:
The Patterson Creek placer mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Exactly how much mining was done on Patterson Creek is unknown. There are no remains of workings, although Brooks (1908, 1909) reported that gold was discovered in the creek in 1907. References were made to mining in 1913 and 1915 (Brooks, 1914, 1916) as well as in 1919 (Brooks and Martin, 1921). No specifics are given, however, and as Cobb (1977) and Eberlein and others (1977) point out, the references may actually have been to tributaries of Patterson Creek, like Sullivan Creek (TN093), Cache Creek (TN097), or Woodchopper Creek (TN081).

Thomas (1957) listed production through 1956 as 2,599 ounces of gold, 385 ounces of silver, and 20,282 pounds of cassiterite concentrate, but this may include, or consist only of, recovery from tributaries.

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:
Any workings and exploration on Patterson Creek are not well documented and some references may actually be to benches on its tributaries. Brooks (1908, 1909) stated that gold was discovered in 1907 and mining was reported in 1913,1915, and 1919 (Brooks, 1914, 1916; Brooks and Martin, 1921). Martin (1920) reported prospect drilling in 1918.

Production notes:
Thomas (1957) reported that 2,599 ounces of gold, 385 ounces of silver, and 20,282 pounds of cassiterite concentrate (60 percent tin), were recovered from Patterson Creek through 1956. Much, or all, of this production, however, may have been from tributaries.

Reserves:

Additional comments:

References:
Brooks, 1908; Brooks, 1909; Brooks, 1914; Brooks, 1916; Martin, 1920; Brooks and Martin, 1921; Thomas, 1957; Cobb, 1972; Cobb, 1973; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Cobb, 1977

Reporter(s): G.E. Graham (ADGGS)

Last report date: 1/15/2001

Site name(s): Miller Gulch

Site type: Mine

ARDF no.: TN085

Latitude: 65.0693 **Quadrangle:** TN A-2

Longitude: 150.9314

Location description and accuracy:

The site of the Miller Gulch placer mine is at several cabins next to the creek at an elevation of about 500 feet, in the southwest quarter of section 24, T. 3 N., R. 17 W., of the Fairbanks Meridian. The site corresponds to location 27 of Cobb (1972).

Commodities:

Main: Au

Other: Ag, Ce, Nb, Sn

Ore minerals: Cassiterite, columbite, gold

Gangue minerals:

Geologic description:

The Miller Gulch mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The Miller Gulch placer deposit lies on or just south of the trace of an east-northeast-striking thrust fault. High-grade placers were discovered on the United States Association claim in lower Miller Gulch in 1912. By 1914, there were three different mines operating in the area, employing 112 men. The depths to bedrock over the area of interest ranged from 85 to 120 feet over a lateral distance of only 500 feet, and to as little as 45 feet upstream. The upper portions of the creek appear to have multiple horizons of continuous pay streak (Eakin, 1915). The pay streaks reportedly were long and narrow compared to other Tofty area placers.

The stream gravels consisted of angular cobbles of dark phyllite, graywacke, and metadiorite. Cobbles of brecciated quartz with tourmaline and cassiterite were also reported. Cobb (1973) reported that fine brown tourmaline replaced all micaceous layers in one piece of subangular phyllite, and dense tourmaline filled crosscutting fractures. Cassiterite tends to occur as well-rounded to subangular particles that range in size from microscopic to several inches across. The larger sizes often are accompanied by vein quartz and tourmaline, as well as by fragments of sedimentary country rock. The smaller sizes generally are free of impurities (Thomas,1957).

A considerable amount of gold and silver, and cassiterite were mined from Miller Gulch. Through 1956, 17,576 ounces of gold, 2,668 ounces of silver, and 101,875 pounds of cassiterite concentrate had been recovered (Thomas, 1957). The average grade was about 0.17 ounce of gold per cubic yard. Channel sampling of tailings by the U.S. Bureau of Mines in 1954-56 showed that the efficiency of tin recovery from different workings varied dramatically. One tailings pile yielded 1.26 pounds of tin per cubic yard, while another yielded 0.29 pound of tin per cubic yard. Claims were staked at this site in 1953 and 1958 and there was mining in 1967 (Heiner and others, 1968).

In addition to gold and cassiterite, other economic minerals were reported in the Miller Gulch-Idaho Gulch (TN086) area . Thomas (1957) and Barton (1962) reported that 0.2-7 percent niobium-bearing minerals were collected in pan concentrates, and Warner and others (1986) reported up to 0.6 percent CeO2 and 1.8 percent Nb2O5 in concentrates from churn drill cuttings. A calculation of possible reserves of niobium, based on this sampling and on earlier placer reserve estimates by Thomas and others (1948) and Wayland (1961), indicated that there may be 100,000 pounds of Nb2O5 reserves in the Tofty placers (Southworth, 1984). Moxham (1954) reported that the eU content of 2 [concentrate?] samples was 0.026 percent and 0.017 percent, and Cobb (1977) speculated that these values implied the presence of aeschynite, columbite, monazite, and zircon.

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:
The workings in the Miller Gulch area were underground drift mines. They were developed around 1910-1915, after which activity waned. The tailings were reworked between 1917-20, and minor drift mining was reported in 1930-31 and 1937-40. Claims were staked at this site in 1953 and 1958 and there was mining in 1967 (Heiner and others, 1968).

Production notes:
Thomas (1957) reported that 17,576 ounces of gold, 2,668 ounces of silver, and 101,875 pounds of cassiterite concentrate (averaging 60% tin), was recovered from Miller Gulch through 1956.

Reserves:

Additional comments:

References:
Eakin, 1915; Moxham, 1954; Thomas, 1957; Wayland, 1961; Barton, 1962; Heiner and others, 1968; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Southworth, 1984; Warner and others, 1986; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/8/2003

Site name(s): Idaho Gulch

Site type: Mine

ARDF no.: TN086

Latitude: 65.0785 **Quadrangle:** TN A-2

Longitude: 150.9188

Location description and accuracy:

The site of the Idaho Gulch placer mine is in the gulch just downstream from a primitive road crossing, near the north boundary of section 24, T. 3 N., R. 17 W., of the Fairbanks Meridian. The site corresponds to location 28 of Cobb (1972), and roughly to the site for Idaho Gulch, U.S. Bureau of Land Management MAS number 0020480017.

Commodities:

Main: Au

Other: Ag, REE, Sn

Ore minerals: Cassiterite, columbite, gold, monazite, unknown silver mineral

Gangue minerals:

Geologic description:

The Idaho Gulch mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The Idaho Gulch deposit lies on or just south of the trace of an east-northeast-striking thrust fault. The bedrock surface of Idaho Gulch is marked by bold scarps that do not have any surface expression (Eakin, 1915). Well-rounded cobbles of brecciated quartz with tourmaline and cassiterite are common in the boulder piles (Wayland, 1961). Cassiterite placer deposits have been found as far as 1,500 feet upstream from the access road, and as much as 2,500 feet downstream from it. The cassiterite tends to occur as well-rounded to subangular particles that range in size from microscopic to several inches across. The larger sizes often are accompanied by vein quartz and tourmaline, as well as by fragments of sedimentary country rock. The smaller sizes generally are free of impurities (Thomas,1957).

The pay streaks in Idaho Gulch are discontinuous. Extensive drilling in 1912 led to the discovery of gold and the start of drift mining in 1912-1913 (Eakin, 1915). Since then, some drilling was done by the Alaska Gold Dredging (1929) and Cleary Hill Mines (1940-1941) companies (Wayland, 1961). The results of the latter work led to drift mining of a small pay streak. The tailings from this mining contained a higher proportion of light-colored gravels and boulders. McGee and Strandberg Mines, Inc., were active on Idaho Gulch in 1967 (Heiner and others, 1968).

The U.S. Bureau of Mines studied the placer tin deposits around Tofty in 1954-1956 (Thomas, 1957).

Their channel samples of tailings in Idaho Gulch yielded an average of 1.00 pound of 'tin' (cassiterite) and 0.02 ounce of gold per cubic yard. They also reported sporadic tin in drill holes on both Idaho and Tofty (TN088) gulches . By 1956, production from Idaho Gulch was 61 ounces of gold and 300 pounds of cassiterite (Thomas, 1957).

In Idaho Gulch and Miller Gulch (TN085), pan concentrates contained 0.2-7.0 percent niobium-bearing minerals, and concentrates from churn-drill cuttings contained up to 0.6 percent CeO_2 and 1.8 percent Nb_2O_5 (Warner and others, 1986). These minerals are often associated with carbonatite, and may be the result of weathering of the carbonatite sill(?) in the Triassic country rocks. Moxham (1954) reported that the eU content of the concentrates ranged from 0.015 percent to 0.035 percent, and that one sample contained 2.3 percent eU. Cobb (1977) speculated that these values implied the presence of aeschynite, columbite, monazite, and zircon.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer Au(-Sn) (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 work in Idaho Gulch was reported in 1911 (Wayland, 1961). Drift mining appears to have been predominant. Drilling programs were conducted by the Alaska Gold Dredging Company in 1929, Cleary Hill Mining Company in 1940-41, and the U.S. Bureau of Mines in 1954-56 (Wayland, 1961; Thomas, 1957). McGee and Strandberg Mines, Inc., were active on Idaho Gulch in 1967 (Heiner and others, 1968).

Production notes:

Thomas (1957) reported that 61 ounces of gold and 300 pounds of cassiterite concentrate (at 60% tin) were produced from Idaho Gulch through 1956.

Reserves:

Additional comments:

References:

Eakin, 1915; Moxham, 1954; Thomas, 1957; Wayland, 1961; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Warner and others, 1986; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957; Wayland, 1961

Reporter(s): G.E. Graham (ADGGS)

Last report date: 1/15/2001

Site name(s): Unnamed (west side of Sullivan Creek)

Site type: Prospect

ARDF no.: TN087

Latitude: 65.1051 **Quadrangle:** TN A-2

Longitude: 150.9060

Location description and accuracy:

This lode prospect is at an elevation of about 700 feet on the west side of Sullivan Creek, about 1 mile upstream from old Tofty and 100 feet above the valley floor (Mertie, 1934). The site is in the northeast quarter of section 12, T. 3 N., R. 17 W., of the Fairbanks Meridian. The location is accurate within 3,000 feet.

Commodities:

Main: As

Other:

Ore minerals: Arsenopyrite, pyrite

Gangue minerals: Quartz

Geologic description:

The Sullivan Creek lode prospect is north of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata. The Tofty tin belt lies along a regional-scale, east-northeast-striking thrust fault which juxtaposes Triassic argillite, sandstone and shale to the northwest over Cretaceous sandstone, siltstone, and shale to the southeast (Reifenstuhl and others, 1998). Carbonatite sills(?) are in the Triassic sedimentary rocks at the head of Idaho Gulch, and similar bodies occur throughout most of the Tofty tin belt. Loess, generally 4 feet thick, and colluvial gravel, usually 2 to 4 feet thick, blanket most of the local area. Sullivan Creek follows the trace of a northwest-trending, high-angle fault.

On the west side of Sullivan Creek, about 1 mile upstream from old Tofty and 100 feet above the valley floor, are several shallow prospects pits in slate (Mertie, 1934). At the bottom of the prospect pits the slate is much sheared and contorted, and contains masses of crumbly and honeycombed white quartz. This quartz is iron-stained and encloses irregular pieces of slate ranging from less than one sixteenth of an inch to at least one inch in diameter (Mertie, 1934). In places, these slate inclusions are almost completely altered to sericite. About 100 yards downstream from these pits is massive, gray quartzite that is cut by an intricate network of iron-stained, whitish, glassy quartz stringers. The quartzite bordering some of these stringers is intensely silicified, and contains a few arsenopyrite crystals (Mertie, 1934). The arsenopyrite in the quartzite is about one inch from the quartz stringers. Mertie also described pyrite-bearing quartz and quartz stringers honeycombed with calcite along Sullivan Creek about 2 miles upstream from old Tofty. At one site, a sharply angular block of iron-stained, whitish, glassy quartz, enclosed in highly sheared wallrock, contains abundant pyrite.

Alteration:

Sericitization and silicification.

Age of mineralization:

Deposit model:
Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a), Polymetallic veins (Cox and Singer, 1986; model 22c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c, 36a

Production Status: None

Site Status: Inactive

Workings/exploration:
Several shallow prospects pits are on the west side of Sullivan Creek about 1 mile upstream from old Tofty and 100 feet above the valley floor (Mertie, 1934).

Production notes:

Reserves:

Additional comments:

References:
Mertie, 1934; Thomas, 1957; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/27/2004

Site name(s): Tofty Gulch

Site type: Mine

ARDF no.: TN088

Latitude: 65.0845 **Quadrangle:** TN A-2

Longitude: 150.8993

Location description and accuracy:
The site of the Tofty Gulch placer mine is at the mine symbol on the gulch, about 0.2 mile upstream from its junction with Sullivan Creek, at the western edge of section 18, T. 3 N., R. 16 W., of the Fairbanks Meridian. The site corresponds to location 29 of Cobb (1972), and roughly to the site for Tofty Gulch, U.S. Bureau of Land Management MAS number 0020480004.

Commodities:

Main: Au

Other: Ag, Cr, Sn

Ore minerals: Cassiterite, chromite, gold

Gangue minerals:

Geologic description:
The Tofty Gulch mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The Tofty Gulch placer deposit is at the intersection of an east-northeast-striking thrust fault that dips north, and a high-angle fault that dextrally displaces the thrust fault by about 1/4 mile. The local bedrock consists of phyllite and minor interbedded graywacke that strikes N85E and dips steeply to the north (Wayland, 1961). The rocks are sheared and contain barren, milky quartz-calcite-pyrite veinlets.

According to Mertie (1934) and Ellsworth (1910), gold was discovered in Tofty Gulch in the winter of 1906-07. There is no well-defined pay zone. Some of the gold is in a bench placer approximately 1,000 feet from Sullivan Creek (Eakin, 1913). The gravels, which are about 4 to 6 feet thick (Eakin, 1913), consist chiefly of angular graywacke, phyllite, and quartz. Other cobbles include metadiorite, quartzite, and altered phyllite containing quartz-tourmaline veins (Wayland, 1961). Cassiterite particles in the gold-bearing gravels range from well-rounded (Hess, 1912) to subangular, and are up to several inches across. The larger sizes often are accompanied by vein quartz and tourmaline, as well as by fragments of sedimentary country rock. The smaller sizes generally are free of impurities (Thomas,1957).

In addition to gold and cassiterite, Wayland (1961) reported chromite. Moxham (1954) reported elevated radioactivity measurements, and suggested that columbite, aeschynite, monazite, and zircon may also be present. Newberry and Clautice (1997) analyzed a gold grain by electron microprobe that contained a tiny inclusion of native nickel. Five other gold grains had cores with silver contents varying from 10 to 17 percent, mercury contents of 1 percent, and strongly silver- and mercury-depleted rims.

Gold was discovered in Tofty Gulch in the winter of 1907, and presumably mined by drifting or shaft-sinking. There was open-cut mining in 1909-12, 1917, 1929 and 1941 (Cobb, 1977). L. McGee mined the property in 1951 (Williams, 1951). The total production reported by Thomas (1957) was 8,855 ounces of gold, 1,376 ounces of silver, and 19,600 pounds of cassiterite concentrate. Drilling took place west of the gulch in 1941 (Wayland, 1961).

Man Mining Company had a washing plant, three bulldozers, two draglines, and five men working a placer claim in 1975 (Carnes, 1976). In 1992, GHD Resources reacquired the Tofty (Gulch?) property and began to prepare the ground for the 1993 season. In September, the company sluiced 150,000 cubic yards of pay gravels, which yielded 130 ounces of gold and 1,500 pounds of cassiterite (Swainbank and others, 1993). In 1993, the company sluiced 89,000 cubic yards of pay, producing gold, silver and byproduct tin (Bundtzen and others, 1994). In January, 1994, the property was sold back to Cassiterite Placers, Inc., who mined that year and again in 1998 (Swainbank and others, 1995; Szumigala and Swainbank, 1999).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:

Mining in Tofty Gulch appears to have been somewhat sporadic. Gold was discovered in the winter of 1907, presumably by drifting. There was open-cut mining in 1909-12, 1917, 1929, and 1941 (Cobb, 1977). L. McGee mined the property in 1951 (Williams, 1951). Man Mining Company had a washing plant, three bulldozers, two draglines, and five men working a placer claim in 1975 (Carnes, 1976). In 1992, GHD Resources reacquired the Tofty (Gulch?) property and began to prepare the ground for the 1993 season. In September, the company sluiced 150,000 cubic yards of pay dirt, which yielded 130 ounces of gold and 1,500 pounds of cassiterite (Swainbank and others, 1993). In 1993, the company sluiced 89,000 cubic yards of pay, producing gold, silver and byproduct tin (Bundtzen and others, 1994). In January, 1994, the property was sold back to Cassiterite Placers, Inc., who mined that year and again in 1998 (Swainbank and others, 1995; Szumigala and Swainbank, 1999).

Production notes:

Thomas (1957) reported that 8,855 ounces of gold, 1,376 ounces of silver, and 19,600 pounds of cassiterite concentrate (at 60 percent tin) were produced from Tofty Gulch through 1956.

Reserves:

Additional comments:

References:

Ellsworth, 1910; Hess, 1912; Eakin, 1913; Mertie, 1934; Williams, 1951; Moxham, 1954; Thomas, 1957; Wayland, 1961; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Swainbank and others, 1993; Swainbank and others, 1995; Bundtzen and others, 1994; Newberry and Clautice, 1997; Reifenstuhl and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Thomas, 1957; Wayland, 1961

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/14/2000

Site name(s): Unnamed (Big Denver Creek)

Site type: Occurrence

ARDF no.: TN089

Latitude: 65.0063 **Quadrangle:** TN A-2

Longitude: 150.8964

Location description and accuracy:
This occurrence is at an elevation of about 700 feet, on the south side of Big Denver Creek, approximately 2 miles below the Big Denver Creek placer mine (TN095). The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97SL153 (Liss and others, 1998), near the northwest corner of section 18, T. 2 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Cu

Other: As, P

Ore minerals:

Gangue minerals:

Geologic description:
Bedrock at this occurrence is mainly Lower Cretaceous sandstone, shale, and siltstone (Reifenstuhl and others, 1998). The western contact of the Tertiary Hot Springs granite pluton is 2 miles to the east.
Samples (97SL153B and 97SL153C) of a felsic dike and of iron-stained shale on the south side of Big Denver Creek contained one or more of the following maximum values: 2,230 parts per million (ppm) copper, 266 ppm arsenic, 13.55 percent iron, 3,130 ppm phosphorous, and 14 ppm scandium (Liss and others, 1998). There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:
Possibly epithermal, polymetallic, or mesothermal veins.

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

Production Status: None

Site Status: Inactive

Workings/exploration:
Samples (97SL153B and 97SL153C) of a felsic dike and of iron-stained shale on the south side of Big Denver Creek contained one or more of the following maximum values: 2,230 parts per million (ppm) copper, 266 ppm arsenic, 13.55 percent iron, 3,130 ppm phosphorous, and 14 ppm scandium (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/24/2004

Site name(s): Quartz Creek; Homestake Bar

Site type: Mine

ARDF no.: TN090

Latitude: 65.1208 **Quadrangle:** TN A-2

Longitude: 150.8840

Location description and accuracy:

The Quartz Creek-Homestake Bar placer mine is approximately a quarter mile west of, and at elevation of 60-75 feet above, the modern channel of Quartz Creek. For this record, the site is on Quartz Creek approximately 1 mile above the junction of Sullivan Creek, in the north half of section 6, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within half a mile. The site corresponds to location 24 of Cobb (1972), and very roughly to the site for Quartz Creek, U.S. Bureau of Land Management MAS number 0020480014, but the MAS site is about 1 mile downstream.

Commodities:

Main: Au

Other: Sn, Yt

Ore minerals: Cassiterite, gold, pyrite, xenotime

Gangue minerals:

Geologic description:

The country rocks in the area of this site include Mesozoic marine clastic sedimentary strata, and Cretaceous granitic plutons, mainly on Roughtop Mountain, that intrude and contact metamorphose the sedimentary rocks (Mertie, 1934; Chapman and others, 1982; Reifenstuhl and others, 1998). The bedded rocks are also cut by diverse faults, including regional-scale, east-northeast-striking thrust faults (Reifenstuhl and others, 1998). A carbonate sill(?) is in the Triassic section of these strata, and there are exposures of serpentinized Cretaceous(?) mafic and ultramafic rocks, mainly on Serpentine Ridge. Quartz Creek drains Serpentine Ridge and Roughtop Mountain, and crosses a north-dipping regional thrust fault. The gradient of the creek is about 100 feet per mile.

The mined area on Quartz Creek was Homestake Bar, a bench approximately a quarter mile from the creek. Eakin (1913) reported that the bedrock surface dips towards the creek at a lesser angle than the ground surface. The uphill extent of the richer portion of the deposit is marked by a steepening of the bedrock surface. The overlying sediments consist of three to four feet of gravels, with only the basal foot well worn. These gravels in turn are overlain by 3 feet of silt.

Waters (1934) reported that the heavy minerals in his samples of the placer included ilmenite, pyrite, zircon, gold, xenotime, tourmaline, and a few grains of cassiterite. Wayland (1961) reported differences between Quartz Creek and Tofty tin belt gold and cassiterite, suggesting that they were of different origins. In particular, the Quartz Creek gold was greener and more angular than that of the tin belt, and the Quartz Creek cassiterite was clear [rather than opaque] brown. In 1940, Cleary Hill Mines Co. ran a 185-hole drill program in the Quartz Creek area. No mention of cassiterite was made in any of the drill logs. Delima Placers mined Quartz Creek in 1998 (Szumigala and Swainbank, 1999).

Alteration:

Age of mineralization:

Quaternary.

Deposit model:
Placer Au(-Sn) (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 workings at Quartz Creek were surficial. Mining and prospecting was reported in the area, including at Homestake Bar, between 1908 and 1914, as well as in 1930 (Cobb, 1977). Cleary Hill Mines Co. ran an 185-hole drill program in the area in 1940. Delima Placers mined Quartz Creek in 1998 (Szumigala and Swainbank, 1999).

Production notes:

Reserves:

Additional comments:

References:
Eakin, 1913; Mertie, 1934; Waters, 1934; Wayland, 1961; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Eakin, 1913; Waters, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 1/15/2001

Site name(s): Boulder Creek

Site type: Mines

ARDF no.: TN091

Latitude: 65.1546 **Quadrangle:** TN A-2

Longitude: 150.8800

Location description and accuracy:

This site represents an area of placer mining on Boulder Creek several miles southwest of Roughtop Mountain. The site is at a (placer) mine symbol in the south half of section 19, T. 4 N., R. 16 W., of the Fairbanks Meridian. The site corresponds to location 23 of Cobb (1972), and roughly to the U.S. Bureau of Land Management site for Boulder Creek (MAS number 0020480071).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Boulder Creek area is underlain by Jurassic or Cretaceous clastic sedimentary rocks, which have been intruded and contact metamorphosed by the Cretaceous monzodiorite and granite Roughtop Mountain pluton (Chapman and others, 1982; Reifenstuhl and others, 1998). This site is just beyond the hornfels zone ringing Roughtop Mountain, and Boulder Creek is fed by many streams that flow through the intrusion (Chapman and others, 1982).

Published descriptions of the placer deposits, and of the locations of workings on Boulder Creek, are ambiguous. See record TN078 for descriptions of placer mining on lower(?) Boulder Creek.

Alteration:

Age of mineralization:

Quaternary.

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: Active?

Workings/exploration:

Published descriptions of the placer deposits, and of the locations of workings on Boulder Creek, are ambiguous. See record TN078 for descriptions of placer mining on lower(?) Boulder Creek.

Production notes:

Reserves:

Additional comments:

References:
Cobb, 1972; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Cobb, 1972

Reporter(s): J.E. Athey (ADGGS)

Last report date: 3/16/2001

Site name(s): Unnamed (Cache Creek area)

Site type: Occurrences

ARDF no.: TN092

Latitude: 65.0930 **Quadrangle:** TN A-2

Longitude: 150.8793

Location description and accuracy:

This record represents a generalized area of lode occurrences of cassiterite, gold, and silver in the Tofty tin belt. The site is at the old town of Tofty, the midpoint of this 12-mile-long area, on the north boundary of section 18, T. 3 N., R. 16 W., of the Fairbanks Meridian.

Commodities:

Main: Au

Other: Ag, Sn

Ore minerals: Cassiterite, gold, pyrite

Gangue minerals: Fluorite, quartz, tourmaline

Geologic description:

The Tofty tin belt is a group of cassiterite ('tin')- and gold-bearing placer deposits in a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The country rocks exposed near the placer workings in this area are sheared and contorted phyllite, schist, quartzite, graywacke, and slate that are cut by numerous pyrite-bearing quartz veins and stringers, locally containing small amounts of cassiterite. The larger pieces of placer cassiterite (up to several inches in diameter) often are attached to quartz and tourmaline, as well as to fragments of sedimentary country rock (Thomas, 1957). Based on the chemical composition of typical tin-bearing granite, Waters (1934) proposed that the Hot Springs pluton is more likely to be associated with cassiterite mineralization than the Roughtop pluton.

The gold- and tin-bearing creeks flow southeasterly, normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placers. Concentrations of placer gold diminish to the south, probably due to dispersion. Veins containing small amounts of gold and silver are associated with the granite of Hot Springs Dome (TN103).

Eakin (1913) reported that the miners in Sullivan Creek (TN093) felt that the placer gold was more abundant in areas of more heavily concentrated quartz veins, and one miner reported tiny stringers of gold along cleavage planes in a fragment of quartzite. Both the tin and gold were believed to have the same source (quartz veins), and cassiterite, along with tourmaline and fluorite, cemented breccias of vein quartz.

Alteration:

Age of mineralization:

Deposit model:
Sn-polymetallic veins(?) (Cox and Singer, 1986; model 20b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
20b(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:
As of 1956, placers in the Tofty tin belt had produced 127,528 ounces of gold, 14,356 ounces of silver, and 470,157 pounds of cassiterite (280,600 pounds of tin at approximately 60 percent tin) (Thomas, 1957).

Reserves:

Additional comments:

References:
Eakin, 1913; Waters, 1934; Thomas, 1957; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957

Reporter(s): J.E. Athey (ADGGS)

Last report date: 3/16/2001

Site name(s): Sullivan Creek

Site type: Mine

ARDF no.: TN093

Latitude: 65.0938 **Quadrangle:** TN A-2

Longitude: 150.8786

Location description and accuracy:

For this record, the site of the Sullivan Creek placer mine is on the creek at Tofty, at the north-central boundary of section 18, T. 3 N., R. 16 W., of the Fairbanks Meridian. The site represents at least a mile of placer workings on Sullivan Creek near Tofty (Cobb, 1972, location 30).

This site very roughly corresponds with the site for Tofty tin belt, U.S. Bureau of Land Management MAS number 0020480032. The site for Sullivan Creek, MAS number 0020480005, is approximately 0.5 mile to the east.

Commodities:

Main: Au

Other: Ag, Cr, Cu, Pb, REE, Sn

Ore minerals: Cassiterite, chromite, galena, gold, ilmenite, magnetite, monazite, native copper, pyrite, xenotime

Gangue minerals:

Geologic description:

The Sullivan Creek mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The Sullivan Creek placer mine is on the trace of a northwest-trending fault with small relative right-lateral displacement, and approximately 0.5 mile north of a regional thrust fault (Reifenstuhl and others, 1998). Bedrock in Sullivan Creek comprises Triassic clastic sedimentary strata.

The principal pay streak was the Sullivan bench placer, approximately 2,000 feet east of the present course of Sullivan Creek (Wayland, 1961). The bedrock of the placer operations has been described as graphitic phyllite containing oxidized pyrite (Wayland, 1961), and phyllite containing quartz stringers and pyrite (Mertie, 1934). The thickness of overburden ranges from 30 to 70 feet and the gravels are 10 to 35 feet thick (Eakin,1913). The gold was concentrated in the lower 2 to 3 feet of the gravels and in fractures in shattered bedrock. The overburden contains the remains of Quaternary mammoth, bison, and horses (Heiner and others, 1968).

Eakin (1915) described the bench placer deposits as elliptical in plan view. The centers of these deposits were very rich and graded outward to leaner ground. For example, one mine produced $200,000 worth of gold from 5,000 square feet (gold at $20.67 per ounce) (Eakin, 1915).

Cassiterite occurs with the gold throughout the area. Hess (1912) reported that the pebbles are very smooth. This was confirmed by Eakin (1913), who described pans worth $10-$15 in gold (at $20.67 per ounce), and containing as much as a half-pound of cassiterite. Other heavy minerals in the concentrates included pyrite, ilmenite, picotite, magnetite, native copper, zircon, monazite, aeschynite, and xenotime (Waters, 1934), as well as chromite, galena, and arsenopyrite (Wayland, 1961). The sources of the chromite, picotite, magnetite, and ilmenite probably are the serpentinized mafic and ultramafic rocks.

Cobb (1977) summarized mining activity on Sullivan Creek to 1975. Mining began on the benches in 1907 and continued into the 1940's. Initially, only the gold was kept, but by about 1918 the cassiterite became an important byproduct. In 1951, L. McGee bought the Cleary Hill Mines, Inc., mining claims and equipment and began mining (Williams, 1951). By 1956, Sullivan Creek had produced 58,136 ounces of gold, 5,463 ounces of silver, and 215,445 pounds of cassiterite concentrate, which was between 1/3 and 1/2 of the total production of placer deposits in the Tofty tin belt (Thomas, 1957). It appears that far more cassiterite might have been recovered if different sluicing techniques had been employed (Wayland, 1961). Placer mining was underway in 1967, with over a dozen claimblocks or working groups on the creek (Heiner and others, 1968).

More recent mining has included drifting on Sullivan bench by Burgess Mining in 1985 (Bundtzen and others, 1986). As of 1988, Shoreham Resources was preparing to mine on the bench (Green and others, 1989), and they mined it in 1991. Their operation recovered 1,746 ounces of gold, 324 ounces of silver, and 6,800 lbs of tin metal as cassiterite (Bundtzen and others, 1992). Harold Bergman spent part of 1990 working a cut (Swainbank and others, 1991). Bundtzen and others (1996) reported that Cassiterite Placers, Inc., worked Sullivan Bench in 1995.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer Au(-Sn) (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:

Sullivan Creek was originally drift mined, and accounted for most of the early output of placer gold in the Tofty district (Brooks, 1909; Hess, 1912). By the early 1920's hydraulic plants were being used. Much of the land was bought up by Alaska Gold Dredging Company, and in 1929 they conducted an extensive drilling program of the Sullivan bench. The results were not satisfactory and the land was passed on to miners, who sold their holdings to Cleary Hill Mines in 1931. By 1934, Cleary Hill Mines was using hydraulic giants to strip land and was mining alternate summers, apparently until 1941 (Wayland, 1961). In 1951, L. McGee bought the Cleary Hill Mines claims and equipment and began mining (Williams, 1951). Placer mining was underway in 1967, with over a dozen claimblocks or working groups on the creek (Heiner and others, 1968).

In 1991, Shorham Resources operated an open-cut placer mine on Sullivan Creek. The company stripped 310,000 cubic yards of overburden and sluiced 104,000 cubic yards of pay. Recovery was 1,746 ounces of gold, 324 ounces of silver, and 6,800 pounds of tin metal as cassiterite.

Production notes:

Thomas (1957) reported that 58,136 ounces of gold, 5,463 ounces of silver, and 215,445 pounds of cassiterite concentrate (averaging 60% tin), were recovered from Sullivan Creek through 1956. There has been significant mining since then, but more up-to-date production estimates are not available.

Reserves:

Additional comments:

References:

Brooks, 1909; Hess, 1912; Eakin, 1913; Eakin, 1915; Mertie, 1934; Waters, 1934; Williams, 1951; Thomas, 1957; Wayland, 1961; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1986; Green and others, 1989; Swainbank and others, 1991; Bundtzen and others, 1992; Bundtzen and others, 1996; Reifenstuhl and others, 1998.

Primary reference: Wayland, 1961

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/11/2003

Site name(s): Harter Gulch

Site type: Mine

ARDF no.: TN094

Latitude: 65.0928 **Quadrangle:** TN A-2

Longitude: 150.8516

Location description and accuracy:

The site of the Harter Gulch placer mine is on the gulch at an elevation of about 700 feet, in the north half of section 17, T. 3 N., R. 16 W., of the Fairbanks Meridian. The site corresponds to location 31 of Cobb (1972), and roughly to the site for Harter Gulch, U.S. Bureau of Land Management MAS number 0020480017.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The Harter Gulch mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The Harter Gulch mine lies just to the north of a regional thrust fault; bedrock in the gulch is Triassic strata. Little is published specifically about Harter Gulch. Wayland (1961) states that mining occurred there in the early days of the district, and that Richards, the principal operator, reportedly collected $90,000 worth of gold in one summer (equivalent to 4,350 ounces of refined gold at $20.67 per ounce). Wayland also states that the tailings in Harter Gulch contain significant quantities of gold and some cassiterite. Moxham (1954) tested the tailings for radioactivity, presumably with negative results. The placer gravels, which consist of angular phyllite and graywacke and some rounded sandstone, were not completely washed by the early prospectors, leaving more gold in the tailings than that found in other creeks. A cubic yard of these gravels averaged 0.84 pound of concentrate that yielded 0.27 pound of cassiterite and 0.017 ounce of gold per cubic yard (Thomas, 1957). Cobb (1981) reports that placer mining may have occurred in 1977.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:
Placer Au(-Sn) (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:
No detailed information has been published about the mining techniques used on Harter Gulch, other than it was worked mainly by a man named Richards in the early days of mining (Wayland, 1961). Cobb (1981) reports that placer mining may have occurred in 1977.

Production notes:
Wayland (1961) states that Richards reported recovering $90,000 worth of gold (at $20.67 per ounce) from Harter Gulch in one season. Cobb (1977) estimated production to the mid-1970's to equal approximately 5,000 ounces.

Reserves:

Additional comments:

References:
Moxham, 1954; Thomas, 1957; Wayland, 1961; Cobb, 1972; Cobb, 1977; Cobb, 1981; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957; Wayland, 1961

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/14/2000

Site name(s): Big Denver Creek

Site type: Prospect

ARDF no.: TN095

Latitude: 65.0091 **Quadrangle:** TN A-2

Longitude: 150.8462

Location description and accuracy:

Thirty mining claims were staked along Big Denver Creek in the early 1980s (Alaska Kardex files). The claims extended from the headwaters of Big Denver Creek near the summit of Manley Hot Springs Dome, for 4 miles downstream along the main channel of Big Denver Creek, and along two of its branches. For this record, the site is at North Rain claim number 14, where work was performed in 1983. The claim is in the southwest quarter of the southeast quarter of section 8, T. 2 N., R. 16 W., of the Fairbanks Meridian; other claims extend above and below this site. The location is accurate within about 500 feet. This site closely corresponds with the site for Big Denver, U.S. Bureau of Land Management MAS number 0020480054.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The Big Denver Creek prospect is south of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998).

Bedrock at the Big Denver Creek prospect is mainly Cretaceous sandstone, shale, and siltstone (Reifenstuhl and others, 1998). The upper end of the claim block is in the hornfels aureole of the Tertiary Hot Springs Dome granite pluton. The hornfels is black, dense rock containing unoriented crystals or rosettes of muscovite, biotite, and andalusite.

Placer mining claims were staked along Big Denver Creek in 1981 and the claims were worked from 1981 to 1986 (Alaska Kardex files). An affidavit of annual labor in 1983 lists 30 state mining claims and sample holes dug to bedrock or permafrost on North Rain claims 10-13. The material was sampled and analyzed. A trench dug to bedrock across the old dry bed of Big Denver Creek on North Rain claim 14 was also sampled. The sample analyses are not available.

Alteration:

Age of mineralization:

Quaternary?

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: Undetermined

Workings/exploration:
Placer mining claims were staked along Big Denver Creek in 1981 and the claims were worked from 1981 to 1986 (Alaska Kardex files). An affidavit of annual labor in 1983 lists 30 state mining claims and sample holes dug to bedrock or permafrost on North Rain claims 10-13. The material was sampled and analyzed. A trench dug to bedrock across the old dry bed of Big Denver Creek on North Rain claim 14 was also sampled. The sample analyses are not available.

Production notes:

Reserves:

Additional comments:

References:
Thomas, 1957; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/28/2004

Site name(s): Dalton Gulch

Site type: Mine

ARDF no.: TN096

Latitude: 65.0995 **Quadrangle:** TN A-2

Longitude: 150.8424

Location description and accuracy:

The site of the Dalton Gulch placer mine is at the approximate midpoint of the gulch, in the southeast quarter of section 8, T.3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within half a mile. The site corresponds to location 32 of Cobb (1972), and roughly to the site for Dalton Gulch, U.S. Bureau of Land Management MAS number 0020480019.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The Dalton Gulch mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge. Bedrock in Dalton Gulch is Triassic sedimentary rocks.

The gold- and cassiterite ('tin')-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Mining began in Dalton Gulch in 1910 and continued until World War I (Wayland,1961). One pay streak was 60 feet wide, but most of the pay was discontinuous. The gravels are thin, averaging 2 to 4 feet thick, with approximately 60 feet of overburden. The stream gradient is about 200 feet per mile. The cassiterite occurs as well-rounded to subangular particles that range in size from microscopic to several inches across. The larger sizes are commonly accompanied by quartz and tourmaline, as well as by fragments of sedimentary country rock. The smaller sizes generally are free of impurities (Thomas,1957). Dalton Gulch also includes bench placers on bedrock terraces. The richest bench placers are on the steepest slopes. They averaged $0.50 in gold per square foot, with local areas as rich as $10 per square foot (gold at $20.67 per ounce). Thomas (1957) reported that the total production of Dalton Creek through 1956 was 466 ounces of gold and 3,000 pounds of cassiterite concentrate. There was less cassiterite in Dalton Gulch than in the surrounding creeks (Wayland, 1961).

Moxham (1954) reported aeschynite, columbite, monazite, and zircon in pan concentrates from Dalton Gulch. These minerals are possibly related to the carbonatite near the headwaters of the creek.

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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 in Dalton Gulch in 1910 and continued until World War I (Wayland,1961). One pay streak was 60 feet wide, but most of the pay was discontinuous. The gravels are thin, averaging between 2 and 4 feet thick, with approximately 60 feet of overburden. Dalton Gulch also includes bench placers on bedrock terraces. The richest bench placers are on the steepest slopes. They averaged $0.50 in gold per square foot, with local areas as rich as $10 per square foot (gold at $20.67 per ounce). Cassiterite is less abundant in Dalton Gulch than in the surrounding creeks (Wayland, 1961).
The U.S. Bureau of Mines churn-drilled and channel sampled (tailings) at the Dalton Gulch mine in the 1950's. The average content of five samples was 3.90 pounds of tin and 0.014 ounce of gold per cubic yard (Thomas, 1957).

Production notes:
Thomas (1957) reported that the total production of Dalton Gulch through 1956 was 466 ounces of gold and 3,000 pounds of cassiterite concentrate (at approximately 60% tin content).

Reserves:

Additional comments:

References:
Moxham, 1954; Thomas, 1957; Wayland, 1961; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957

Reporter(s): G.E. Graham (ADGGS)

Last report date: 1/15/2001

Site name(s): Cache Creek

Site type: Mine

ARDF no.: TN097

Latitude: 65.0999 **Quadrangle:** TN A-2

Longitude: 150.8157

Location description and accuracy:

The site of the Cache Creek placer mine is at the junction of Cache Creek and Ferguson Draw (TN098), just south of the center of section 9, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is probably accurate within half a mile. The site corresponds to location 33 of Cobb (1972), and roughly to the site for Gold Basin Creek, U.S. Bureau of Land Management MAS number 0020480020.

Commodities:

Main: Au

Other: Ag, Cr, REE, Sn

Ore minerals: Aeschynite, barite, cassiterite, chromite, gold, ilmenite, magnetite, pyrite

Gangue minerals:

Geologic description:

The Cache Creek mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rocks, mainly on Serpentine Ridge.

The gold- and cassiterite-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

The Cache Creek placer area is low-lying, with little exposed bedrock. Most of the area is covered by Quaternary loess and alluvium. The deposit is on the trace of a thrust fault that separates Triassic and Cretaceous rocks, and just south of a northwest-trending fault that offsets the thrust (Reifenstuhl and others, 1998). Farther upstream, the creek flows across carbonatite and another fault. The stream gravels in the mined area consist mainly of angular to subangular fragments of phyllite and graywacke, but also contain fragments of biotite granite, weathered monzonite, metadiorite, and serpentinized gabbro (Wayland, 1961).

Mining in the Cache Creek area began during the winter of 1908-09 (Ellsworth, 1910), and by 1910 steam hoists were being used. The pay gravel was at an average depth of about 50 feet; it was about 10 feet thick, and rested on bedrock. The gold was concentrated at the bedrock/gravel interface. Waters (1934) reported that pan concentrates of the placer deposit contained, in addition to gold and cassiterite, magnetite, pyrite, ilmenite, barite, picotite, and aeschynite. Pebbles of cassiterite also contain tourmaline (Wayland, 1961).

Through 1956, the U.S. Bureau of Mines reported that approximately 3,650 ounces of gold, 409 ounces of silver, and 5,155 pounds of cassiterite concentrate were removed from Cache Creek (Thomas, 1957).

Otto Hovely drift mined on Cache Creek around 1951 (Williams, 1951). Active claims in 1967 on Cache Creek, with mining on some or all of the claims, were held by Benson, Lincoln Quartz Nos. 1 and 2, McGee, McLaughlin, and Strandberg Mines, Inc. (Heiner and others, 1968). More recent activity included mining by Shoreham Resources, Ltd., which in 1989 opened a large-scale placer operation for gold and cassiterite ('tin'), recovering 2,190 ounces of gold and 14,000 pounds of byproduct tin. In that season, the company reported that the recoverable reserves were raised from 63,000 to 74,500 ounces of gold (Bundtzen and others, 1990). The following year, it reported recovery of 1,074 ounces of gold, 208 ounces of silver and 2,600 pounds of tin from 26,000 cubic yards of processed pay (Swainbank and others, 1991). Cassiterite Placers, Inc., mined on Cache Creek during the 1990s (T.K. Bundtzen, oral commun., 2000).

Quartz veins and stringers that have small amounts of cassiterite have been identified in the area (TN092), and veins containing a little gold and silver are associated with the granite of Hot Springs Dome (TN103). Such lode deposits probably are the source(s) of some of the metalliferous minerals in this placer deposit.

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer Au(-Sn) (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:

Mining in the Cache Creek area began in 1908-09, and by 1910 steam hoists were being used. The pay gravel was at a depth of approximately 50 feet, with limited water supplies for sluicing (Eakin, 1913). Reports of cassiterite ('tin') recovery were sporadic, owing to sub-economic conditions. According to Ellsworth and Davenport (1913), the cassiterite was abundant, while Mertie (1934) reported that it was not.

Little is published about mining on Cache Creek between 1917 and 1937. Mining appears to have taken place on a much smaller scale from 1937 to at least 1940. Otto Hovely drift mined on Cache Creek around 1951 (Williams, 1951). Active claims in 1967 on Cache Creek, with mining on some or all of the claims, were held by Benson, Lincoln Quartz Nos. 1 and 2, McGee, McLaughlin, and Strandberg Mines, Inc. (Heiner and others, 1968).

More recent activity on Cache Creek included mining by Shoreham Resources, Ltd. In 1989, the company opened a large-scale placer operation for gold and tin, stripping 192,000 cubic yards of overburden, sluicing 26,000 cubic yards of gravel, and recovering 2,190 ounces of gold and 14,000 pounds of byproduct tin. In that season, the company reported that the recoverable reserves were raised from 63,000 to 74,500 ounces of gold (Bundtzen and others, 1990). They hydraulic mined the overburden and sluiced the ore to a containment zone using a completely enclosed system, recycling 100 percent of the mine-process water (Bundtzen and others, 1990). In 1990, the company reported recovery of 1,074 ounces of gold, 208 ounces of silver, and 2,600 pounds of tin from 26,000 cubic yards of processed pay (Swainbank and others, 1991). In 1990, Harold Bergman also worked Cache Creek. Cassiterite Placers, Inc., worked Cache Creek during the 1990's (T.K. Bundtzen, oral commun., 2000).

Production notes:

The U.S. Bureau of Mines reported that approximately 3,650 ounces of gold, 409 ounces of silver, and 5,155 pounds of cassiterite ('tin') concentrate were removed from Cache Creek through 1956 (Thomas, 1957). This figure is thought to be conservative. Recent mining activity on Cache Creek included mining by Shoreham Resources, Ltd. In 1989, the company opened a large-scale placer operation for gold and tin, recovering 2,190 ounces of gold and 14,000 pounds of byproduct tin. In that season, the company reported that the recoverable reserves were raised from 63,000 to 74,500 ounces of gold (Bundtzen and others, 1990). The following year, it reported recovery of 1,074 ounces of gold, 208 ounces of silver and 2,600 pounds of tin from 26,000 cubic yards of processed pay (Swainbank and others, 1991). Cassiterite Placers, Inc., was also active on Cache Creek in the 1990s (T.K. Bundtzen, oral commun., 2000), but estimates of its production are not available.

Reserves:

Additional comments:

References:

Ellsworth, 1910; Ellsworth and Davenport, 1913; Eakin, 1913; Mertie, 1934; Waters, 1934; Williams, 1951; Thomas, 1957; Wayland, 1961; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1990; Swainbank and others, 1991; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957; Wayland, 1961

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/8/2003

Site name(s): Ferguson Draw

Site type: Mine

ARDF no.: TN098

Latitude: 65.1006 **Quadrangle:** TN A-2

Longitude: 150.8133

Location description and accuracy:

The exact location of placer mining on Ferguson Draw is unknown. For this record, the site is at a sled-road crossing just upstream from its junction with Cache Creek, near the center of section 9, T. 3 N., R. 16 W., of the Fairbanks Meridian. The site corresponds to location 33 in Cobb (1972, 1977) and to location 8 in the Tanana quadrangle in Eberlein and others (1977). It also roughly corresponds to the site for Ferguson Draw, U.S. Bureau of Land Management MAS number 0020480131, but the MAS site is approximately 0.5 mile upstream.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The Ferguson Draw placer mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Ferguson Draw is at the junction of two faults (Reifenstuhl and others, 1998). Bedrock in the creek consists of Triassic sedimentary rocks. The gravels in Ferguson Draw are thin or absent, and the gold is directly on the bedrock, often overlain by 40 feet of muck (Wayland, 1961). The gravels, when present, contain silicified phyllite, and well-traveled boulders of quartzite and quartz. Wayland reported that the ground contained 0.3-0.4 ounce of gold and 0.1 to 0.4 pound of cassiterite per square foot of bedrock. Upstream, the pay streak terminates abruptly at a bedrock bench.

The gold recovered from Ferguson Draw was different from the gold at the head of Cache Creek (TN097). Gold from Ferguson Draw was characteristically fine and smooth, whereas the bulk of the gold from Cache Creek was bird-shot in size. The cassiterite mostly occurs as well-rounded to subangular particles that range in size from microscopic to several inches across. The larger sizes often are accompanied by vein quartz and tourmaline, as well as by fragments of sedimentary country rock. The smaller sizes generally are free of impurities (Thomas,1957).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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 was discovered on Cache Creek (TN097) in 1909 and 1910, and prospecting began on Ferguson Draw about then. Subsequent mining presumably involved sinking shafts and underground workings.

Production notes:
Wayland (1961) reported that the ground contained 0.3-0.4 ounce of gold and 0.1 to 0.4 pound of cassiterite per square foot of bedrock.

Reserves:

Additional comments:

References:
Thomas, 1957; Wayland, 1961; Cobb, 1972; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Wayland, 1961

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/14/2000

Site name(s): Tofty Ridge

Site type: Prospect

ARDF no.: TN099

Latitude: 65.1159 **Quadrangle:** TN A-2

Longitude: 150.8102

Location description and accuracy:

The Tofty Ridge lode prospect is on a southeast-facing ridge between Cache Creek and Gold Basin Creek, 0.15 mile east of the center of section 4, T. 3 N., R. 16 W., of the Fairbanks Meridian. The site is the center of an area of recent lode exploration bounded on the west by Cache Creek and on the northeast and east by Irish Gulch and Killarney Creek. The location is accurate within 100 feet.

This site corresponds approximately with site 'Tof' (Tof claims), U.S. Bureau of Land Management MAS number 0020480117. The ARDF site for the Tofty Ridge prospect, however, is different from that of Tof in the BLM record, and agrees instead with a location based on more recent work by North Star Exploration, Inc.

Commodities:

Main: Ce, Nb, Y

Other: Ag, REE, U

Ore minerals: Aeschynite, arsenopyrite, chalcopyrite, euxenite, gold, magnetite, pyrite, zircon

Gangue minerals:

Geologic description:

The Tofty Ridge prospect is near a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge. The carbonatite sill has a strike length of at least 10 km (Reifenstuhl and others, 1998).

The Tofty tin belt lies along a regional-scale, east-northeast-striking thrust fault which juxtaposes Triassic argillite, sandstone and shale to the northwest over Cretaceous sandstone, siltstone and shale to the southeast (Reifenstuhl and others, 1998). Carbonatite bodies (sills?) are in the Triassic sedimentary rocks at the head of Idaho Gulch, and these bodies occur across the length of most of the Tofty tin belt (Reifenstuhl and others, 1998). Wayland (1961) describes an exposure of carbonatite as a 100-foot- thick lens of pale yellow limestone containing minor magnetite and apatite crystals exposed near the head of Harter Gulch.

The Tofty Ridge prospect is at the intersection of an east-northeast-striking thrust fault that dips north, and a high-angle fault that dextrally displaces the thrust fault by about 1/4 mile. The local exposed bedrock is quartz-veined quartzite along the north side of Tofty Ridge. Loess, generally 4 feet thick, and colluvial gravel, usually 2 to 4 feet thick, blanket most of the area. Black shale, gray shale, and quartzite are the most common rocks in trenches and drill holes (North Star Exploration, Inc., 2000 [Drilling and trenching program, Tofty Ridge, Manley Hot Springs village block, Alaska]). Other rock types encountered in drilling at this prospect include sericitic schist, carbonatite, quartzite breccia, pyroxenite, and metacarbonate. The carbonatite is dominantly ferroan dolomite or calcite, along with tremolite, apatite, magnetite, and traces to varying amounts of pyrite, hematite, zircon, limonite, barite, arsenopyrite, aeschynite, euxenite, and chalcopyrite.

The Tofty Ridge area was explored and over 120 claims were staked in 1978 by Resource Associates of Alaska, Inc. (RAA) for Houston Oil & Minerals (HOM) (Jim Adler, oral commun., 2003). The original exploration was to identify and evaluate the source of cassiterite ('tin') in the local placer deposits. Field work in 1979 and subsequent petrologic study of rock samples found minerals, including apatite, phlogopite, and melanite, indicative of carbonatite. In 1979, 3 geophysical traverses (one on the ridge between Harter Gulch and Sullivan Creek, one on the ridge between Dalton Gulch and Cache Creek, and one on the ridge between Cache Creek and Gold Basin Creek) consisted of 7,500 feet of ground electromagnetic survey, 7,500 feet of induced polarization, and 7,500 feet of resistivity survey (Alaska Kardex files). A geochemical survey in 1979 consisted of 135 samples collected on 100-foot spacing along the geophysical lines. A detailed, 474-line-mile, fixed-wing aeromagnetic survey was conducted by Jerry Hook of Manley Hot Springs for HOM. Large, very high positive magnetic anomalies outlined areas of known carbonatite and were subsequently used to locate buried carbonatite. In 1980, 3 angle core holes, totaling about 1,200 feet, were drilled along a north-south line using a hydrowink drill (Jim Adler, oral commun., 2003). The drilling found at least one large carbonatite dike. Core recovery was very good and consisted of limonite-stained, magnetite-rich, coarsely crystalline carbonatite containing about 10 percent magnetite and up to 10 percent apatite, as well as rare-earth elements (REE), but no significant tin, gold, uranium, or base metals. In 1981, ten backhoe trenches, up to twenty-five feet deep and 2,267 feet in total length, were excavated by Jack Neubauer for HOM. All trenches were backfilled after being sampled and mapped. Material in the trenches consisted of limonitic regolith (weathered carbonatite), which contained several times more REE than the unweathered iron-rich carbonatite bedrock. The near-surface, oxidized, lateritic residual material is enriched in REE, but still contained only about one-third of the values required for a commercial open-pit mine (Jim Adler, oral commun., 2003). In one trench, the north side of the carbonatite dike is in fault contact with serpentinite. The best sample from trenching of the carbonatite dike system produced 30 feet averaging more than one percent REE (as cesium and lanthium) and 0.15 percent niobium. Locally, niobium and tantalum are present at geochemically anomalous levels. In 1982, the HOM Tofty project data and claims were returned to RAA under prior agreement.

North Star Exploration, Inc., cut 9 trenches through loess, gravel, colluvium, and bedrock in the Tofty area in 2000 (North Star Exploration, Inc., 2001 [Alaska exploration opportunities]; Szumigala and others, 2001). North Star also diamond drilled 8 holes totaling 2,723 feet. One hole cut 159 feet of magnetite-rich, niobium-bearing carbonatite. Portions of the core were geochemically anomalous for niobium, REE, and yttrium. The orientation of the carbonatite body could not be determined by the drilling, but the geophysical data best-fit a model of an overturned, V-shaped body dipping to the north. Plans for 2001 work included drilling an additional line of holes from Gold Basin Creek toward Irish Gulch, but this work was not implemented.

An Alaska Division of Geological and Geophysical Surveys (ADGGS) sample (97RN235B) of weathered carbonatite in Miller Gulch contained more than15 percent iron and 10,000 parts per million (ppm) phosphorous; 2,100 ppm strontium, 51 ppm scandium, 740 ppm lanthanum, 433 ppm vanadium, and 40 ppm uranium (Liss and others, 1998). Several carbonatite samples from the same body in Harter Gulch contained maximums of 952 ppm arsenic, 12 ppm bismuth, 403 ppm chromium, 595 ppm lanthanum, 4,120 ppm manganese, 982 ppm nickel, 2,900 ppm strontium, 18 ppm scandium, 117 ppm vanadium, and more than 10,000 ppm phosphorous (sample numbers 97RN227.2, 97RN227.3, 97RN232A, 96KC203). Reanalysis of magnetite-bearing carbonate (carbonatite) from U.S. Bureau of Mines drill core by ADGGS indicated the unusual nature of the carbonatite, with maximum values of 542 ppm niobium, 7,245 ppm strontium, 39 ppm yttrium, 281 ppm zirconium, 26 ppm gallium, 3,416 ppm nickel, and 638 ppm zinc (ADGGS unpublished data). A whole-rock sample of altered phyllite adjacent to carbonatite in the Idaho Gulch area yielded an Ar/Ar age of 193 +/- 15 Ma, with a reset age of about 55 million years (Reifenstuhl and others, 1998). The reset age may represent the age of emplacement of the carbonatite.

Alteration:

Age of mineralization:

A whole-rock sample of altered phyllite adjacent to carbonatite in the Idaho Gulch area yielded an Ar/Ar age of 193 +/- 15 Ma, with a reset age of about 55 million years (Reifenstuhl and others, 1998). The reset age may represent the age of emplacement of the carbonatite.

Deposit model:
Carbonatite deposits (Cox and Singer, 1986; model 10).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
10

Production Status: None

Site Status: Active?

Workings/exploration:
The Tofty Ridge area was explored and over 120 claims were staked in 1978 by Resource Associates of Alaska, Inc. (RAA) for Houston Oil & Minerals (HOM) (Jim Adler, oral commun., 2003). The original exploration was to identify and evaluate the source of cassiterite ('tin') in the local placer deposits. Field work in 1979 and subsequent petrologic study of rock samples found minerals, including apatite, phlogopite, and melanite, indicative of carbonatite. In 1979, 3 geophysical traverses (one on the ridge between Harter Gulch and Sullivan Creek, one on the ridge between Dalton Gulch and Cache Creek, and one on the ridge between Cache Creek and Gold Basin Creek) consisted of 7,500 feet of ground electromagnetic survey, 7,500 feet of induced polarization, and 7,500 feet of resistivity survey (Alaska Kardex files). A geochemical survey in 1979 consisted of 135 samples collected on 100-foot spacing along the geophysical lines. A detailed, 474-line-mile, fixed-wing aeromagnetic survey was conducted by Jerry Hook of Manley Hot Springs for HOM. Large, very high positive magnetic anomalies outlined areas of known carbonatite and were subsequently used to locate buried carbonatite. In 1980, 3 angle core holes, totaling about 1,200 feet, were drilled along a north-south line using a hydrowink drill (Jim Adler, oral commun., 2003). The drilling found at least one large carbonatite dike. Core recovery was very good and consisted of limonite-stained, magnetite-rich, coarsely crystalline carbonatite containing about 10 percent magnetite and up to 10 percent apatite, as well as rare-earth elements (REE), but no significant tin, gold, uranium, or base metals. In 1981, ten backhoe trenches, up to twenty-five feet deep and 2,267 feet in total length, were excavated by Jack Neubauer for HOM. All trenches were backfilled after being sampled and mapped. Material in the trenches consisted of limonitic regolith (weathered carbonatite), which contained several times more REE than the unweathered iron-rich carbonatite bedrock. The near-surface, oxidized, lateritic residual material is enriched in REE, but still contained only about one-third of the values required for a commercial open-pit mine (Jim Adler, oral commun., 2003). In one trench, the north side of the carbonatite dike is in fault contact with serpentinite. The best sample from trenching of the carbonatite dike system produced 30 feet averaging more than one percent REE (as cesium and lanthium) and 0.15 percent niobium. Locally, niobium and tantalum are present at geochemically anomalous levels. In 1982, the HOM Tofty project data and claims were returned to RAA under prior agreement.

North Star Exploration, Inc., cut 9 trenches through loess, gravel, colluvium, and bedrock in the Tofty area in 2000 (North Star Exploration, Inc., 2001 [Alaska exploration opportunities]; Szumigala and others, 2001). North Star also diamond drilled 8 holes totaling 2,723 feet. One hole cut 159 feet of magnetite-rich, niobium-bearing carbonatite. Portions of the core were geochemically anomalous for niobium, REE, and yttrium. The orientation of the carbonatite body could not be determined by the drilling, but the geophysical data best-fit a model of an overturned, V-shaped body dipping to the north. Plans for 2001 work included drilling an additional line of holes from Gold Basin Creek toward Irish Gulch, but this work was not implemented.

An Alaska Division of Geological and Geophysical Surveys (ADGGS) sample (97RN235B) of weathered carbonatite in Miller Gulch contained more than15 percent iron and 10,000 parts per million (ppm) phosphorous; 2,100 ppm strontium, 51 ppm scandium, 740 ppm lanthanum, 433 ppm vanadium, and 40 ppm uranium (Liss and others, 1998). Several carbonatite samples from the same body in Harter Gulch contained maximums of 952 ppm arsenic, 12 ppm bismuth, 403 ppm chromium, 595 ppm lanthanum, 4,120 ppm manganese, 982 ppm nickel, 2,900 ppm strontium, 18 ppm scandium, 117 ppm vanadium, and more than 10,000 ppm phosphorous (sample numbers 97RN227.2, 97RN227.3, 97RN232A, 96KC203). Reanalysis of magnetite-bearing carbonate (carbonatite) from U.S. Bureau of Mines drill core by ADGGS indicated the unusual nature of the carbonatite, with maximum values of 542 ppm niobium, 7,245 ppm strontium, 39 ppm yttrium, 281 ppm zirconium, 26 ppm gallium, 3,416 ppm nickel, and 638 ppm zinc (ADGGS unpublished data).

Production notes:

Reserves:

Additional comments:

Estimated reserves of approximately 100,000 pounds of niobium (as Nb2O5) are present in placer tailings in upper Idaho Gulch (TN083) (Southworth, 1984).

References:

Moxham, 1954; Thomas, 1957; Wayland, 1961; Cobb, 1972; Eberlein and others, 1977; Chapman and others, 1982; Southworth, 1984; Warner and others, 1986; Liss and others, 1998; Reifenstuhl and others, 1998; North Star Exploration, Inc., 2000 (Drilling and trenching program, Tofty Ridge, Manley Hot Springs village block, Alaska); North Star Exploration, Inc., 2001 (Alaska exploration opportunities).

Primary reference: North Star Exploration, Inc., 2000 (Drilling and trenching program, Tofty Ridge, Manley Hot Springs village block, Alaska); North Star Exploration, Inc., 2001 (Alaska exploration opportunities)

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/12/2004

Site name(s): Big Denver

Site type: Prospect

ARDF no.: TN100

Latitude: 65.0206 **Quadrangle:** TN A-2

Longitude: 150.7861

Location description and accuracy:

The site of the Big Denver lode prospect is at the 1855-foot summit of a western spur of Bean Ridge, in the northwest quarter of section 10, T. 2 N., R. 16 W., of the Fairbanks Meridian. The site represents an area of prospecting that stretches for several miles along an east-northeast trend.

Commodities:

Main: Au

Other: Ag, As, Bi, Cu, Sb

Ore minerals: Gold, tetradymite

Gangue minerals: Calcite

Geologic description:

The country rocks in the area of the Big Denver prospect consist of the Tertiary Manley Hot Springs granite; Cretaceous graywacke, sandstone, quartzite, siltstone, slate, argillite, and rare conglomerate; and a zone of contact metamorphosed sedimentary rocks (hornfels) peripheral to the granite (Chapman and others, 1982; Reifenstuhl and others, 1998). The hornfels is described by Reifenstuhl and others (1998) as dark gray to black, very fine grained, and hard, with randomly oriented crystals or rosettes of muscovite, biotite, and andalusite.

Several drill targets have been identified by North Star Exploration, Inc., in calcareous sedimentary strata just beyond the hornfels zone (North Star Exploration, Inc., 1999 [Report 99-34]; North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]). Aeromagnetic surveys flown by the Alaska Division of Geological and Geophysical Surveys (Staff and others, 1996) indicate deep magnetic lows over the hornfels zones, moderate to low values over the granite, and strong highs over several elliptical bodies interpreted by North Star Exploration, Inc. as skarn targets. Magnetic highs are coincident with EM (electromagnetic) conductors. North Star Exploration, Inc., reports that sediments from streams that drain this area contain gold, arsenic, antimony, copper, and bismuth. Native gold and tetradymite have also been found in placer concentrates.

The area of interest includes Big Denver Creek (TN095), and the Hot Springs Dome (TN103) and Big Denver (TN089) lode deposits. Mertie (1934) reports gold- and silver-bearing calcite veins in a shear zone that appears to strike N75E. The mineralized shear zone reportedly could be traced for 3,000 feet from Big Denver Creek to Blowback Creek, but Mertie's location is poorly constrained, and there may be more than one system of veins.

Alteration:

Contact metamorphism.

Age of mineralization:

If present, mineralization presumably is Tertiary (62 +/- 3 Ma), the age of the Manley Hot Springs granitic body (Chapman and others, 1982).

Deposit model:

Au-Cu skarn (after Cox and Singer, 1986; model 18b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
18b

Production Status: None

Site Status: Active?

Workings/exploration:
North Star Exploration, Inc., identified the Big Denver prospect as a priority target in the late 1990's, based on compilation and interpretation of regional and detailed geological, geophysical, geochemical, and Landsat data. Included in this compilation are proprietary and public domain, helicopter-borne magnetic/resistivity/EM (electromagnetic) geophysical surveys. North Star is using these data to identify skarn targets (North Star Exploration, Inc., 2000 [Reduced calcic gold skarns]).

Production notes:

Reserves:

Additional comments:
This site is on land selected by or conveyed to Doyon, Ltd. For further information, contact Doyon, Ltd., at 210 1st Avenue, Fairbanks, Alaska, 99701.

References:
Mertie, 1934; Chapman and others, 1982; Bottge, 1985; Staff and others, 1996; Reifenstuhl and others, 1998; North Star Exploration, Inc., 1999 (Report 99-34); North Star Exploration, Inc., 2000 (Reduced calcic gold skarns).

Primary reference: North Star Exploration, Inc., 1999 (Report 99-34)

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/15/2000

Site name(s): Gold Basin Creek

Site type: Prospect

ARDF no.: TN101

Latitude: 65.1124 **Quadrangle:** TN A-2

Longitude: 150.7628

Location description and accuracy:
The site of the Gold Basin Creek placer prospect is at a sled road crossing on the creek, in the southwest quarter of section 2, T. 3 N., R. 16 W., of the Fairbanks Meridian. The site corresponds to location 34 of Cobb (1972).

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:
The Gold Basin prospect is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) occurs in the Triassic strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rocks, mainly on Serpentine Ridge. Gold Basin Creek flows along a northwest-trending fault in Triassic strata just north of one of the regional thrust faults.

The gold- and tin(cassiterite)-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

In 1917, prospectors found significant amounts of cassiterite in Gold Basin Creek, but did not find much gold. The creek was explored by drilling and prospect shafts. The gold and cassiterite were on bedrock at a depth of 40 to 80 feet (Wayland, 1961; Cobb, 1977). The exact distribution of the gold is unknown, but in the past it has proved too fine to recover. The cassiterite is similar to that in Woodchopper Creek (TN081) and is well rounded (Wayland, 1961).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:

In 1917, prospectors found significant amounts of cassiterite in Gold Basin Creek, but not much gold (Martin, 1919). The creek was explored by drilling and prospect shafts. The gold and cassiterite were on bedrock at a depth of 40 to 80 feet (Wayland, 1961; Cobb, 1977). The exact distribution of the gold is unknown, but in the past it has proved too fine to recover. The cassiterite is similar to that in Woodchopper Creek (TN081) and is well rounded (Wayland, 1961).

Production notes:

Reserves:

Additional comments:

References:

Martin, 1919; Thomas, 1957; Wayland, 1961; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1957; Wayland, 1961

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/11/2000

Site name(s): Unnamed (northwest of Manley Hot Springs Dome)

Site type: Occurrence

ARDF no.: TN102

Latitude: 65.0337 **Quadrangle:** TN A-2

Longitude: 150.7599

Location description and accuracy:

This occurrence is at an elevation of about 2,200 feet, approximately 3,000 feet northwest of Manley Hot Springs Dome. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97SL055A (Liss and others, 1998), near the northwest corner of section 2, T. 2 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Zn

Other:

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock at the head of Little Denver Creek is mainly Lower Cretaceous sandstone, shale, and siltstone, along with less-abundant quartzite (Reifenstuhl and others, 1998). The northwestern contact of the Tertiary Hot Springs granite pluton and its hornfels aureole is 3,500 feet to the southeast.

In 1997, ADGGS collected samples (97SL055A and 97SL055C) of quartzite and black phyllitic schist from near the crest of a west-trending ridge at the head of Little Denver Creek (Liss and others, 1998). The samples contained maximum geochemical values of 4,130 parts per million (ppm) phosphorous and 296 ppm zinc. There is no record of exploration or mining at this site, but there has been extensive industry exploration around Hot Springs Dome (TN103).

Alteration:

Age of mineralization:

Deposit model:

Likely polymetallic veins (Cox and Singer, 1986; model 22c), but very little specific information regarding the mineralization.

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

22c

Production Status: None

Site Status: Inactive

Workings/exploration:

Two samples (97SL055A and 97SL055C) of quartzite and black phyllitic schist were collected by ADGGS from near the top of a west-trending ridge that forms the headwaters of Little Denver Creek (Liss and others, 1998). The samples had anomalous geochemical values of 4130 ppm P, and 296 ppm Zn (Liss and others, 1998). There is no record of exploration or mining activity at this site, but there has been extensive exploration around Hot Springs Dome.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/25/2004

Site name(s): Hot Springs Dome; Barrett; Donnelly

Site type: Prospect

ARDF no.: TN103

Latitude: 65.0278 **Quadrangle:** TN A-2

Longitude: 150.7528

Location description and accuracy:

The site of the Hot Springs Dome prospect is at an elevation of about 2100 feet, about 0.3 mile southwest of the summit of Manley Hot Springs Dome. The prospect is in section 2, T. 2 N., R. 16 W., of the Fairbanks Meridian. The site corresponds to location 6 of Cobb (1972).

Commodities:

Main: Au

Other: Ag, Co, Cu, Mn, Pb, Zn

Ore minerals: Argentiferous(?) galena, azurite, cerussite, chalcocite, chalcopyrite, erythrite, magnetite, malachite, monazite, native sulfur, pyrite, pyrrhotite

Gangue minerals: Calcite, goethite, hematite, limonite, pyrolusite, quartz, siderite, tourmaline

Geologic description:

The country rocks in the area of Hot Springs Dome consist of Tertiary biotite granite, Cretaceous, predominantly marine, clastic sedimentary rocks, and a zone of contact-metamorphosed sedimentary rocks (hornfels) peripheral to the granite (Chapman and others, 1982; Reifenstuhl and others, 1998). The hornfels zone is approximately 1/4 mile wide. Dikes ranging from 3 inches to 4 feet thick cut the granite (Waters, 1934). Most of the dikes contain tourmaline, in amounts ranging from less than 1 percent to 15 percent; monazite was also identified in one specimen.

The lode deposits of Hot Springs Dome are in granite and in metamorphosed sedimentary rocks along its contact. The deposits are marked by gossans that trend northeast, approximately parallel to the contact between the granite and the country rocks. The gossans contain abundant iron-oxide veins, along with some iron-carbonate and quartz veinlets, and apparently have developed along shear or breccia zones. Exposures of the mineralization, however, are poor.

Eakin (1913) reported gold-bearing hematite deposits near Hot Springs Dome and Roughtop Mountain, in breccia zones ranging from a few inches to several feet wide. Mertie (1934) described six east-trending shear zones in metamorphosed sedimentary rocks on the northwest side of the granite body on Hot Springs Dome. At the Barrett prospect, a shear zone contains veins of galena and pockets of limonite, siderite, and possibly manganese minerals. Other reported minerals include chalcopyrite, pyrrhotite, pyrite, malachite, azurite, chalcocite, and native sulfur; erythrite occurs in quartz stringers and in crevices of schistose rock. Wedow and others (1952) reported that the galena is argentiferous. Moxham (1954) reported that the Barrett prospect shear zone is 20- to 35-feet wide, and can be traced horizontally for 2,000 feet. He also reported cerussite as the main ore in the oxidized zone.

Very few sulfides have been identified in drilling, most likely due to their oxidation. The U.S. Bureau of Mines diamond-drilled eight holes in 1954, with a total length of 3,198 feet and a maximum length of 515 feet. Even at a depth below the surface of 446 feet, the rocks are intensely oxidized. The drilling intersected gossan comprising limonite, goethite, pyrolusite, hematite, magnetite, rutile, and minor anglesite and erythrite (Maloney, 1971). Fresh galena, however, was intersected in one drill hole at a depth of 400 feet, and a stringer of pyrrhotite, chalcopyrite, and pyrite was intersected at a depth of 18 feet in another hole. Wayland (1961) reported that one oxidized quartz-siderite-galena vein was traceable on the surface for 1,500 feet and another for 500 feet. Those veins also contained calcite, pyrite, pyrrhotite, and erythrite.

Exploratory pits and adits driven by the U.S. Bureau of Mines on Hot Springs Dome in 1953-54 yielded little more than iron and manganese oxides (Maloney, 1971). Earlier reports of small amounts of lead, zinc, copper, and cobalt sulfides were confirmed by drilling and surface sampling, whose results included the following maximum metal values: 3.7 percent lead, 0.32 percent zinc, 1.20 percent copper, 0.02 percent cobalt, 3.90 percent manfanese, 0.17 ounce of gold per ton, and 0.53 ounce of silver per ton. Most samples, however, contained only trace amounts of metals.

The Donnelly prospect is just south of the Barrett prospect. Little work has been done there, and its description has not been made public (Heiner and others, 1968).

Alteration:

All metallic minerals are oxidized except for a few pockets containing small amounts of galena, pyrrhotite, chalcopyrite, and pyrite.

Age of mineralization:

Tertiary. The granite has a [whole-rock?] K-Ar age date of 62 +/- 3 Ma (Chapman and others, 1982), and a biotite 40Ar/39Ar age date of 59 +/- 0.8 Ma (Reifenstuhl and others, 1998).

Deposit model:

Polymetallic veins (Cox and Singer, 1986; model 22c).

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

22c

Production Status: None

Site Status: Inactive

Workings/exploration:

Workings (3 shallow shafts, 1 short adit, several trenches and pits) caved by 1931. Diamond drilling (8 holes, 3,198 feet total) completed by U.S. Bureau of Mines in 1954.

Production notes:

Reserves:

Additional comments:

References:

Eakin, 1913; Mertie, 1934; Waters, 1934; Wedow and others, 1952; Moxham, 1954; Wayland, 1961; Berg and Cobb, 1967; Heiner and others, 1968; Maloney, 1971; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934; Maloney, 1971

Reporter(s): G.E. Graham (ADGGS), D. J. Szumigala (ADGGS)

Last report date: 8/1/2003

Site name(s): Unnamed (Bean Ridge)

Site type: Occurrences

ARDF no.: TN104

Latitude: 65.0231 **Quadrangle:** TN A-2

Longitude: 150.7483

Location description and accuracy:

These occurrences are along a 4,000-foot-long northeast trend along the top of Bean Ridge. The northernmost occurrence is approximately 1,700 feet south of Manley Hot Springs Dome. The site is at the center of the area of occurrences, at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97RN147 (Liss and others, 1998), just north of the middle of the south boundary of section 2, T. 2 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Au, Pb, Zn

Other: Fe, Mn

Ore minerals:

Gangue minerals: Quartz

Geologic description:

Bedrock at thse occurrences is locally brecciated, mainly Lower Cretaceous sandstone, shale, and siltstone that is hornfelsed by the Tertiary Hot Springs granite pluton (Reifenstuhl and others, 1998). The hornfels consists of black, dense rock that contains unoriented crystals or rosettes of muscovite, biotite, and, locally, andalusite. The northwestern contact of the Tertiary Hot Springs granite pluton is in the prospect area. The breccia probably is due to high-angle faulting at the pluton-hornfels contact.

In 1997, ADGGS collected several samples (97RN145A, 97RN147, and 97RN150) of iron- and manganese-oxide-cemented breccia, and of quartz veins in hornfels, along Bean Ridge south and southwest of Manley Hot Springs Dome (Liss and others, 1998). The samples contained one or more of the following maximum geochemical values: 690 parts per billion (ppb) gold, 8.5 parts per million (ppm) cadmium, 280 ppm lead, 3,750 ppm zinc, and more than 15 percent iron and 10,000 ppm manganese (Liss and others, 1998). There is no record of exploration or mining at this site, but there has been extensive exploration by industry around Hot Springs Dome and at the Barrett prospect (TN103).

Alteration:

Age of mineralization:

Tertiary. The granite has a [whole-rock?] K-Ar age date of 62 +/- 3 Ma (Chapman and others, 1982), and a biotite 40Ar/39Ar age date of 59 +/- 0.8 Ma (Reifenstuhl and others, 1998).

Deposit model:

Polymetallic veins (Cox and Singer, 1986; model 22c).

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

22c

Production Status: None

Site Status: Inactive

Workings/exploration:

In 1997, ADGGS collected several samples (97RN145A, 97RN147, and 97RN150) of iron- and manganese-oxide-cemented breccia, and of quartz veins in hornfels, along Bean Ridge south and southwest of Manley Hot Springs Dome (Liss and others, 1998). The samples contained one or more of the following maximum geochemical values: 690 parts per billion (ppb) gold, 8.5 parts per million (ppm) cadmium, 280 ppm lead, 3,750 ppm zinc, and more than 15 percent iron and 10,000 ppm manganese (Liss and others, 1998). There is no record of exploration or mining at this site, but there has been extensive exploration by industry around Hot Springs Dome and at the Barrett prospect (TN103).

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/25/2004

Site name(s): Unnamed (Hot Springs Dome, east Barrett)

Site type: Occurrences

ARDF no.: TN105

Latitude: 65.0303 **Quadrangle:** TN A-2

Longitude: 150.7426

Location description and accuracy:

These occurrences are at and near the summit of Manley Hot Springs Dome. The area of occurrences ranges in elevation from 2,100 to 2,649 feet, and extends for about 1,750 feet in a north-south direction and 2,250 feet in an east-west direction. The site is about at the center of this area, at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97RN144, at the summit of Manley Hot Springs Dome (Liss and others, 1998). The location is accurate within 500 feet.

Commodities:

Main: Ag, Au, Cu, Pb, Zn

Other: As, Bi, Co, Fe, Mn, Sb, W

Ore minerals: Galena, goethite, limonite

Gangue minerals: Siderite

Geologic description:

The country rocks in the area of Hot Springs Dome consist of Tertiary biotite granite, Cretaceous, predominantly marine, clastic sedimentary rocks, and a zone of contact-metamorphosed sedimentary rocks (hornfels) peripheral to the granite (Chapman and others, 1982; Reifenstuhl and others, 1998). The hornfels zone is approximately 1/4 mile wide. Dikes ranging from 3 inches to 4 feet thick cut the granite (Waters, 1934). Most of the dikes contain tourmaline, in amounts ranging from less than 1 percent to 15 percent; monazite was also identified in one specimen.

Rock samples were collected in 1998 by ADGGS at the summit, and along spur ridges, of Manley Hot Springs Dome (Liss and others, 1998). Samples from the summit, and from up to 1,250 feet north, 1,000 feet west, 1,250 feet east, and 500 feet south of the summit, probably are on eastern extensions of the shear zones that host mineralization at the Barrett prospect (TN103). Samples of goethite-bearing, siderite-bearing, and manganese-stained gossan; of breccia; and of galena-bearing and other mineralized rocks contained one or more of the following maximum geochemical values: 1,500 parts per billion (ppb) gold, 98.4 parts per million (ppm) silver, 2,080 ppm arsenic, 2,760 ppm bismuth, 497 ppm cobalt, 6,090 ppm copper, 980 ppm phosphorous, 7.81 percent lead, 38 ppm antimony, 130 ppm tungsten, 8,510 ppm zinc, and more than 15 percent iron and 10,000 ppm manganese.

Alteration:

Age of mineralization:

Tertiary. The granite has a [whole-rock?] K-Ar age date of 62 +/- 3 Ma (Chapman and others, 1982), and a biotite 40Ar/39Ar age date of 59 +/- 0.8 Ma (Reifenstuhl and others, 1998).

Deposit model:

Polymetallic veins (Cox and Singer, 1986; model 22c).

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

22c

Production Status: None

Site Status: Inactive

Workings/exploration:

Rock samples were collected in 1998 by ADGGS at the summit, and along spur ridges, of Manley Hot Springs Dome (Liss and others, 1998). Samples from the summit, and from up to 1,250 feet north, 1,000 feet west, 1,250 feet east, and 500 feet south of the summit, probably are on eastern extensions of the shear zones that host mineralization at the Barrett prospect (TN103). Samples of goethite-bearing, siderite-bearing, and manganese-stained gossan; of breccia; and of galena-bearing and other mineralized rocks contained one or more of the following maximum geochemical values: 1,500 parts per billion (ppb) gold, 98.4 parts per million (ppm) silver, 2,080 ppm arsenic, 2,760 ppm bismuth, 497 ppm cobalt, 6,090 ppm copper, 980 ppm phosphorous, 7.81 percent lead, 38 ppm antimony, 130 ppm tungsten, 8,510 ppm zinc, and more than 15 percent iron and 10,000 ppm manganese.

Production notes:

Reserves:

Additional comments:

References:

Eakin, 1913; Mertie, 1934; Waters, 1934; Wedow and others, 1952; Moxham, 1954; Maloney, 1971; Chapman and others, 1982; Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/24/2004

Site name(s): Killarney Creek

Site type: Prospect

ARDF no.: TN106

Latitude: 65.1143 **Quadrangle:** TN A-2

Longitude: 150.7404

Location description and accuracy:
Killarney Creek drains the southeastern side of Roughtop Mountain. The site of this placer prospect is at a sled road crossing on Killarney Creek, just east of the center of section 2, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within half a mile. The site corresponds to location 35 of Cobb (1972), and roughly to the site for Killarney Creek, U.S. Bureau of Land Management MAS number 0020480021.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:
The Killarney Creek prospect is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) occurs in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock in the area, mainly on Serpentine Ridge. Bedrock at the Killarney Creek prospect is Triassic or Permian siliciclastic rocks (argillite, sandstone, and shale), characterized by subphyllitic to phyllitic textures (Reifenstuhl and others, 1998).

The gold- and tin-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Killarney Creek delineates the northeastern boundary of the tin belt (Thomas, 1957). The creek gravels contain cobbles of a coarse-grained biotite granite probably from Roughtop Mountain (Wayland, 1961). Bedrock in Killarney Creek consists of Triassic sedimentary rocks (Reifenstuhl and others, 1998).

Prospecting began on Killarney Creek in 1912 (Wayland, 1961). Potential gold-bearing gravel deposits were drilled the following years by Hanson and Bock, and by Howell and Bargery (Brooks, 1916). The cassiterite and gold occur on phyllite bedrock for approximately 1,000 feet along Killarney Creek, at a depth of 40 to 80 feet. Unlike the other deposits in the tin belt, the cassiterite is fine; the largest piece recovered from one drilling program was only one inch in diameter (Wayland, 1961).

More recent work on Killarney Creek has included testing the gravels for gold and tin by Bruce Savage in 1989 (Bundtzen and others, 1990). In 1997, Bed Rock Enterprises conducted placer exploration on Killarney Creek, as well as on Roughtop Mountain (Swainbank and others, 1998).

Alteration:

Age of mineralization:
Quaternary.

Deposit model:
Placer Au(-Sn) (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:
Prospecting began on Killarney Creek in 1912 (Wayland, 1961). Potential gold-bearing gravel deposits were drilled the following years by Hanson and Bock, and by Howell and Bargery (Brooks, 1916). The cassiterite and gold occur on phyllite bedrock for approximately 1,000 feet along Killarney Creek, at a depth of 40 to 80 feet. Unlike the other deposits in the tin belt, the cassiterite is fine; the largest piece recovered from one drilling program was only one inch in diameter (Wayland, 1961).
More recent work on Killarney Creek included testing the gravels for gold and tin by Bruce Savage in 1989 (Bundtzen and others, 1990). In 1997, Bed Rock Enterprises conducted placer exploration on Killarney Creek, as well as on Roughtop Mountain (Swainbank and others, 1998).

Production notes:

Reserves:

Additional comments:

References:
Brooks, 1916; Thomas, 1957; Wayland, 1961; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1990; Reifenstuhl and others, 1998; Swainbank and others, 1998.

Primary reference: Wayland, 1961

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/11/2000

Site name(s): Cooney Creek

Site type: Mine

ARDF no.: TN107

Latitude: 65.1139 **Quadrangle:** TN A-2

Longitude: 150.7287

Location description and accuracy:

Cooney Creek drains the southeastern side of Roughtop Mountain. The site of this placer mine is at an elevation of about 750 feet on Cooney Creek, in the southwest quarter of section 1, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within about half a mile.

The site corresponds to location 36 of Cobb (1972), and roughly to the site for Cooney Creek, U.S. Bureau of Land Management MAS number 0020480031.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Cooney Creek placer deposit is in an area of low relief, most of which is covered with a blanket of Quaternary loess and alluvium. Reifenstuhl and others (1998) mapped the underlying bedrock as Triassic sedimentary rocks. The upper reaches of Cooney Creek flow across a carbonatite sill in the Triassic rocks, and its headwaters drain an area underlain by Mesozoic granitic and metamorphic rocks (Chapman and others, 1982).

Gold was identified in Cooney Creek in 1912, when a large area of unevenly distributed, very low grade gold placer ground was reported (Ellsworth and Davenport, 1913). Small production was reported in 1938 (Smith, 1939 [B 917-A]). Stanley Dale and J. Neubauer were mining on Cooney Creek in 1967 (Heiner and others, 1968), and Rough Top Mining Company mined with a bulldozer and sluice operation in 1975 (Carnes, 1976; Cobb, 1981). Albert Hagen mined through Claim 1 above Discovery and on about half of the Discovery claim before and during 1988, in section 25, T. 4 N., R. 16 W. (Alaska Kardex files). In 1993, Thurman Oil and Mining mined on Cooney Creek at a placer cut started in 1988 and proceeded up the valley making 20-foot-long by 90-foot-wide cuts (Bundtzen and others, 1994; Alaska Kardex files).

Alteration:

Age of mineralization:

Quaternary.

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:

Cooney Creek presumably was mined by surface workings. Gold was identified in Cooney Creek in 1912, when a large area of irregularly distributed, very low grade gold placer ground was reported (Ellsworth and Davenport, 1913). Small production was reported in 1938 (Smith, 1939 [B 917-A]). Stanley Dale and J. Neubauer were mining on Cooney Creek in 1967 (Heiner and others, 1968), and Rough Top Mining Company mined with a bulldozer and sluice operation in 1975 (Carnes, 1976; Cobb, 1981). Albert Hagen mined through Claim 1 above Discovery and on about half of the Discovery claim before and during 1988 (Alaska Kardex files). In 1993, Thurman Oil and Mining mined on Cooney Creek at a placer cut started in 1988 and proceeded up the valley making 20-foot-long by 90-foot-wide cuts (Bundtzen and others, 1994; Alaska Kardex files).

Production notes:

Reserves:

Additional comments:

References:

Ellsworth and Davenport, 1913; Smith, 1939 (B 917-A); Wayland, 1961; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1981; Chapman and others, 1982; Bundtzen and others, 1994; Reifenstuhl and others, 1998.

Primary reference: Wayland, 1961

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/8/2003

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

Site type: Occurrence

ARDF no.: TN108

Latitude: 65.0381 **Quadrangle:** TN A-2

Longitude: 150.7287

Location description and accuracy:

This occurrence is at an elevation of about 1,500 feet on the toe of a northwest-trending ridge at the head of Blowback Creek, and approximately 1.1 miles northeast of Manley Hot Springs Dome. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97SL086 (Liss and others, 1998), near the southwest corner of section 36, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Ag, Au, Cu

Other: As, Bi, Fe, Mn

Ore minerals:

Gangue minerals: Siderite

Geologic description:

Bedrock at the head of Blowback Creek is mainly Lower Cretaceous sandstone, shale, and siltstone, along with less-abundantand quartzite (Reifenstuhl and others, 1998). The northwestern contact of the Tertiary Hot Springs granite pluton and its hornfels aureole is 3,000 feet to the south.

A sample (97SL086) of quartzite with siderite collected by ADGGS on a ridge at the head of Blowback Creek contained 2,720 parts per billion (ppb) gold, 33.8 parts per milion (ppm) silver, 256 ppm arsenic, 480 ppm bismuth, 8,740 ppm copper, 3,400 ppm manganese, and more than 15 percent iron (Liss and others, 1998). There has been extensive exploration by industry around Hot Springs Dome and at the Barrett prospect (TN103).

Alteration:

Age of mineralization:

Tertiary. The granite has a [whole-rock?] K-Ar age date of 62 +/- 3 Ma (Chapman and others, 1982), and a biotite 40Ar/39Ar age date of 59 +/- 0.8 Ma (Reifenstuhl and others, 1998).

Deposit model:

Polymetallic veins (Cox and Singer, 1986; model 22c).

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

22c

Production Status: None

Site Status: Inactive

Workings/exploration:

A sample (97SL086) of quartzite with siderite collected by ADGGS on a ridge at the head of Blowback

Creek contained 2,720 parts per billion (ppb) gold, 33.8 parts per milion (ppm) silver, 256 ppm arsenic, 480 ppm bismuth, 8,740 ppm copper, 3,400 ppm manganese, and more than 15 percent iron (Liss and others, 1998). There has been extensive exploration by industry around Hot Springs Dome and at the Barrett prospect (TN103).

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/25/2004

Site name(s): Unnamed (north spur of Bean Ridge)

Site type: Occurrence

ARDF no.: TN109

Latitude: 65.0487 **Quadrangle:** TN A-2

Longitude: 150.7102

Location description and accuracy:
This occurrence is at an elevation of about 1,800 feet, on the north spur of Bean Ridge between Little Beauty and Blowback creeks. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97JD053 (Liss and others, 1998), about 0.4 mile north of the center of section 36, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Zn

Other: As, Fe

Ore minerals: Limonite

Gangue minerals:

Geologic description:
Bedrock at this occurrence is mostly Lower Cretaceous sandstone, shale, and siltstone (Reifenstuhl and others, 1998). The northwestern contact of the Tertiary Hot Springs granite pluton and its hornfels aureole is 1 mile to the south.
Samples (97JD053 and 97SL032) of thinly laminated shale, and of limonite gossan in dolomite between Blowback and Little Beauty creeks contained one or more of the following maximum values: 814 parts per million (ppm) arsenic, 13.8 percent iron, 2,780 ppm phosphorous, and 2,260 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:
Possibly epithermal, polymetallic, or mesothermal veins related to the Hot Springs granite pluton.

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

Production Status: None

Site Status: Inactive

Workings/exploration:
Samples (97JD053 and 97SL032) of thinly laminated shale, and of limonite gossan in dolomite between Blowback and Little Beauty creeks contained one or more of the following maximum values: 814 parts per million (ppm) arsenic, 13.8 percent iron, 2,780 ppm phosphorous, and 2,260 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/24/2004

Site name(s): Unnamed (northeast of Manley Hot Springs Dome)

Site type: Occurrences

ARDF no.: TN110

Latitude: 65.0375 **Quadrangle:** TN A-2

Longitude: 150.7042

Location description and accuracy:

These occurrences are approximately 1.2 miles northeast of Manley Hot Springs Dome. The site is at the top of hill 2456, at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97RN142A (Liss and others, 1998), in the southeast quarter of section 36, T. 3 N., R. 16 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Cu, Zn

Other: Fe

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock at thse occurrences is locally brecciated, mainly Lower Cretaceous sandstone, shale, and siltstone that has been hornfelsed by the Tertiary Hot Springs granite pluton (Reifenstuhl and others, 1998). The hornfels consists of black, dense rock that contains unoriented crystals or rosettes of muscovite, biotite, and, locally, andalusite. The northwestern contact of the Hot Springs pluton is about 1,000 feet to the south. The breccia may be due to high-angle faulting.

Several samples (97KC049A, 97KC049B, and 97RN142A) of gossaneous hornfels and breccia on eastern Bean Ridge contained one or more of the following maximum geochemical values: 471 parts per million (ppm) copper, more than 15 percent iron, 4,400 ppm manganese, 162 ppm lead, and 804 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:

Possibly epithermal, polymetallic, or mesothermal veins related to the Hot Springs granite pluton.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Several samples (97KC049A, 97KC049B, and 97RN142A) of gossaneous hornfels and breccia on eastern Bean Ridge contained one or more of the following maximum geochemical values: 471 parts per million (ppm) copper, more than 15 percent iron, 4,400 ppm manganese, 162 ppm lead, and 804 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/24/2004

Site name(s): Unnamed (Baker Creek tributary)

Site type: Prospect

ARDF no.: TN111

Latitude: 65.0834 **Quadrangle:** TN A-2

Longitude: 150.6864

Location description and accuracy:

Mining claims were staked in 1967, followed by placer mining, along a tributary of Baker Creek (Alaska Kardex files). The location given in the U.S. BLM MAS system (MAS number 0020480059), is in the southwest quarter of section 18, T. 3 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within about 1000 feet.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

This placer prospect is about 2 miles south of the east edge of the Tofty tin belt, a group of cassiterite- and gold-bearing placer deposits centered on the town of Tofty and extending for approximately 12 miles in an east-northeast trend (Thomas, 1957). The gold- and tin-bearing creeks flow normal to the trend of the tin belt. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Bedrock at the prospect is Lower Cretaceous sandstone, shale, and siltstone (Reifenstuhl and others, 1998). A square-mile outcrop area of the Tertiary (58 Ma) Hot Springs granite is approximately one mile to the southeast. Numerous east-trending and northwest-trending high-angle faults cut through the area.

Placer mining claims were staked on this tributary of Baker Creek in 1967, and were worked from 1967 to at least 1972 (Alaska Kardex files). Affidavits of annual labor list trenching in 1971 and drilling in 1972. There is no record of mining or production.

Alteration:

Age of mineralization:

Quaternary?

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: Probably inactive

Workings/exploration:

Placer mining claims were staked on this tributary of Baker Creek in 1967, and were worked from 1967 to at least 1972 (Alaska Kardex files). Affidavits of annual labor list trenching in 1971 and drilling in 1972. There is no record of mining or production.

Production notes:
No known production.

Reserves:

Additional comments:

References:
Thomas, 1957; Reifenstuhl and others, 1998.

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/3/2004

Site name(s): Unnamed (near Orum Creek)

Site type: Occurrence

ARDF no.: TN112

Latitude: 65.2166 **Quadrangle:** TN A-2

Longitude: 150.6773

Location description and accuracy:

This occurrence is at an elevation of about 1,400 feet, on the southwest flank of the ridge between Orum and Wolverine creeks. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97KC023 (Liss and others, 1998), about 0.2 mile east-southeast of the center of section 32, T. 5 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Cu, Zn

Other:

Ore minerals:

Gangue minerals:

Geologic description:

Bedrock in the Orum-Wolverine creeks area consists of Triassic to Permian argillite, sandstone, and shale (Reifenstuhl and others, 1998). These rocks are in thrust-fault contact with Jurassic or Cretaceous metasedimentary rocks to the south, and with lower Paleozoic or older chert, cherty argillite, siliceous dolostone, and calcareous mudstone to the north. The Cretaceous monzodiorite, syenite, and monzonite Roughtop Mountain pluton crops out about 1.5 miles to the south (Reifenstuhl and others, 1998).

A sample (97KC023) of quartzite on a ridge south of Orum Creek contained 306 parts per million (ppm) copper, 7.81 percent iron, 1,170 ppm phosphorous, and 944 ppm zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

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:

A sample (97RN035) of a quartz vein at the contact between quartzite and argillite on the ridge between Minook and Eureka creeks contained 360 parts per million (ppm) arsenic (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/21/2004

Site name(s): Tonawanda Creek

Site type: Mine

ARDF no.: TN113

Latitude: 65.1219 **Quadrangle:** TN A-2

Longitude: 150.6661

Location description and accuracy:

Mining claims were staked in 1980, followed by placer mining along Tonawanda Creek (Alaska Kardex files). The discovery claim was on the creek at the northeast corner of section 6, T. 3 N., R. 15 W., of the Fairbanks Meridian, and claims extended above and below the discovery claim. The site is at the discovery claim. The location is accurate within about 500 feet.

This site roughly corresponds with the site for Tonawanda Creek, U.S. Bureau of Land Management MAS number 0020480128.

Commodities:

Main: Au

Other: Sn?

Ore minerals:

Gangue minerals:

Geologic description:

The Tonawanda Creek mine is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and cassiterite ('tin')-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Bedrock at the Tonawanda Creek mine is Triassic or Permian, subphyllitic to phyllitic, argillite, sandstone, and shale, and a steeply-dipping Jurassic carbonatite sill (Reifenstuhl and others, 1998). Mining claims were staked along Tonawanda Creek in 1980 (Alaska Kardex files), and worked semi-continuously from 1980 to 1994. An affidavit of annual labor from 1986 listed 22 state mining claims and stripping on No. 1 below Discovery.

Alteration:

Age of mineralization:

Quaternary?

Deposit model:

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

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

Production Status: Undetermined.

Site Status: Undetermined

Workings/exploration:
Mining claims were staked along Tonawanda Creek in 1980 (Alaska Kardex files), and worked semi-continuously from 1980 to 1994. An affidavit of annual labor from 1986 listed 22 state mining claims and stripping on No. 1 below Discovery.

Production notes:

Reserves:

Additional comments:

References:
Thomas, 1957; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/26/2004

Site name(s): Unnamed (Karshner Creek Ridge)

Site type: Occurrence

ARDF no.: TN114

Latitude: 65.0085 **Quadrangle:** TN A-2

Longitude: 150.6328

Location description and accuracy:
This occurrence is at an elevation of about 550 feet, on a south-facing ridge on the east side of Karshner Creek and about 1,500 feet north of Karshner hot spring. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97SL229A (Liss and others, 1998), near the southeast corner of section 8, T. 2 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Pb, Zn

Other: Fe, Mn, U

Ore minerals:

Gangue minerals: Limonite

Geologic description:
Bedrock in the area of this occurrence is mainly Lower Cretaceous sandstone, shale, and siltstone that has been hornfelsed by the Tertiary Hot Springs granite pluton (Reifenstuhl and others, 1998). The hornfels is black, dense rock that contains unoriented crystals or rosettes of muscovite, biotite, and, locally, andalusite. Felsic dikes associated with the Hot Springs granite pluton occur throughout the area.
Several samples (97RR168B, 97SL229A, and 97SL229B) of gossan and hornfelsed shale on a ridge just east of Karshner Creek contained one or more of the following maximum geochemical values: more than 15 percent iron, 40 parts per million (ppm) lanthanum, 1,795 ppm manganese, 548 ppm lead, 40 ppm uranium, and 1,130 ppm zinc (Liss and others, 1998). There is no record of lode exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:
Possibly epithermal, polymetallic, or mesothermal veins related to the Tertiary Hot Springs granite pluton.

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

Production Status: None

Site Status: Probably inactive

Workings/exploration:
Several samples (97RR168B, 97SL229A, and 97SL229B) of gossan and hornfelsed shale on a ridge just east of Karshner Creek contained one or more of the following maximum geochemical values: more than 15 percent iron, 40 parts per million (ppm) lanthanum, 1,795 ppm manganese, 548 ppm lead, 40 ppm uranium, and 1,130 ppm zinc (Liss and others, 1998). There is no record of lode exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/24/2004

Site name(s): Karshner Creek

Site type: Occurrence

ARDF no.: TN115

Latitude: 65.0017 **Quadrangle:** TN A-2

Longitude: 150.6297

Location description and accuracy:

This site represents the location of a pan sample of sediment from Karshner Creek near its junction with Hot Springs Slough, just above the town of Manley Hot Springs. The site is in the east half of section 17, T. 2 N., R. 15 W., of the Fairbanks Meridian. The site corresponds to location 37 in Cobb (1972, 1977), and to location 22 in the Tanana quadrangle in Eberlein and others (1977).

Commodities:

Main: REE

Other:

Ore minerals: Magnetite, monazite

Gangue minerals:

Geologic description:

Karshner Creek drains an area underlain by Tertiary granite, Cretaceous, marine clastic sedimentary country rocks, and a zone of contact-metamorphosed strata (hornfels) peripheral to the granite (Chapman and others, 1982). This site represents a pan sample of stream sediment collected less than a quarter mile from the hornfels zone. The significance of this site is that Karshner Creek is the only one outside the Tofty tin belt from which brookite and monazite have been collected (Waters, 1934).

The bulk of the pan sample contained components from the breakdown of the granite; no gold or precious metal minerals were identified. Minerals identified in the sample include tourmaline, magnetite, andalusite, brookite, zircon, monazite, and common rock-forming minerals (Waters, 1934). Tourmaline was abundant in this sample.

Mining claims were staked and there was prospecting for gold and rare-earth metals along Karshner Creek from 1971 to 1974 (Alaska Kardex files).

Alteration:

Age of mineralization:

Quaternary.

Deposit model:

Placer derived from carbonatite(?) deposits (Cox and Singer, 1986; model 10).

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

10(?)

Production Status: None

Site Status: Inactive

Workings/exploration:

This site represents a pan sample of stream sediment collected less than a quarter mile from a hornfels zone. The significance of this site is that Karshner Creek is the only one outside the Tofty tin belt from which brookite and monazite have been collected (Waters, 1934).

The bulk of the pan sample contained components from the breakdown of the granite; no gold or precious metal minerals were identified. Minerals identified in the sample include tourmaline, magnetite, andalusite, brookite, zircon, monazite, and common rock-forming minerals (Waters, 1934). Tourmaline was abundant in this sample.

Mining claims were staked and there was prospecting for gold and rare-earth metals along Karshner Creek from 1971 to 1974 (Alaska Kardex files).

Production notes:

Reserves:

Additional comments:

References:

Waters, 1934; Cobb, 1972; Cobb, 1977; Eberlein and others, 1977; Chapman and others, 1982.

Primary reference: Waters, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/14/2000

Site name(s): Utah Creek

Site type: Prospect

ARDF no.: TN116

Latitude: 65.1260 **Quadrangle:** TN A-2

Longitude: 150.6023

Location description and accuracy:

Mining claims were staked in the 1970's, followed by placer mining, on Utah Creek (Alaska Kardex files). Mining claim location notices show 3 claims along Utah Creek about 2 miles upstream from its junction with Baker Creek. The site is in the southeast quarter of section 33, T. 4 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within about 1,000 feet. This site closely corresponds with the site for Utah Creek, U.S. Bureau of Land Management MAS number 0020480110.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The Utah Creek placer prospect is one of a group of cassiterite- and gold-bearing placer deposits known as the Tofty tin belt, a 12-mile-long area that trends east-northeast, between Roughtop Mountain to the north and Hot Springs Dome to the south (Thomas, 1957). Roughtop Mountain and Hot Springs Dome respectively are underlain by Cretaceous (K-Ar age date of 92 +/- 5 Ma) and Tertiary (K-Ar age date of 62 +/- 3 Ma) granitic plutons (Chapman and others, 1982). The plutons intrude and contact metamorphose Mesozoic marine sedimentary strata, which also are cut by diverse faults, including regional-scale, east-northeast-striking, thrust faults (Reifenstuhl and others, 1998). A carbonatite sill(?) is in the Triassic section of these strata and there are exposures of serpentinized, Cretaceous(?) mafic and ultramafic rock, mainly on Serpentine Ridge.

The gold- and cassiterite-bearing creeks flow normal to the trend of the tin belt. They head in the plutonic, metamorphic, and mafic/ultramafic rocks of Roughtop Mountain and Serpentine Ridge, which probably are the source(s) of some of the metalliferous minerals in the placer deposits. Concentrations of gold diminish toward the south, probably due to dispersion (Thomas, 1957).

Bedrock at the Utah Creek prospect is Triassic or Permian, phyllitic argillite, sandstone, and shale, and a steeply-dipping Jurassic carbonatite sill (Reifenstuhl and others, 1998). Three mining claims were staked along Utah Creek in the 1970's (Alaska Kardex files). Affidavits of annual labor from 1979 to 1982 list excavation, an adit 18 feet high and 15 feet deep, and drilling. There is no record of production from Utah Creek, but if placer gold has been recovered, the creek would be the easternmost placer gold producer in the Tofty tin belt.

Alteration:

Age of mineralization:

Quaternary.

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: Probably inactive

Workings/exploration:
Three mining claims were staked along Utah Creek in the 1970's (Alaska Kardex files). Affidavits of annual labor from 1979 to 1982 list excavation, an adit 18 feet high and 15 feet deep, and drilling.

Production notes:
There is no record of production from Utah Creek, but if placer gold has been recovered, the creek would be the easternmost placer gold producer in the Tofty tin belt.

Reserves:

Additional comments:

References:
Thomas, 1957; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: This report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/10/2004

Site name(s): McIntyre

Site type: Prospect

ARDF no.: TN117

Latitude: 65.0673 **Quadrangle:** TN A-2

Longitude: 150.5861

Location description and accuracy:

This lode prospect is at the base of the east slope of the Sunde Creek valley, about 1.5 miles downstream from the bridge where Tofty road crosses Sunde Creek (Thomas, 1958 [McIntyre tin prospect]). The site is in the southwest quarter of section 22, T. 3 N., R. 15 W., of the Fairbanks Meridian. The location is accurate within 500 feet. This site corresponds with the site for McIntyre, U.S. Bureau of Land Management MAS number 0020480125.

Commodities:

Main: Sn

Other:

Ore minerals: Limonite

Gangue minerals:

Geologic description:

The country rocks in the area of Hot Springs Dome consist of Tertiary (58 Ma) biotite granite, Cretaceous, predominantly marine, sandstone, shale, and siltstone, and a hornfels zone peripheral to the granite (Chapman and others, 1982; Reifenstuhl and others, 1998). The McIntyre prospect is in the sedimentary rocks just outside the hornfels zone (Reifenstuhl and others, 1998).

The McIntyre prospect is on a 500-foot by 50-foot area of limonite gossan in talus near the contact of the Hot Springs Granite, which is considered to be prospective for tin mineralization (Thomas, 1958 [McIntyre tin prospect]). The limonite probably is the result of of oxidation of pyrite. A shallow trench, now caved, was excavated in rubble at the base of the talus slope. Thomas collected grab samples from the trench dump and chip samples from above the talus, but reported no analytical results.

Alteration:

Age of mineralization:

Deposit model:

Sn veins?, Sn-polymetallic veins? (Cox and Singer, 1986; models 15b, 20b).

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

15b?, 20b?

Production Status: None

Site Status: Inactive

Workings/exploration:

The McIntyre prospect is on a 500-foot by 50-foot area of limonite gossan. A shallow trench, now caved, was excavated in rubble at the base of the talus slope. Thomas (1958 [McIntyre tin prospect]) collected grab samples from the trench dump and chip samples from above the talus, but reported no analytical results.

Production notes:

Reserves:

Additional comments:

References:

Thomas, 1958 (McIntyre tin prospect); Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Thomas, 1958 (McIntyre tin prospect)

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/27/2004

Site name(s): Thanksgiving Creek

Site type: Mine

ARDF no.: TN118

Latitude: 65.1774 **Quadrangle:** TN A-1

Longitude: 150.3693

Location description and accuracy:

The Thanksgiving Creek placer mine is marked by about 0.4 mile of tailings along a tractor trail in the northeast quarter of section 15, T. 4 N., R. 14 W., of the Fairbanks Meridian. The site is at the midpoint of the tailings. The location is accurate. The site is included in location 38 of Cobb (1972), and roughly corresponds with the site for Thanksgiving Creek, U.S. Bureau of Land Management MAS number 0020480038.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Thanksgiving Creek flows in a shallow, open valley about 5 miles long. The area is underlain by Mesozoic clastic sedimentary rocks that are cut by thrust faults and locally intruded by small Cretaceous monzodiorite bodies (Chapman and others, 1982; Reifenstuhl and others, 1998). The upper part of Thanksgiving Creek flows along the trace of one of the thrust faults.

According to Hess (1908) and Mertie (1934), the local bedrock is yellowish, sheared arkosic sandstone. It is overlain by 6 to 18 feet of gravels, overlain in turn by 1 to 4 feet of muck. The gravels contain subangular cobbles of quartzite, schistose arkose, vein quartz, slate, and small amounts of monzonite, along with intermixed sticky yellowish clay (Hess, 1908). Hess reported that the pay streak was 25 to 45 feet wide and 1.5 to 9 feet thick. The gold was rough and shotty, sometimes bright, and sometimes iron-stained.

The source of the gold is controversial. Prindle and Hess (1905) thought that it was derived directly from small quartz veins in the schistose bedrock. Mertie (1934), however, believed that the gold in Thanksgiving Creek was reconcentrated from adjacent bench or terrace gravels.

Gold was discovered on Thanksgiving Creek in 1903 (Prindle and Hess, 1905), and there was sporadic mining from 1903-1936. After a long hiatus in reported mining, Anthony Lanning and two men mined on Thanksgiving Creek in 1967 and 1975 with a bulldozer and sluice (Heiner and others, 1968; Carnes, 1976). Thanksgiving Mining Company was active in 1984, using a backhoe to trench placer ground on both Thanksgiving and Slate (TN052) creeks (Eakin and others, 1985). In 1989, John Shilling worked Thanksgiving and Slate creeks (Bundtzen and others, 1990). In 1992, Thanksgiving Mining (John Shilling) worked Thanksgiving Creek, and collected a bulk sample (Swainbank and others, 1993). Mining continued in 1993 (Bundtzen and others, 1994), and a small amount of sluicing was done in 1994 (Swainbank and others, 1995).

Separate production figures have not been published for Thanksgiving Creek. According to Hess (1908), combined mining of Thanksgiving and Omega creeks had produced $18,200 worth of gold by the fall of 1904. Cobb (1977) estimated this to equal approximately 880 ounces of gold, and speculated that no more than a few thousand ounces of gold had been produced through 1977 from Thanksgiving Creek.

Alteration:

Age of mineralization:
Quaternary.

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:
Gold was discovered on Thanksgiving Creek in 1903 (Prindle and Hess, 1905), and sporadic mining was reported until 1936, apparently by ground sluicing and other surface methods. After a long hiatus in reported mining, Anthony Lanning and two men mined on Thanksgiving Creek in 1967 and 1975 with a bulldozer and sluice (Heiner and others, 1968; Carnes, 1976). Thanksgiving Mining Company was active in 1984, when Thanksgiving Mining Company used a backhoe to trench placer ground on both Thanksgiving and Slate creeks (Eakin and others, 1985). In 1989, John Shilling worked Thanksgiving and Slate creeks (Bundtzen and others, 1990). In 1992, Thanksgiving Mining (John Shilling) worked Thanksgiving Creek, and collected a bulk sample (Swainbank and others, 1993). Mining continued in 1993 (Bundtzen and others, 1994), and a small amount of sluicing was done in 1994 (Swainbank and others, 1995).

Production notes:
Separate production figures have not been published for Thanksgiving Creek. According to Hess (1908), combined mining of Thanksgiving and Omega creeks had produced $18,200 worth of gold by the fall of 1904. Cobb (1977) estimated this to equal approximately 880 ounces of gold, and speculated that no more than a few thousand ounces of gold had been produced through 1977 from Thanksgiving Creek.

Reserves:

Additional comments:

References:
Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Eakins and others, 1985; Bundtzen and others, 1990; Swainbank and others, 1993; Bundtzen and others, 1994; Swainbank and others, 1995; Reifenstuhl and others, 1998.

Primary reference: Hess, 1908; Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (ridge between Allen and California Creeks)

Site type: Occurrence

ARDF no.: TN119

Latitude: 65.2331 **Quadrangle:** TN A-1

Longitude: 150.3593

Location description and accuracy:
This occurrence is at an elevation of about 2,150 feet, at the top of a southwest-trending ridge between Allen and California Creeks. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97SL015B (Liss and others, 1998), in the northeast quarter of section 26, T. 5 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Au, Cu, Zn

Other: Fe, P

Ore minerals:

Gangue minerals:

Geologic description:
Bedrock on the ridge between Allen and California creeks consists of Triassic to Permian conglomerate, argillite, sandstone, and shale (Reifenstuhl and others, 1998). The rocks form a northeast-trending syncline that is in thrust-fault contact with Mesozoic metasedimentary rocks to the south and with Paleozoic or older rocks to the north. Cretaceous monzodiorite crops out about 2 miles south and southeast of this area (Reifenstuhl and others, 1998).
A sample (97SL015B) of conglomerate on the ridgeline between Allen and California creeks contained 300 parts per million (ppm) gold, 1,015 ppm copper, 13.95 percent iron, 2,810 ppm phosphorous, and 814 ppm zinc (Liss and others, 1998). The sample was not visibly altered or mineralized. There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:
Possibly epithermal or mesothermal veins.

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

Production Status: None

Site Status: Inactive

Workings/exploration:
A sample (97SL159) of a gouge zone in shale and siltstone on the west side of Silverbow Creek near its junction with Hutlinana Creek contained 1,210 parts per million (ppm) arsenic, 1,270 ppm phosphorous, and 38 ppm antimony (Liss and others, 1998). A sample (97SL158b) of a quartz vein at this site contained 190 ppm arsenic. There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/21/2004

Site name(s): Chicago Creek

Site type: Mine

ARDF no.: TN120

Latitude: 65.1797 **Quadrangle:** TN A-1

Longitude: 150.3593

Location description and accuracy:

Placer mining has occurred on Chicago creek near its mouth. The site is at the intersection of Chicago Creek and the Thanksgiving drainage ditch, in the northeast quarter of section 15, T. 4 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 0.5 mile. The site is included in location 38 of Cobb (1972), and roughly corresponds with the site for Chicago Creek, U.S. Bureau of Land Management MAS number 0020480047.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The Chicago Creek area is marked by low, predominantly alluvium-covered topography (Chapman and others, 1982). The area is underlain by Mesozoic clastic sedimentary rocks including sandstone, siltstone, and shale, that are cut by thrust faults and locally intruded by Cretaceous monzodiorite (Reifenstuhl and others, 1998).

Gold was first reported on Chicago Creek in 1904 (Hess, 1908). Little work was reported, however, until 1935 through 1937 (Chapin,1919; Smith,1937, 1938, 1939), when Chicago Creek was considered a significant producer in the Eureka area. The gravels were 5 to 6 feet thick and overlay dark gray shale. According to Cobb (1981), nuggets 0.3 to 0.8 inch in diameter were found, some still attached to quartz. Mining of unknown extent was reported in 1973 (Cobb, 1981).

Alteration:

Age of mineralization:

Quaternary.

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 was first reported on Chicago Creek in 1904 (Hess, 1908). Little work was reported, however, until

1935 through 1937 (Chapin,1919; Smith,1937, 1938, 1939), when Chicago Creek was considered a significant producer in the Eureka area. The gravels were 5 to 6 feet thick and overlay dark gray shale. According to Cobb (1981), nuggets 0.3 to 0.8 inch in diameter were found, some still attached to quartz. Mining of unknown extent was reported in 1973 (Cobb, 1981).

Production notes:

According to Cobb (1981), angular nuggets 0.3 to 0.8 inch in diameter were recovered from the Chicago Creek placer. Production figures have not been made public, but production probably was small, despite local rumors of significant production in 1935-1937.

Reserves:

Additional comments:

References:

Hess, 1908; Chapin, 1919; Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Cobb, 1972; Cobb, 1973; Cobb, 1981; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Cobb, 1981

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/9/2000

Site name(s): Unnamed (Baker-Hutlitakwa Creek)

Site type: Occurrence

ARDF no.: TN121

Latitude: 65.0084 **Quadrangle:** TN A-1

Longitude: 150.3586

Location description and accuracy:

This occurrence is at an elevation of about 300 feet, on a low knob on the north side of Baker Creek, approximately 0.75 mile below the junction of Hutlitakwa Creek. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97SL150E (Liss and others, 1998), at the in the southeast corner of section 10, T. 2 N., R. 14 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: Zn

Other:

Ore minerals:

Gangue minerals: Quartz

Geologic description:

The area of Baker Creek near its junction with Hutlitakwa Creek is low-lying and extensively covered by Quaternary alluvial and colluvial deposits (Reifenstuhl and others, 1998). Bedrock in this area consists of Cretaceous volcaniclastic rocks and sandstone, shale, and siltstone. No plutonic rocks are mapped in the local area.

A sample (97SL150E) of a quartz vein in volcaniclastic sandstone on the north bank of Baker Creek contained 742 parts per million (ppm) zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:

Possibly epithermal or mesothermal veins.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

A sample (97SL150E) of a quartz vein in volcaniclastic sandstone on the north bank of Baker Creek contained 742 parts per million (ppm) zinc (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:
Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/21/2004

Site name(s): Omega Creek; Alpha Creek

Site type: Mine

ARDF no.: TN122

Latitude: 65.1789 **Quadrangle:** TN A-1

Longitude: 150.3386

Location description and accuracy:

The Omega Creek placer mine is marked by about a mile of tailings in the north half of section 14, T. 4 N., R. 14 W., of the Fairbanks Meridian. The site is at the junction of Omega Creek and Alpha Creek. The location is accurate within a few hundred feet. The site is included in location 38 of Cobb (1972), and roughly corresponds with the site for Alpha Creek, U.S. Bureau of Land Management MAS number 0020480042. The site for Omega Creek, MAS number 0020480021, is downstream from the ARDF site.

Commodities:

Main: Au

Other: Hg, W

Ore minerals: Cinnabar, gold, ilmenite, pyrite, scheelite

Gangue minerals:

Geologic description:

The Omega Creek area is underlain by Mesozoic clastic sedimentary strata that are cut by thrust faults and locally intruded by Cretaceous monzodiorite (Chapman and others, 1982; Reifenstuhl and others, 1998). In part, the upper valley of the creek is parallel to the N70E strike of the country rocks and of the thrust faults.

The local bedrock is fissile slate and sandy phyllite (Mertie, 1934). Gravel deposits range in thickness from 5 to 10 feet under very thin overburden, and contain cobbles of slate, vein quartz, and quartzite. According to Prindle (1906), the gold-bearing bench gravels stretched over a couple of miles. The gold commonly was rough and contained quartz fragments (Prindle and Hess, 1905). Hess (1908) reported that crystal faces could be seen on many of the gold grains and many small crystals of pyrite occur in the mining concentrates. Other heavy minerals include ilmenite, zircon, picotite, garnet, scheelite, and cinnabar (Waters, 1934).

Newberry and Clautice (1997) analyzed four gold grains by electron microprobe. Three have almost identical compositions, lack zoning, and contain anomalous tellurium. The other grain has a core with abnormally low (less than 0.2 percent) mercury content and low mercury-silver rims. Gold compositions are similar to those of placer gold at Rhode Island Creek (TN125) and Eureka Creek (TN130).

Gold was discovered on Omega Creek in 1899 (Mertie, 1934). According to Prindle and Hess (1905), mining began in 1903, and by 1904 Omega Creek was established as economically important, having produced, in conjunction with Thanksgiving Creek (TN118), $18,200 in gold, which Cobb (1977) estimated to equal about 880 ounces.

There are reports of fairly consistent mining on Omega Creek after 1904. In the late 1930's Omega Creek was considered to be a major producer in the Eureka area, and in 1938, it was the largest producer (Smith, 1939 [B 917-A]). Tony Lanning mined on Omega Creek In 1951 (Williams, 1951); Trumpey mined there in 1967 (Heiner and others, 1968); and Lloyd Hubbard ran a bulldozer on the creek in 1975 (Carnes, 1976). The only recent reference to mining was in 1998, when Richard Ott mined on Omega Creek (Szumigala and Swainbank, 1999). No official production figures have been made public, but Cobb (1977) estimated that several tens of thousands of ounces of gold were probably mined from Omega Creek.

Alteration:

Age of mineralization:
Quaternary.

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:
According to Mertie (1934), Omega Creek had been mined intermittently since 1901. There are reports of both surface and drift mining on Omega Creek (Eakin, 1912; Chapin, 1914; Mertie, 1934). The surface work included ground sluicing and open-cuts. Mining was continuous until at least 1940 (Cobb, 1977). Tony Lanning mined on Omega Creek In 1951 (Williams, 1951); Trumpey mined there in 1967 (Heiner and others, 1968); and Lloyd Hubbard ran a bulldozer on the creek in 1975 (Carnes, 1976), while Martin H. Ott operated a bulldozer and monitor about one mile downstream (Carnes, 1976). Richard Ott mined on Omega Creek in 1998 (Szumigala and Swainbank, 1999).

Production notes:
Although no data for total production was published, Cobb (1977) estimated that as much as several tens of thousands of ounces of gold may have been mined from Omega Creek.

Reserves:

Additional comments:

References:
Prindle and Hess, 1905; Prindle, 1906; Hess, 1908; Eakin, 1912; Chapin, 1914; Mertie, 1934; Waters, 1934; Smith, 1939 (B 917-A); Williams, 1951; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Newberry and Clautice, 1997; Reifenstuhl and others, 1998; Szumigala and Swainbank, 1999.

Primary reference: Mertie, 1934; Cobb, 1977

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 2/10/2004

Site name(s): McKinley Creek

Site type: Prospects

ARDF no.: TN123

Latitude: 65.1662

Quadrangle: TN A-1

Longitude: 150.3184

Location description and accuracy:

The location of placer prospect(s) along McKinley Creek is poorly documented, and references to McKinley Creek could pertain to any portion of the creek. For this record, the site is on the creek at the boundary between sections 13 and 24, T. 4 N., R. 14 W., of the Fairbanks Meridian, where mining claims were active in 1984. This site roughly corresponds with the site for McKinley Creek, U.S. Bureau of Land Management MAS number 0020480025.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The McKinley Creek area is underlain by Mesozoic clastic sedimentary strata that are cut by thrust faults (Chapman and others, 1982; Reifenstuhl and others, 1998). A 100-foot-thick carbonatite sill or dike in Triassic or Permian argillite, sandstone, and shale crosses Kinley Creek and is cut along strike by thrust faults. Cretaceous or Jurassic rocks, mostly quartzite, sandstone, and shale north of Omega Creek are locally intruded by Cretaceous monzodiorite (Reifenstuhl and others, 1998).

Good placer prospects on McKinley Creek were reported in 1902, but their exact locations were not known (Collier, 1903). Claims were staked by McIntyre and Youngstrom in 1966 and the property was active during 1967 (Heiner and others, 1968). Mining claims were maintained in the late 1990's through 2003 by Richard Ott, who mined on Omega Creek (TN122) (Swainbank and others, 1998; Szumigala and Swainbank, 1999, Szumigala and others, 2001).

Alteration:

Age of mineralization:

Quaternary.

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: Active?

Workings/exploration:

Prospecting reported in 1902. No known workings.

Production notes:

Reserves:

Additional comments:

References:

Collier, 1903; Heiner and others, 1968; Chapman and others, 1982; Reifenstuhl and others, 1998; Swainbank and others, 1998; Szumigala and Swainbank, 1999; Szumigala and others, 2001.

Primary reference: Heiner and others, 1968

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/8/2003

Site name(s): Seattle Creek

Site type: Mine

ARDF no.: TN124

Latitude: 65.1860 **Quadrangle:** TN A-1

Longitude: 150.2798

Location description and accuracy:
Placer gold is believed to have been mined on Seattle Creek, near its confluence with Rhode Island Creek. The site is in the southwest quarter of section 7, T. 4 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within a quarter mile. The site corresponds to location 39 of Cobb (1972). The site for Hunter Creek, U.S. Bureau of Land Management MAS number 0020480026, is approximately 1 mile upstream from the ARDF site.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The country rocks in the area of Seattle Creek are Mesozoic sandstone, siltstone, and shale that are cut by thrust faults and intruded by Cretaceous or Tertiary monzodiorite (Chapman and others, 1982; Reifenstuhl and others, 1998).
The local bedrock is graphitic, slaty arkose, overlain by 8 to 30 feet of fine gravel consisting of quartzite, vein quartz, and slate, overlain in turn by 1 to 3 feet of muck (Hess, 1908). Hess postulated that the gold was a placer reconcentration from older gravels. The gold's fineness is approximately 780 (Ed Salter, oral commun., 2000).
Very little information about mining on Seattle Creek has been made public. Through the fall of 1904, only $100 worth of gold had been recovered from the creek, equal to less than 5 ounces at $20.67 per ounce. Mertie (1934) reported only sporadic mining at a small open cut in 1931.
Strandberg Mines, Inc., and Pringle had active claims on Seattle Creek in 1967 (Heiner and others, 1968). Salter and Associates mined in the area for 28 years (Green and others, 1989), but stopped mining in 1997 due to depressed gold prices (Ed Salter, oral commun., 2000). Although production figures have not been made public, significant amounts of gold probably were recovered in the last few decades of the 20th Century.

Alteration:

Age of mineralization:
Quaternary.

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:

Very little information about mining on Seattle Creek has been made public. Through the fall of 1904, only $100 worth of gold had been recovered from the creek, equal to less than 5 ounces at $20.67 per ounce. Mertie (1934) reported only sporadic mining at a small open cut in 1931.

Archie Pringle was mining in 1951 on Rhode Island Creek (TN125) at its confluence with Seattle Creek (Williams, 1951). Pringle had been on this creek since 1933 and reportedly had ground available for 5 or 6 more years of mining. Strandberg Mines, Inc., and Pringle had active claims on Seattle Creek in 1967 (Heiner and others, 1968). Salter and Associates mined in the area for 28 years (Green and others, 1989), but stopped mining in 1997 due to depressed gold prices (Ed Salter, oral commun., 2000).

Production notes:

Very little information about mining on Seattle Creek has been made public. Through the fall of 1904, only $100 worth of gold had been recovered from the creek, equal to less than 5 ounces at $20.67 per ounce. Mertie (1934) reported only sporadic mining at a small open cut in 1931.

Salter and Associates mined in the area for 28 years (Green and others, 1989), but stopped mining in 1997 due to depressed gold prices (Ed Salter, oral commun., 2000). Although production figures have not been made public, significant amounts of gold probably were recovered in the last few decades of the 20th Century.

Reserves:

Additional comments:

References:

Hess, 1908; Mertie, 1934; Williams, 1951; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Green and others, 1989; Reifenstuhl and others, 1998.

Primary reference: Hess, 1908

Reporter(s): G.E. Graham (ADGGS); D.J. Szumigala (ADGGS)

Last report date: 8/11/2003

Site name(s): Rhode Island Creek

Site type: Mine

ARDF no.: TN125

Latitude: 65.1834 **Quadrangle:** TN A-1

Longitude: 150.2733

Location description and accuracy:

This site represents a bench (terrace) placer mine on Rhode Island Creek just downstream from its junction with Seattle Creek (TN124). The site is in the northeast bank of Rhode Island Creek, on the north side of an unimproved road, in the south half of section 7, T. 4 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within 1,000 feet. The site corresponds to location 39 of Cobb (1972), and roughly to the U.S. Bureau of Land Management site for Rhode Island Creek (MAS number 0020480034), but the MAS site is approximately 1 mile downstream.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The country rocks in the area of Rhode Island Creek consist of thrust-fault-juxtaposed Cretaceous sandstone, siltstone, and shale, Triassic clastic sedimentary rocks, and Jurassic or Cretaceous quartzite (Chapman and others, 1982; Reifenstuhl and others, 1998). The area also contains small, elongate intrusions of Cretaceous or Tertiary monzodiorite, which have a northeast trend. Rhode Island Creek flows across the strike of the bedrock.

Mining concentrated both on bench deposits and the modern stream channel. The bench deposits on both sides of the creek are 300 feet above the present channel. The easternmost bench deposit is known as Shirley Bar (TN127) (Mertie, 1934). Collier (1903) reported that the local bedrock is schist without quartz veins, but bedrock in the area being hydraulically mined in 1931 consisted of phyllite with quartz stringers (Mertie, 1934). The mined gravels consisted of schist and mafic igneous rocks (Collier, 1903), and the overburden of silt contained mammoth, bison, and other vertebrate remains (Mertie, 1934).

The gold occurs on bedrock and in places has worked into cracks in the bedrock to a depth of several feet (Mertie, 1934). Large amounts of bedrock were often moved in order to recover the gold. The pay streak above the mouth of Gold Run Creek (TN126) was 70 feet wide. Hydraulicking, open cuts, and drift mining were employed, and Rhode Island Creek was economically significant by 1904 (Prindle and Hess, 1905).

Most of the mining took place between 1930 and 1940 (Cobb, 1977). Much of it was done by Archie W. Pringle, who, as of 1951, had been mining there since 1933 (Williams, 1951). His company, Rhode Island Creek Mines, mined the east bench below the mouth of Gold Run Creek (Saunders, 1962). Rhode Island Creek Mines was mining with two bulldozers and a sluice in 1975 (Carnes, 1976). In 1993, Thurman Oil and Mining ran a large placer operation on Rhode Island and Cooney creeks (Bundtzen and others, 1994).

Newberry and Clautice (1997) analyzed gold nuggets from Rhode Island Creek by electron microprobe. The gold in the nugget cores is homogeneous with respect to silver content, averaging 20 percent silver. Mercury content in the cores varies from 0.8 to 5 percent, and the fineness of the cores varies from 750 (high Hg) to 840 (low Hg). The rims of most of the gold grains are depleted in mercury, and two of the nuggets also have silver-depleted rims.

Alteration:

Age of mineralization:
Quaternary.

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:
Mertie (1934) reported that both surface and underground techniques were employed in mining the bench and creek placer deposits of Rhode Island Creek. These techniques included hydraulicking, open cuts, and drift-mining. Much of this work was done by Archie W. Pringle, who, as of 1951, had been mining there since 1933 (Williams, 1951). His company, Rhode Island Creek Mines, mined the east bench below the mouth of Gold Run (TN126) (Saunders, 1962). Pringle was mining in 1951 on Rhode Island Creek at its confluence with Seattle Creek (TN124) (Williams, 1951). Pringle had been on this creek since 1933 and reportedly had ground available for 5 or 6 more years of mining. Rhode Island Creek Mines was mining with two bulldozers and a sluice in 1975 (Carnes, 1976). In 1993, Thurman Oil and Mining operated a large placer operation on Rhode Island and Cooney creeks (Bundtzen and others, 1994).

Production notes:
No production figures have been published for Rhode Island Creek. However, Cobb (1977) speculated that as much as several tens of thousands of ounces of gold may have been mined from its placers.

Reserves:

Additional comments:

References:
Collier, 1903; Prindle and Hess, 1905; Mertie, 1934; Williams, 1951; Saunders, 1962; Cobb, 1972; Cobb, 1973; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1994; Newberry and Clautice, 1997; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 11/15/2000

Site name(s): Gold Run Creek

Site type: Mine

ARDF no.: TN126

Latitude: 65.1803 **Quadrangle:** TN A-1

Longitude: 150.2703

Location description and accuracy:

This placer mine is at the junction of Gold Run Creek and Rhode Island Creek, on the boundary of sections 7 and 18, T. 4 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within a quarter mile. The site is included in location 39 of Cobb (1972).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The country rocks in the area of Gold Run Creek are chiefly Mesozoic clastic sedimentary strata that are cut by thrust faults, and intruded by Cretaceous or Tertiary monzodiorite (Chapman and others, 1982; Reifenstuhl and others, 1998).

Bedrock in Gold Run Creek has been described as blocky, silicic(?) schist, and slaty to schistose grit (Collier, 1903; Hess, 1908). The placer gravels range in thickness from 16 to18 feet, and consist of well-rounded clasts that include quartzite (Hess, 1908). The overlying muck is 2 feet thick. The ground is frozen and sluicing can only be done during snow melt (Collier, 1903), inasmuch as the creek flows in an open, shallow valley that is often dry (Hess, 1908).

The gold occurs in a streak 150 feet wide by 1,500 feet long, both in the gravels and in the upper 3 or 4 feet of bedrock (Mertie, 1934). At least some reconcentration of gold probably took place, because Gold Run Creek cuts through the bench gravels of Shirley Bar (TN127) (Prindle and Hess, 1905). Mertie reported that the gold was light colored, shotty, and somewhat worn. Some, however, exhibited crystal faces (Hess, 1908), suggesting a proximal lode source. There thus may be two sources of the gold: one local and one distant. Purington (1905) reported that the gold was worth $16.00 per ounce when refined gold returned $20.67 per ounce.

Mining in Gold Run Creek started around 1900 and continued sporadically, probably until the 1930's. Mertie (1934) reported that the early diggings had been mined out. According to Cobb (1977), total production through 1938 was estimated at nearly 10,000 ounces of gold. Archie Pringle held active mining claims and may have mined in 1967 (Heiner and others, 1968).

Alteration:

Age of mineralization:

Quaternary.

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 on Gold Run Creek began in the winter of 1900-01. Mertie (1934) reported that it had been drift mined from one end to the other by 1931. Archie Pringle held active mining claims and may have mined in 1967 (Heiner and others, 1968).

Production notes:

Approximately $200,000 worth of gold was produced from Gold Run Creek through 1931 (Mertie, 1934), estimated by Cobb (1977) to be nearly 10,000 ounces of gold. Production rate was low due to the lack of water for sluicing, which could only be done during breakup.

Reserves:

Additional comments:

References:

Collier, 1903; Prindle and Hess, 1905; Purington, 1905; Hess, 1908; Mertie, 1934; Heiner and others, 1968; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/10/2003

Site name(s): Shirley Bar

Site type: Mine

ARDF no.: TN127

Latitude: 65.1713 **Quadrangle:** TN A-1

Longitude: 150.2572

Location description and accuracy:

Shirley Bar is a bench placer on high ground between Rhode Island and Glen creeks. The site is at the mine symbol just south of the center of the boundary between sections 17 and 18, T. 4 N., R. 13 W., of the Fairbanks Meridian. The location is accurate. The site is included in location 39 of Cobb (1972), and roughly corresponds with U.S. Bureau of Land Management MAS number 0020480094.

Commodities:

Main: Au

Other: Hg, Pb

Ore minerals: Barite, cinnabar, galena, gold, ilmenite, pyrite

Gangue minerals:

Geologic description:

Shirley Bar is a bench placer deposit between Glen Creek and Rhode Island Creek. It is on a broad, gently sloping bedrock spur that is covered with [Pleistocene?] alluvial deposits. The bedrock in the area (and at the workings) is predominantly Cretaceous sandstone, shale, and siltstone (Chapman and others, 1982; Reifenstuhl and others, 1998). A thrust-emplaced lenticular block of Triassic sedimentary rocks and Jurassic or Cretaceous quartzite are mapped to the north and west. No intrusive rocks are exposed in the area.

The bench was originally mined in 1901. Collier (1903) reported that the pay was in the gravel on bedrock and in a clay layer that often lies on the bedrock. Later reports state that the gold is distributed evenly throughout the 2- to 9-foot thickness of gravel in the bench (Prindle and Hess, 1905; Hess,1908). Mertie (1934) described the deposit as a semi-residual body of auriferous, angular gravel, and that the pay streak continues down the hillside as a body of subangular gravel on muck.

Collier (1903) described the gold as coarse and rough. An assay of the gold yielded a value of $16.45 an ounce (at $20.67 per ounce). Mertie (1934) reported a gold fineness of 792. Other heavy minerals in the placer include pyrite, cinnabar, picotite, barite, galena, ilmenite, limonite, garnet, and sphene (Waters, 1934). Joesting (1942) reported that cinnabar was common.

Published reports indicate that by 1904 there had been considerable production from Shirley Bar (Prindle and Hess, 1905). After 1904, mining was recorded in 1931, 1937, and 1938 (Smith, 1933; Smith, 1939 [B 910-A; B 917-A]; Cobb, 1977), and again in 1951 (Williams, 1951). Tony Landing mined in 1962 (Saunders, 1962), and Johnson & Toftaker were active in 1967 (Heiner and others, 1968).

Alteration:

Age of mineralization:

Quaternary.

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 deposit probably was mined by surface workings, and although water was scarce, production was considerable by 1904 (Prindle and Hess, 1905). Sporadic mining occurred after this, with specific references to mining of Shirley Bar published only in 1931, 1937, and 1938 (Smith, 1933; Smith, 1939 [B 10-A; B 917-A]; Cobb, 1977), and in 1951 (Williams, 1951). Tony Landing mined in 1962 (Saunders, 1962), and Johnson & Toftaker were active in 1967 (Heiner and others, 1968).

Production notes:

Reserves:

Additional comments:

References:

Collier, 1903; Prindle and Hess, 1905; Hess, 1908; Smith, 1933; Mertie, 1934; Waters, 1934; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Joesting, 1942; Williams, 1951; Saunders, 1962; Heiner and others, 1968; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Collier, 1903; Mertie, 1934; Waters, 1934

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 8/8/2003

Site name(s): Joseph Creek

Site type: Prospect

ARDF no.: TN128

Latitude: 65.2430 **Quadrangle:** TN A-1

Longitude: 150.2514

Location description and accuracy:

The Joseph Creek lode prospect is at an elevation of about 2,500 feet on the ridge at the head of Joseph Creek. The site is 0.2 mile north of hill 2815, in the southwest quarter of section 21, T. 5 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within a mile. The site corresponds to location 8 of Cobb (1972, 1977), and roughly to the U.S. Bureau of Land Management site for Long Run (MAS number 0020480120).

Commodities:

Main: Sb

Other:

Ore minerals: Stibnite

Gangue minerals:

Geologic description:

The ridge between Granite and Minook creeks consists of Triassic to Permian conglomerate, argillite, sandstone, and shale (Reifenstuhl and others, 1998). This sequence is in thrust-fault contact with Cretaceous or Jurassic metasedimentary rocks to the south and with Paleozoic rocks to the north. A Cretaceous monzodiorite [stock] is exposed on Eureka Dome approximately 1.5 miles to the southeast (Reifenstuhl and others, 1998).

Scattered float of partly oxidized stibnite occurs along the top of the ridge between Granite Creek and upper Minook Creek (Mertie, 1934). Shallow trenches failed to expose the bedrock source of the stibnite. Burand and Saunders (1966) mention reports of two stibnite prospects in the Minook Creek (TN054) area: one in the headwaters of Joseph Creek (TN128) and the other in the headwaters of Chapman Creek (TN070). Eberlein and others (1977) report that a visit by the U.S. Geological Survey in 1972 found several bright red and canary-yellow stained zones, but no signs of mining or diligent exploration. Resource Associates of Alaska (RAA) staked 28 mining claims over this area in 1979 (Alaska Kardex files). In 1979, an affidavit of annual labor stated that [RAA] did 300 feet of trenching to a depth of 2 feet to determine the depth of oxidation, and in 1980, they core drilled to determine the length and depth of mineralization (Alaska Kardex files).

Alteration:

Age of mineralization:

Deposit model:

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

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

27d

Production Status:

Site Status: Inactive

Workings/exploration:

Resource Associates of Alaska (RAA) staked 28 mining claims over this area in 1979 (Alaska Kardex files). In 1979, an affidavit of annual labor stated that [RAA] did 300 feet of trenching to a depth of 2 feet to determine the depth of oxidation, and in 1980, they core drilled to determine the length and depth of mineralization (Alaska Kardex files).

Production notes:

Reserves:

Additional comments:

References:

Mertie, 1934; Burand and Saunders, 1966; Cobb, 1972; Cobb, 1977; Eberlein and others, 1977; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/13/2004

Site name(s): Glenn Creek; Alice Bench

Site type: Mine

ARDF no.: TN129

Latitude: 65.1733 **Quadrangle:** TN A-1

Longitude: 150.2510

Location description and accuracy:

The area of the Glenn Creek placer mine is marked by mine and cabin symbols near the center of the boundary between sections 17 and 18, T. 4 N., R. 13 W., of the Fairbanks Meridian. The site, which includes the nearby Alice Bench property, is about a mile west of the abandoned town of Glen, on the low ridge between Glenn Creek and Rhode Island Creek. Both properties are included in location 39 of Cobb (1972). The location is accurate within several hundred feet.

This site roughly corresponds with the site for Glenn Creek, U.S. Bureau of Land Management MAS number 0020480022, but the MAS site is approximately 2 miles downstream.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The Glen Creek area is underlain by Mesozoic clastic sedimentary strata that are cut by thrust faults and locally intruded by gabbro and diorite (Chapman and others, 1982; Reifenstuhl and others, 1998). The placer deposit is about a half-mile south of one of the thrust faults.

The bedrock of Glen Creek is slate and quartzite, cut by a few quartz veins (Hess, 1908). The stream gravels locally are overlain by slide rock. The productive zones are localized where bench gravels are cut by the active creek (Hess, 1908), suggesting that the gold is reconcentrated from older bench placers (Mertie, 1934). The pay zones are up to 100 feet wide and 7 feet thick (Collier, 1903; Hess, 1908). The gold also occurs in the upper two feet of bedrock.

Gold was discovered in this area around 1900, and mining began in Glen Creek in 1901 (Collier, 1903). The deposit was considered to be rich, with pockets of pay dirt yielding $10 worth of gold per pan when gold was worth $20.67 per ounce. Through 1931, Glen Creek produced more than $1,000,000 worth of gold, equivalent to about 48,380 ounces of refined gold (Mertie, 1934) . Mining continued through the 1930's, when Glen Creek was considered to be a major producer in the Eureka Creek area. A few cassiterite pebbles were found in 1939 (Wayland, 1961). Cobb's (1977) and Smith's (1930) reports of Johnson & Hensley operating a hydraulic mine in 1928 in the Eureka Creek area actually refer to an operation on Alice Bench, located at the base of the hill just east of Glenn Gulch (Wimmler, 1926). More recently, Earthmovers operated a placer mine on Glen Creek in 1992 (Swainbank and others, 1993), and Ernest Johnson mined there in 1997 (Swainbank and others, 1997).

Alteration:

Age of mineralization:

Quaternary.

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:
Gold was discovered in this area around 1900, and mining began in Glen Creek in 1901 (Collier, 1903). Both surface and underground mining probably took place. Glen Creek was considered phenomenally rich, with pockets of pay dirt yielding $10 worth of gold per pan when gold was worth $20.67 per ounce. Through 1931, Glen Creek produced more than $1,000,000 worth of gold, equivalent to about 48,380 ounces of refined gold (Mertie, 1934) . Mining continued through the 1930's, when Glen Creek was considered to be a major producer in the Eureka Creek area. In 1992, Earthmovers operated a placer mine on Glen Creek (Swainbank and others, 1993), and Ernest Johnson mined there in 1997 (Swainbank and others, 1997).

Production notes:
Through 1931, Glen Creek reportedly produced more than $1,000,000 worth of gold (Mertie, 1934), equivalent to 48,380 ounces of refined gold at $20.67 per ounce. Mining continued through the 1930's, when Glen Creek was considered to be a major producer in the Eureka Creek area. A small amount of cassiterite has been reported (Wayland, 1961).

Reserves:

Additional comments:

References:
Collier, 1903; Hess, 1908; Wimmler, 1926; Smith, 1930; Mertie, 1934; Wayland, 1961; Cobb, 1972; Cobb, 1973; Cobb, 1977; Chapman and others, 1982; Swainbank and others, 1993; Swainbank and others, 1997; Reifenstuhl and others, 1998.

Primary reference: Hess, 1908; Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Eureka Creek (including Boston, Unanimous, Nugget, and American creeks)

Site type: Mine

ARDF no.: TN130

Latitude: 65.1790 **Quadrangle:** TN A-1

Longitude: 150.2186

Location description and accuracy:

This site represents an approximately 4-mile-long area of placer mining on Eureka Creek and its tributaries that stretches from the northern half of section 36, T. 5 N., R. 13 W., to the southwest corner of section 16, T. 4 N., R. 13 W., of the Fairbanks Meridian. The site is at the abandoned townsite of Eureka. The site is included in location 40 of Cobb (1972), and roughly corresponds with the U.S. Bureau of Land Management site for Eureka Creek (MAS number 0020480128). Other MAS locations represented by this site are Boston Creek (MAS number 0020480030) and Unanimous-American Creeks (MAS number 0020480049). As of 1952 much of this area was accessible by a light-duty road.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The bedrock of most of the upper reaches of Eureka Creek, as well as of the area that has been mined, consists of Jurassic or Cretaceous sandstone, siltstone, shale, and quartzite (Chapman and others, 1982; Reifenstuhl and others, 1998). Some of the strata are intruded by several small, northeast-trending Cretaceous monzodiorite plugs. The creek follows a southwest-trending thrust fault for four miles. This fault is manifested by the valley's asymmetry. The southeast side is steep, and consists of quartzite, and the northwest side, along which the placer benches occur, slopes gently. Two benches have been identified, one approximately 250 feet above the present channel and one 50 feet above the channel. Yeend (1990) describes four terraces at Eureka Creek, with the best-developed one 250 feet above the present channel. Yeend (1990) hypothesized that ancestral Eureka and Pioneer creeks flowed southwest toward Tofty during the Pleistocene and joined the ancestral Tanana River farther west than the present day channel. The gradient of Eureka Creek between points 1.5 miles below and 3 miles above Boston Creek is about 100 feet per mile. Above Boston Creek, water supply is small and during an average summer is barely adequate for sluicing.

The discovery of gold on Eureka Creek in 1898 was the first one in the Hot Springs district and it sparked a stampede (Cobb, 1973). Mining on a one-mile stretch, including the discovery claim just below the confluence with Boston Creek, started by 1900 (Collier, 1903), and mining along Eureka Creek was continuous until 1940 (Cobb, 1977). Active claims or workers in 1967 included Boston Boys, Brock and Johnson, Farmer and Jones, Frank & Co., Gill, and Strandberg Mines, Inc. (Heiner and others, 1968).

Both drift mining and open cuts were used. The gravels are 10 to 18 feet thick, and overlain by eight feet of muck. Pay continued for several feet into bedrock (Prindle and Hess, 1905). The width of the pay streaks ranged from 25 to 75 feet. Much of the gold occurred as chunks, commonly attached to vein quartz (Prindle and Hess, 1905; Mertie, 1934). The gold fineness was 780. Hess (1908) described small quartz veins and reported considerable disseminated pyrite in the sheared grit and argillaceous bedrock. According to Hess, the pay contained sticky clay, which made sluicing difficult.

Newberry and Clautice (1997) analyzed a coarse gold nugget intergrown with quartz by electron microprobe. The gold was homogeneous with respect to silver and mercury contents, averaging 20 percent silver, 1.3 percent mercury, and a fineness of 780. The gold composition is similar to that in lode deposits on Elephant Mountain (TN067).

Activity has been reported in recent years on Eureka Creek. John Cole operated a bulldozer on mining claims in 1975 (Carnes, 1976). Shimsky Mining operated along the creek in 1985 (Bundtzen and others, 1986) and reportedly completed assessment work on holdings in 1986. Mark Krenzke placer mined from 1988-90, the last year of which Orval McCormack also worked Eureka Creek (Green and others, 1989; Bundtzen and others, 1990; Swainbank and others, 1991). James Crude worked the creek in 1989, and Thurman Oil and Mining operated there in 1991 (Bundtzen and others, 1992). Kelly Mining and Ed Salter both worked Eureka Creek (Swainbank and others, 1995) in 1994, and Bob Bettisworth placer mined on the creek in 1996 (Swainbank and others, 1997). BIFS Mining and Eleven Pup Mining both explored for placer gold in 1997 (Swainbank and others, 1998).

From 1968 to 1995, exploration on Boston Creek near its junction with Eureka Creek included bedrock testing, overburden stripping, building a slick plate and sluicebox, and roadwork, but no mining was reported (Alaska Kardex files). Claims were staked in 1977 on Unanimous Creek, a tributary to Eureka Creek, followed in1979-1981 by test panning and other prospecting (Alaska Kardex files). Claims were staked in 1972 on Nugget Creek, another tributary to Eureka Creek, and on the upper part of Eureka Creek, followed in 1979-1995 by test panning and other prospecting, but no mining was reported (Alaska Kardex files).

It is unclear how much gold has been recovered from Eureka Creek. Hess (1908) reported production of about $85,300 worth of gold (at $20.67 per ounce) as of the fall of 1904, but this figure included some of the production from the Pioneer Creek area. Cobb (1977) reported production in 1916 of 2,900 ounces of gold, and that total production from 1899 to 1940, although unknown, was large.

Alteration:

Age of mineralization:

Quaternary.

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:

The discovery of gold on Eureka Creek in 1898 was the first one in the Hot Springs district and it sparked a stampede (Cobb, 1973). Mining on a one-mile stretch, including the discovery claim just below the confluence with Boston Creek, started by 1900 (Collier, 1903), and mining along Eureka Creek was continuous until 1940 (Cobb, 1977). Active claims or workers in 1967 included Boston Boys, Brock and Johnson, Farmer and Jones, Frank & Co., Gill, and Strandberg Mines, Inc. (Heiner and others, 1968).

Activity has been reported in recent years on Eureka Creek. John Cole operated a bulldozer on mining claims in 1975 (Carnes, 1976). Shimsky Mining operated along the creek in 1985 (Bundtzen and others, 1986) and reportedly completed assessment work on holdings in 1986. Mark Krenzke placer mined from 1988-90, the last year of which Orval McCormack also worked Eureka Creek (Green and others, 1989; Bundtzen and others, 1990; Swainbank and others, 1991). James Crude worked the creek in 1989, and Thurman Oil and Mining operated there in 1991 (Bundtzen and others, 1992). Kelly Mining and Ed Salter both worked Eureka Creek (Swainbank and others, 1995) in 1994, and Bob Bettisworth placer mined on the creek in 1996 (Swainbank and others, 1997). BIFS Mining and Eleven Pup Mining both explored for placer gold in 1997 (Swainbank and others, 1998).

From 1968 to 1995, exploration on Boston Creek near its junction with Eureka Creek included bedrock testing, overburden stripping, building a slick plate and sluicebox, and roadwork, but no mining was re-

ported (Alaska Kardex files). Claims were staked in 1977 on Unanimous Creek, a tributary to Eureka Creek, followed in1979-1981 by test panning and other prospecting (Alaska Kardex files). Claims were staked in 1972 on Nugget Creek, another tributary to Eureka Creek, and on the upper part of Eureka Creek, followed in 1979-1995 by test panning and other prospecting, but no mining was reported (Alaska Kardex files).

Production notes:

It is unclear how much gold has been recovered from Eureka Creek. Hess (1908) reported production of about $85,300 worth of gold (at $20.67 per ounce) as of the fall of 1904, but this figure included some of the production from the Pioneer Creek area. Cobb (1977) reported that production in 1916 equaled 2,900 ounces of gold, and that total production from 1899 to 1940, although unknown, was large.

Reserves:

Additional comments:

References:

Collier, 1903; Prindle and Hess, 1905; Hess, 1908; Mertie, 1934; Heiner and others, 1968; Cobb, 1972; Cobb, 1973; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Bundtzen and others, 1986; Green and others, 1989; Bundtzen and others, 1990; Yeend, 1990; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1995; Newberry and Clautice, 1997; Swainbank and others, 1997; Reifenstuhl and others, 1998; Swainbank and others, 1998.

Primary reference: Hess, 1908; Mertie, 1934; Cobb, 1977

Reporter(s): G.E. Graham (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 5/8/2004

Site name(s): McCaskey Bar

Site type: Mine

ARDF no.: TN131

Latitude: 65.1675 **Quadrangle:** TN A-1

Longitude: 150.2131

Location description and accuracy:

McCaskey Bar is a bench between Eureka and Kentucky Creeks. The site is at the mine symbol on the east side of Eureka Creek, in the southwest quarter of section 16, T. 4 N., R. 13 W., of the Fairbanks Meridian. According to Cobb (1972, location 42; 1977), the area of placer mining extends eastward from the mine symbol for about a mile. The western edge of the placer mine is apparently within a quarter mile of a landing strip to the northwest. The location is accurate within half a mile.

This site is approximately 0.5 mile west of the site for McCaskey Bar, U.S. Bureau of Land Management MAS number 0020480048.

Commodities:

Main: Au

Other: Hg

Ore minerals: Cinnabar, gold, ilmenite, magnetite

Gangue minerals:

Geologic description:

Bedrock in the area of the McCaskey Bar placer deposit consists of Jurassic or Cretaceous clastic sedimentary strata that are cut by thrust faults and locally intruded by one or more dikes of unknown composition (Chapman and others, 1982; Reifenstuhl and others, 1998). Mertie (1934) described the bedrock in the mined area as altered phyllite and argillite, often so decomposed that no hard rock could be found. A dike that cuts the country rock is just as altered, and quartz veins in the bedrock are also decomposed and iron-stained.

Mertie (1934) described McCaskey Bar as an old terrace placer east of Eureka Creek, approximately 250 feet above the active stream channel. The gold appears to be concentrated in the upper foot or so of the bedrock, but minor amounts also occur throughout the gravels in streaks at least 100 feet wide. Mertie reported the fineness of gold in one sample as 802.75. The largest nugget reported as of 1931 was worth $8.00 (gold at $20.67 per ounce). The heavy mineral concentrates contained ilmenite, picotite, cinnabar, and magnetite (Waters, 1934).

Mining has been mainly by hydraulicking the frozen overburden and allowing the ground to thaw naturally. Water is scarce in summer and mining was intermittent (Mertie, 1934). Cobb's (1977) and Smith's (1933) reports of Farmer & Jones operating a hydraulic mine in 1928 in the Eureka Creek area actually refer to an operation on McCaskey Bar (Wimmler, 1926). Ray C. Pittman operated a bulldozer just south of McCaskey Bar on Eureka Creek in 1975 (Carnes, 1976).

Alteration:

Age of mineralization:

Quaternary.

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:
McCaskey Bar was mined by hydraulic methods and sluicing starting in 1924 and continued through the 1930's (Mertie, 1934). Cobb's (1977) and Smith's (1933) reports of Farmer & Jones operating a hydraulic mine in 1928 in the Eureka Creek area actually refer to an operation on McCaskey Bar (Wimmler, 1926, 1930). Ray C. Pittman operated a bulldozer just south of McCaskey Bar on Eureka Creek in 1975 (Carnes, 1976).

Production notes:
No official records of production from McCaskey Bar have been made public.

Reserves:

Additional comments:

References:
Wimmler, 1926; Smith, 1933 (B 844); Mertie, 1934; Waters, 1934; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Bottge, 1986; Bundtzen and others, 1990; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Unnamed (east Eureka Dome)

Site type: Occurrence

ARDF no.: TN132

Latitude: 65.2259 **Quadrangle:** TN A-1

Longitude: 150.1843

Location description and accuracy:

This occurrence is on a ridge at an elevation of about 1,900 feet, approximately 1.25 miles east-northeast of Eureka Dome. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample station 97RN035 (Liss and others, 1998), near the south end of the west boundary of section 26, T. 5 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: As

Other:

Ore minerals:

Gangue minerals: Quartz

Geologic description:

Bedrock east of Eureka Dome, on the ridge between Minook and Eureka creeks, consists of Jurassic or Cretaceous quartzite, sandstone, and shale (Reifenstuhl and others, 1998). These rocks are in thrust-fault contact with Cretaceous or Jurassic metasedimentary rocks to the south and with Triassic or Permian sedimentary rocks to the north. A small Cretaceous monzodiorite pluton is exposed on Eureka Dome, approximately 1.5 miles to the west-southwest (Reifenstuhl and others, 1998).

A sample (97RN035) of a quartz vein at the contact between quartzite and argillite on the ridge between Minook and Eureka creeks contained 360 parts per million (ppm) arsenic (Liss and others, 1998). There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:

Possibly epithermal or mesothermal veins.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

A sample (97RN035) of a quartz vein at the contact between quartzite and argillite on the ridge between Minook and Eureka creeks contained 360 parts per million (ppm) arsenic (Liss and others, 1998). There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/21/2004

Site name(s): Pioneer Creek; including Doric, Boothby, Seattle Jr., Skookum, Joe Bush, and North Fork creeks

Site type: Mines

ARDF no.: TN133

Latitude: 65.1894 **Quadrangle:** TN A-1

Longitude: 150.1843

Location description and accuracy:

This record represents several placer mines on Pioneer Creek and some of its tributaries, including Doric, Boothby, Seattle Jr., Skookum, Joe Bush, and North Fork creeks. The site is at the junction of Pioneer and Doric creeks, in the west half of section 10, T. 4 N., R. 13 W., of the Fairbanks Meridian.

The site corresponds to location 41 of Cobb (1972), and to U.S. Bureau of Land Management MAS numbers 0020480100, 0020480050, 0020480044, 0020480039, 0020480029, 0020480031, 0020480041, 0020480063, and 0020480043. The nearby site for Gold Run Creek, MAS number 0020480028, is incorrect.

Commodities:

Main: Au

Other: Hg, W

Ore minerals: Barite, cinnabar, gold, ilmenite, magnetite, pyrite, scheelite, titanite

Gangue minerals:

Geologic description:

The area of Pioneer Creek (including its tributaries) is underlain by Cretaceous or Jurassic sandstone, siltstone, and shale (Chapman and others, 1982; Reifenstuhl and others, 1998). Pioneer Creek follows the trace of a fault, and all of the placer gold deposits are north of this fault. No intrusive rocks are mapped nearby. Yeend (1990) described four terraces at Eureka Creek (TN130), with the best-developed one at 250 feet above the present channel of Eureka and Pioneer creeks. Yeend (1990) also hypothesized that ancestral Eureka and Pioneer creeks flowed southwest toward Tofty during the Pleistocene and joined the ancestral Tanana River farther west than the present channel.

Mining on Pioneer Creek and its tributaries began in 1902 (Collier, 1903). Most of the gold reportedly was mined, not from Pioneer Creek itself, but from benches on the northwest side of the creek or from secondary reconcentrations on the tributary creeks that cut across those benches (Mertie, 1934). Gold was discovered in 1902, just southwest of the mouth of Doric Creek. According to Eakin (1913), this site, locally named What Cheer Bar, was typical of the bench deposits, and consisted of quartzite and conglomerate gravels 3 to 10 feet thick. This, the richest bench, is approximately 250 feet above Pioneer Creek and 2,000 feet to the north. Mertie's (1934) description of the bedrock included pyritized sandstone, slate, and phyllite. Waters (1934) reported that two placer concentrate samples contained picotite, ilmenite, pyrite, zircon, gold, sphene, barite, magnetite, garnet, scheelite, cinnabar, and tourmaline.

Hess (1908) described the bedrock at the Doric Creek mine as slate, grit, and quartzite that strike N70E and dip steeply north. Brooks (1907) reported mining on Boothby and Skookum creeks in 1906. Chapin (1914) described mining on Seattle Jr. Creek. Hydraulic mining by J.R. Frank Co. on Doric Creek and What Cheer Bar in the late 1920s was one of the principal operations in the Eureka area. Mining on some or all of these creeks continued until 1940, after which there is a hiatus in published reports of activity.

In 1967, Strandberg Mines, Inc., held active mining claims on Boothby, Doric, Pioneer, and Skookum creeks; Frank & Co. were active on Doric, Seattle Jr., and Pioneer creeks; and claims were active on North Fork and Skookum creeks (Heiner and others, 1968). in 1975, John Cole ran a bulldozer on Skookum

Creek (plotted location looks closer to Eureka Creek), and Mary Sue Mines ran a bulldozer on placer claims in Skookum Creek during (Carnes, 1976). In 1991, Ross Novak finished mining on the Pioneer bench (Bundtzen and others, 1992). From 1990-92, Rick Swenson operated on Doric Creek (Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993). In 1992, Rick Swenson and partner Ross Novak open-cut mined on Doric Creek during a 110-day season. In 1997, Rick Swenson mined again, as did Salter and Associates (Swainbank and others, 1998). In 1990-91 and 1993, Salter and Associates mined gold on Joe Bush Creek (Bundtzen and others, 1992, 1994), where the biggest obstacle to mining was 6 feet of blue clay just above the pay gravels. The clay was removed carefully in order to preserve the gold. In 1995, Salter and Associates trenched on Joe Bush Creek, and Kelley Mining Company mined North Fork Creek (Bundtzen and others, 1996). In 1998, Salter and Associates mined on Joe Bush Creek (Alaska Kardex files).

Official production figures are not available for Pioneer Creek. As of the fall of 1904, Hess (1908) reported that production from Doric Creek , Eureka Creek (TN130), and associated bench bars was around $85,300, estimated by Cobb (1977) to have equaled 4,125 ounces of gold. Cobb also estimated that many tens of thousands of ounces of gold were mined from the Pioneer Creek area.

Alteration:

Age of mineralization:
Quaternary.

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 on Pioneer Creek and its tributaries involved both open-cut and underground drift mining. Gold prospects, identified in 1902 (Collier, 1903), were mostly on benches or on tributaries of Pioneer Creek (Prindle and Hess, 1905). By 1905, What Cheer Bar had been identified, and within a couple of years references were being made to mining on Skookum and Boothby Creeks as well as on Doric Creek (Brooks, 1907; Hess, 1908). References to mining on Seattle Jr. Creek were made starting in 1913 (Chapin, 1914). Hydraulic mining by J.R. Frank Co. on Doric Creek and What Cheer Bar in the late 1920s was one of the principal operations in the Eureka area. Mining was reported to have continued until at least 1940, after which there is a hiatus in published reports of activity.

In 1967, Strandberg Mines, Inc. held active mining claims on Boothby, Doric, Pioneer, and Skookum creeks; Frank & Co. were active on Doric, Seattle Jr., and Pioneer creeks; and claims were active on North Fork and Skookum creeks (Heiner and others, 1968). In 1975, John Cole ran a bulldozer on Skookum Creek (plotted location looks closer to Eureka Creek), and Mary Sue Mines ran a bulldozer on placer claims in Skookum Creek (Carnes, 1976). In 1991, Ross Novak finished mining on the Pioneer bench (Bundtzen and others, 1992). From 1990-92, Rick Swenson operated on Doric Creek (Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993). In 1992, Rick Swenson and partner Ross Novak open-cut mined on Doric Creek during a 110-day season. In 1997, Rick Swenson mined again, as did Salter and Associates (Swainbank and others, 1998). In 1990-91 and 1993, Salter and Associates mined gold on Joe Bush Creek (Bundtzen and others, 1992, 1994). The biggest obstacle to mining was 6 feet of blue clay just above the pay gravels. The clay was removed carefully in order to preserve the gold. In 1995, Salter and Associates trenched on Joe Bush Creek (Bundtzen and others, 1996), and in 1998, they mined there (Alaska Kardex files).

Production notes:

Individual production figures are not available for this group of placer deposits. As of the fall of 1904, Hess (1908) reported that production from Doric Creek, Eureka Creek (TN130), and associated bench bars was around $85,300, estimated by Cobb (1977) to have equaled 4,125 ounces of gold. Cobb also estimated that many tens of thousands of ounces of gold were mined from the Pioneer Creek area.

Reserves:

Additional comments:

References:

Collier, 1903; Prindle and Hess, 1905; Brooks, 1907; Hess, 1908; Ellsworth, 1910; Eakin, 1913; Chapin, 1914; Mertie, 1934; Waters, 1934; Heiner and others, 1968; Cobb, 1972; Carnes, 1976; Cobb, 1977; Chapman and others, 1982; Yeend, 1990; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993; Bundtzen and others, 1994; Bundtzen and others, 1996; Swainbank and others, 1998; Reifenstuhl and others, 1998.

Primary reference: Prindle and Hess, 1905; Cobb, 1977; Yeend, 1990

Reporter(s): G.E. Graham (ADGGS)

Last report date: 12/10/2000

Site name(s): Alameda Creek

Site type: Mine

ARDF no.: TN134

Latitude: 65.1739 **Quadrangle:** TN A-1

Longitude: 150.1669

Location description and accuracy:

This placer mine is at about the midpoint of Alameda Creek, near the center of section 15, T. 4 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within three-fourths of a mile.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Bedrock in the area of the Alameda Creek placer deposit consists of Jurassic or Cretaceous sandstone, siltstone, and shale that are cut by thrust and high-angle faults (Chapman and others, 1982; Reifenstuhl and others, 1998).

The topographic map of the Tanana A-1 quadrangle (1952, with minor revisions in 1963), shows several ditches contouring around the slopes of Alameda Creek. This development work is not mentioned in published reports. In 1989, Ed Salter worked Alameda Creek approximately 1 mile east of McCaskey Bar (TN131) (Bundtzen and others, 1990). According to Bottge (1986), gold had been recovered from Alameda Creek by 1985.

Alteration:

Age of mineralization:

Quaternary.

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 topographic map of the Tanana A-1 quadrangle (1952, with minor revisions in 1963), shows several ditches contouring around the slopes of Alameda Creek. Two ditches feed into Alameda Creek, presumably to help offset the scarcity of water in the summer. This development work is not mentioned in published reports. In 1989, Ed Salter worked Alameda Creek approximately 1 mile east of McCaskey Bar (TN131) (Bundtzen and others, 1990). According to Bottge (1986), gold had been recovered from Alameda Creek by 1985.

Production notes:

In 1989, Ed Salter worked Alameda Creek approximately 1 mile east of McCaskey Bar (TN131) (Bundtzen and others, 1990). According to Bottge (1986), gold had been recovered from Alameda Creek by 1985, but the amount is undisclosed.

Reserves:

Additional comments:

References:

Chapman and others, 1982; Bottge, 1986; Bundtzen and others, 1990; Reifenstuhl and others, 1998.

Primary reference: Bundtzen and others, 1990

Reporter(s): G.E. Graham (ADGGS), J.E. Athey (ADGGS)

Last report date: 3/16/2001

Site name(s): Unnamed (junction of Elliot Highway and Silverbow Creek)

Site type: Occurrence

ARDF no.: TN135

Latitude: 65.1604 **Quadrangle:** TN A-1

Longitude: 150.1190

Location description and accuracy:

This occurrence is on the south bank of Silverbow Creek, just south of the Elliot Highway crossing. The site is at Alaska Division of Geological and Geophysical Surveys (ADGGS) sample stations 97SL158 and 159 (Liss and others, 1998), on the boundary between sections 23 and 24, T. 4 N., R. 13 W., of the Fairbanks Meridian. The location is accurate within 500 feet.

Commodities:

Main: As

Other: Sb

Ore minerals:

Gangue minerals: Quartz

Geologic description:

The area of Silverbow Creek near its junction with Hutlinana Creek is low-lying and extensively covered by Quaternary alluvial and colluvial deposits (Reifenstuhl and others, 1998). Bedrock in this area is Lower Cretaceous sandstone, shale, and siltstone that are cut by northeast-trending thrust faults. No plutonic rocks are mapped in the local area.

A sample (97SL159) of a gouge zone in shale and siltstone on the west side of Silverbow Creek near its junction with Hutlinana Creek contained 1,210 parts per million (ppm) arsenic, 1,270 ppm phosphorous, and 38 ppm antimony (Liss and others, 1998). A sample (97SL158b) of a quartz vein at this site contained 190 ppm arsenic. There is no record of exploration or mining at this site.

Alteration:

Age of mineralization:

Deposit model:

Possibly epithermal or mesothermal veins.

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

Production Status: None

Site Status: Inactive

Workings/exploration:

A sample (97SL159) of a gouge zone in shale and siltstone on the west side of Silverbow Creek near its junction with Hutlinana Creek contained 1,210 parts per million (ppm) arsenic, 1,270 ppm phosphorous, and 38 ppm antimony (Liss and others, 1998). A sample (97SL158b) of a quartz vein at this site contained 190 ppm arsenic. There is no record of exploration or mining at this site.

Production notes:

Reserves:

Additional comments:

References:

Reifenstuhl and others, 1998; Liss and others, 1998.

Primary reference: Liss and others, 1998

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/20/2004

Site name(s): Black Bart

Site type: Prospect

ARDF no.: TN136

Latitude: 65.2350 **Quadrangle:** TN A-1

Longitude: 150.1109

Location description and accuracy:

The Black Bart lode claims were staked in 1978 at the head of Eureka Creek (Alaska Kardex files). Mining claim location notices show 2 claims in section 25, T. 5 N, R. 13 W. and section 30, T. 5 N, R. 12 W., of the Fairbanks Meridian. For this record, the site is in the northwest quarter of section 30, T. 5 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within about 1500 feet. This site closely corresponds with the site for Black Bart, U.S. Bureau of Land Management MAS number 0020480119.

Commodities:

Main:

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The bedrock in most of the upper reaches of Eureka Creek is Jurassic or Cretaceous sandstone, siltstone, shale, and quartzite (Chapman and others, 1982; Reifenstuhl and others, 1998). Some of the strata are intruded by several northeast-trending, Cretaceous monzodiorite plugs. The creek follows a southwest-trending thrust fault for four miles. This fault is manifested by the valley's asymmetry. The southeast side is very steep, and consists of quartzite, while the northwest side, along which the placer benches occur, slopes gently.

Mertie (1934) reported that a prospector had found a lead-silver deposit several years before 1931 in the headwaters of either Eureka or Pioneer creeks. Two assays of the sulfides are said to have shown 100 ounces of silver to the ton and 70 percent lead.

A lode claim was located on this site in 1978, with hand trenching and blasting from 1979 to 1981 to expose the ore (Alaska Kardex files). The mining location notice shows that the claim was staked on a northwest-trending dike crossed by the Eureka-Rampart road. The vein exposure, or possibly trench dimensions, is described as 2 feet wide, 12 feet high, and 6 feet deep. The ore mineralogy and commodities sought are not described. No other work is known on this prospect.

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: None

Site Status: Inactive

Workings/exploration:

Mertie (1934) reported that a prospector had found a lead-silver deposit several years before 1931 in the headwaters of either Eureka or Pioneer creeks. Two assays of the sulfides are said to have shown 100 ounces of silver to the ton and 70 percent lead.

A lode claim was located on this site in 1978, with hand trenching and blasting from 1979 to 1981 to expose the ore (Alaska Kardex files). The mining location notice shows that the claim was staked on a northwest-trending dike crossed by the Eureka-Rampart road. The vein exposure, or possibly trench dimensions, is described as 2 feet wide, 12 feet high, and 6 feet deep. The ore mineralogy and commodities sought are not described. No other work is known on this prospect.

Production notes:

Reserves:

Additional comments:

References:

Mertie, 1934; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934; this report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 5/13/2004

Site name(s): Deadwood Creek

Site type: Mine

ARDF no.: TN137

Latitude: 65.2086 **Quadrangle:** TN A-1

Longitude: 150.0930

Location description and accuracy:
The Deadwood Creek placer mine is about a half-mile upstream from the junction of North Fork. The site is at Deadwood claim number 1, where work was performed in 1980 (Alaska Kardex files). It is in the northeast quarter of section 1, T. 4 N., R. 13 W., of the Fairbanks Meridian. Three claims extend upstream from this site. The location is accurate within about 500 feet. This site closely corresponds with the site for Deadwood, U.S. Bureau of Land Management MAS number 0020480113.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:
The Deadwood Creek area is underlain by Cretaceous sandstone, siltstone, quartzite, and shale, and by Cretaceous or Jurassic quartzite (Chapman and others, 1982; Reifenstuhl and others, 1998). Deadwood Creek follows the trace of a thrust fault between the Cretaceous and Cretaceous or Jurassic units (Reifenstuhl and others, 1998). No igneous rocks are mapped nearby.
Placer mining in the upper Pioneer Creek-Deadwood Creek area began in 1902 (Collier, 1903). Most of the gold reportedly was mined from benches on the northwest side of Pioneer Creek or from secondary re-concentrations on the tributaries that cut across those benches (Mertie, 1934). Early work specifically on Deadwood Creek is not recorded.
Placer mining claims were staked along Deadwood Creek in 1977 (Alaska Kardex files), and the claims were worked from 1977 to at least 1985. Affidavits of annual labor list digging holes up to 14 feet deep with a backhoe, and backpack drilling to 35-foot depth in 1979; sluicing ground on claim number 1 in 1980; stripping overburden and digging test holes with a backhoe in 1983 in preparation for mining the following year; stripping and ripping topsoil and frozen overburden with a D-8 Caterpillar bulldozer in 1984; and digging bedrock drains in 1984 and 1985.

Alteration:

Age of mineralization:
Quaternary?

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

Site Status: Undetermined

Workings/exploration:

Placer mining in the upper Pioneer Creek-Deadwood Creek area began in 1902 (Collier, 1903). Most of the gold reportedly was mined from benches on the northwest side of Pioneer Creek or from secondary re-concentrations on the tributaries that cut across those benches (Mertie, 1934). Early work specidically on Deadwood Creek is not recorded.

Placer mining claims were staked along Deadwood Creek in 1977 (Alaska Kardex files), and the claims were worked from 1977 to at least 1985. Affidavits of annual labor list digging holes up to 14 feet deep with a backhoe, and backpack drilling to 35-foot depth in 1979; sluicing ground on claim number 1 in 1980; stripping overburden and digging test holes with a backhoe in 1983 in preparation for mining the following year; stripping and ripping topsoil and frozen overburden with a D-8 Caterpillar bulldozer in 1984; and digging bedrock drains in 1984 and 1985.

Production notes:

Reserves:

Additional comments:

References:

Collier, 1903; Mertie, 1934; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934; this report

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 4/28/2004

Site name(s): Unnamed (Pioneer Creek Headwater; Eureka Head)

Site type: Occurrence

ARDF no.: TN138

Latitude: 65.2469 **Quadrangle:** TN A-1

Longitude: 150.0711

Location description and accuracy:

This lode occurrence is at an elevation of 2,000 feet, in the northwest quarter of section 20, T. 5 N., R. 12 W., of the Fairbanks Meridian. The location is accurate within 1000 feet. This site closely corresponds to the U.S. Bureau of Land Management site for Pioneer Creek Headwater (MAS number 0020480118). The site for Eureka Head (MAS number 0020480051) probably is the same lode occurrence. The site roughly corresponds to location 9 of Cobb (1972, 1977).

Commodities:

Main: Ag, Pb

Other:

Ore minerals: Sulfides

Gangue minerals:

Geologic description:

Bedrock in most of the upper reaches of Eureka Creek consists of Jurassic or Cretaceous sandstone, siltstone, shale, and quartzite (Chapman and others, 1982; Reifenstuhl and others, 1998). Some of the strata are intruded by several small, northeast-trending, Cretaceous monzodiorite plugs. The creek follows a southwest-trending thrust fault for four miles. The fault is manifested by the valley's asymmetry: the southeast side is very steep, and consists of quartzite; the northwest side, along which the placer benches occur, slopes gently.

Mertie (1934) reported that a prospector had found a lead-silver deposit several years before 1931 in the headwaters of either Eureka or Pioneer creeks. Two assays of the sulfides are said to have shown 100 ounces of silver per ton and 70 percent lead.

A lode claim was located on this site in 1978, with hand trenching and blasting from 1979 to 1981 to expose the ore (Alaska Kardex files). No other work on this prospect is known.

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: None

Site Status: Inactive

Workings/exploration:

Mertie (1934) reported that a prospector had found a lead-silver deposit several years before 1931 in the headwaters of either Eureka or Pioneer creeks. Two assays of the sulfides are said to have shown 100 ounces of silver per ton and 70 percent lead.

A lode claim was located on this site in 1978, with hand trenching and blasting from 1979 to 1981 to expose the ore (Alaska Kardex files). No other work on this prospect is known.

Production notes:

Reserves:

Additional comments:

References:

Mertie, 1934; Cobb, 1972; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934

Reporter(s): J.E. Athey (ADGGS), D.J. Szumigala (ADGGS)

Last report date: 7/18/2003

Site name(s): Hutlinana Creek

Site type: Prospects

ARDF no.: TN139

Latitude: 65.1852 **Quadrangle:** TN A-1

Longitude: 150.0118

Location description and accuracy:
This record represents approximately located placer gold prospects and occurrences in the Hutlinana Creek area. Some or possibly all of them may be in the Livengood quadrangle. The site is in the uppermost portion of the creek in the Tanana quadrangle, in the southwest quarter of section 9, T. 4 N., R. 12 W., of the Fairbanks Meridian. The U.S. Bureau of Land Management location for Tonawanda Creek (MAS number 0020480040) is approximately 2 miles downstream from this site.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals:

Geologic description:
Bedrock in the area of the Hutlinana Creek placer gold prospects consists of Jurassic or Cretaceous clastic sedimentary strata that are cut by thrust faults and locally intruded by one or more dikes of unknown composition (Chapman and others, 1982; Reifenstuhl and others, 1998). Reifenstuhl and others (1998) mapped thrust faults along both sides of this part of Hutlinana Creek.
A stampede to the Hutlinana Creek area occurred in 1902 and colors and occasional good prospects were reported (Collier, 1903; Hess, 1908). Mertie (1934) reported that some gold had been found on most of the northwest tributaries, but no good pay streak had been located. The ground is deep, unfrozen, and cannot be worked economically on a small scale. Cobb's (1977) description of the prospects includes references to Hootlenana and Hutlina creeks.

Alteration:

Age of mineralization:
Quaternary.

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:
A stampede to the Hutlinana Creek area occurred in 1902 and colors and occasional good prospects were

reported (Collier, 1903; Hess, 1908). Mertie (1934) reported that some gold had been found on most of the northwest tributaries, but no good pay streak had been located. The ground is deep, unfrozen, and cannot be worked economically on a small scale. Cobb's (1977) description of the prospects includes references to Hootlenana and Hutlina creeks.

Production notes:

Reserves:

Additional comments:

References:

Collier, 1903; Hess, 1908; Mertie, 1934; Cobb, 1977; Chapman and others, 1982; Reifenstuhl and others, 1998.

Primary reference: Mertie, 1934; Cobb, 1977

Reporter(s): D.J. Szumigala (ADGGS)

Last report date: 8/1/2003

References

Alaska Kardex files: 370 records for the Tanana quadrangle, housed in the Alaska Department of Natural Resources Public Information Center, Fairbanks, Alaska (Unpublished paper and microfiche records: older files with state and federal mining claim information filed by quadrangle and claim record number; include mining claim location notices and affadavits of labor.)

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