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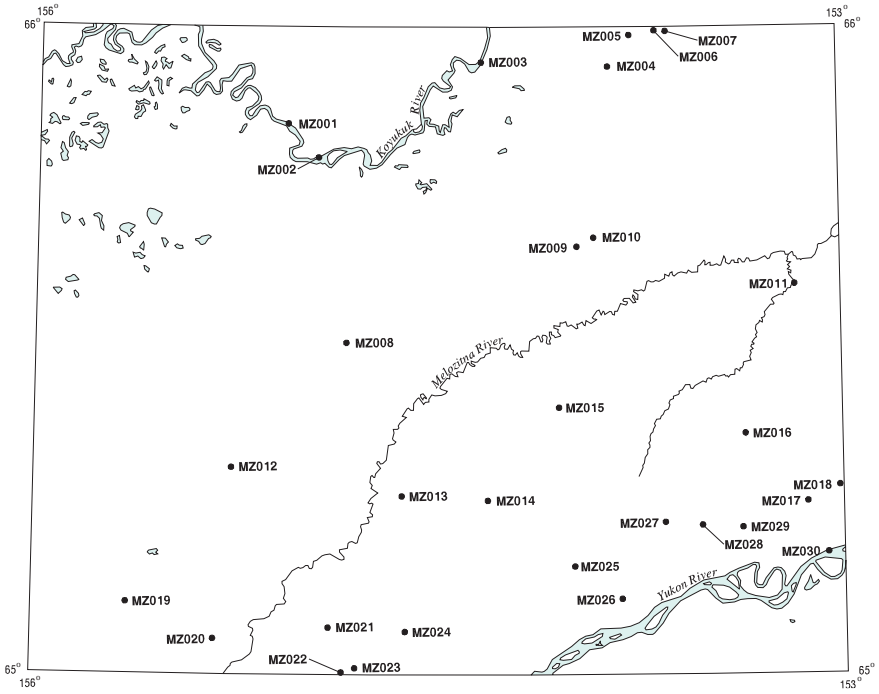
Alaska Resource Data File

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

This and related reports are accessible through the USGS World Wide Web site http://ardf.wr.usgs.gov. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to: Frederic Wilson, USGS, 4200 University Dr., Anchorage, AK 99508-4667, e-mail fwilson@usgs.gov, telephone (907) 786-7448. This compilation is authored by:

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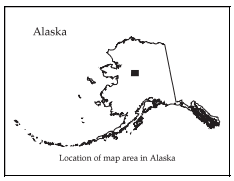
Fairbanks, AK



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 2005-1257

Site name(s): Unnamed ('Batza Slough')

Site type: Occurrence

ARDF no.: MZ001

Latitude: 65.8505 **Quadrangle:** MZ D-5

Longitude: 155.0664

Location description and accuracy:

This occurrence is at the mouth of what is informally called Batza Slough at its junction with the Koyukuk River. The site is at about the midpoint of the west boundary of section 10, T. 5 N., R. 18 E., Kateel River Meridian. The location is accurate is within 1,000 feet. It corresponds to location 1 of Cobb (1972).

Commodities:

Main: Ag, Cu, Pb

Other:

Ore minerals: Cerussite, galena, malachite

Gangue minerals:

Geologic description:

What is locally called Batza Slough flows along the western foothills of the Isahultila Mountains through an area of Quaternary flood plain, colluvium, alluvium, and terrace deposits (Patton and others, 1977). The stream gradient is about 50 feet per mile. The rocks in the western Isahultila Mountains consists of Cretaceous pillow basalt and andesite flows, andesitic tuff, volcanic conglomerate and breccia, chert , fine-grained cherty tuff; and coquinoidal limestone. The rocks are widely altered to dark green hornfels. Numerous quartz-latite porphyry dikes occur throughout the Sun Mountain area (Miller and Ferrians, 1968). Cretaceous or Tertiary rhyolite tuff, with subordinate vesicular basalt flows, occurs approximately 5 miles to the south in the Takhakhdona Hills (Patton and others, 1977).

Miller and Ferrians (1968) describe a 2-foot-long angular block of altered silicified rock on a cut bank at the mouth of Batza Slough. The rock contained disseminated cerussite, galena, and malachite. A sample contained about 5 percent lead, 0.5 percent copper, and 3 ounces of silver per ton (Miller and Ferrians, 1968; Cobb, 1973; Cobb, 1975). On the basis of those assays, the dikes, and the regional hornfelsing, Miller and Ferrians (1968) postulated that the mineralization is related to a buried hypabyssal pluton.

Alteration:

Silicification and hornfelsing.

Age of mineralization:

Fossils in limestone interbedded with the andesitic volcanic rocks are of earliest Cretaceous age (Patton and others,1977). The mineralization is probably Cretaceous or younger.

Deposit model:

Polymetallic replacement? (Cox and Singer, 1986; model 19a); Polymetallic vein? (Cox and Singer, 1986; model 22c)

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

19a?, 22c?

Production Status: None

Site Status: Inactive

Workings/exploration:
Only reconnaissance geologic mapping and sampling by government geologists.

Production notes:

Reserves:

Additional comments:
This site is the Batza Slough, U.S. BLM MILS location 0020470018 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:
Miller and Ferrians, 1968; Cobb, 1972; Cobb, 1973; Cobb, 1975; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Miller and Ferrians, 1968

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 06/04/04

Site name(s): Unnamed (southwest of Sun Mountain)

Site type: Occurrences

ARDF no.: MZ002

Latitude: 65.7984 **Quadrangle:** MZ D-4

Longitude: 154.9516

Location description and accuracy:

Several lode occurrences are along the Koyukuk River southwest of Sun Mountain, in the southern Isahultila Mountains (Miller and Ferrians, 1968). Their precise locations are unknown, but are presumed to be in T. 5 N, R. 18 E. to R. 20 E., Kateel River Meridian. For this record, the site is at an elevation of about 350 feet on the north bank of the Koyukuk River north of Fry Island.

Commodities:

Main: Cu

Other:

Ore minerals: Chalcopyrite, malachite, pyrite

Gangue minerals:

Geologic description:

The Koyukuk River near Sun Mountain flows along the southern foothills of the Isahultila Mountains in an area of Quaternary flood plain, colluvium, alluvium, and terrace deposits (Patton and others, 1977). The rocks in the southwestern Isahultila Mountains consists of Cretaceous pillow basalt and andesite flows; andesite tuff and volcanic conglomerate and breccia; chert and fine-grained cherty tuff; and coquinoidal limestone. The rocks are widely altered to dark green hornfels. Numerous quartz latite porphyry dikes occur throughout the Sun Mountain area (Miller and Ferrians, 1968). Cretaceous or Tertiary rhyolite tuff, with subordinate vesicular basalt flows, crop out approximately 2 miles to the south in the Takhakhdona Hills (Patton and others, 1977).

Miller and Ferrians (1968) report scattered occurrences of chalcopyrite, malachite, and pyrite along the Koyukuk River in the southern Isahultila Mountains near Sun Mountain, and suggest that several massive limestone units as much as 65 feet thick are favorable hosts for ore deposits.

Alteration:

Hornfels is widespread in the southern Isahultila Mountains.

Age of mineralization:

Cretaceous or younger based on the age of the host rocks.

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Only reconnaissance geologic mapping by government geologists (Miller and Ferrians, 1968).

Production notes:

Reserves:

Additional comments:

This site is the Sun Mountain, U.S. BLM MILS location 0020470016 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Miller and Ferrians, 1968; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Miller and Ferrians, 1968

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/19/05

Site name(s): Florence Bar

Site type: Mines

ARDF no.: MZ003

Latitude: 65.9456 **Quadrangle:** MZ D-3

Longitude: 154.3417

Location description and accuracy:
Gold was placer mined in the late 19th and early 20th centuries on what was then called Florence Bar, a prominent bar of sand on the west side of the Koyukuk River across from Rock Island Point. There apparently were several mines on the bar. The mines are in the SE1/4 of section 1, T. 6 N., R. 21 E., Kateel River Meridian. The location is accurate within 2,000 feet. It corresponds to location 2 of Cobb (1972).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The Florence Bar placer mines were on a gravel bar in the Koyukuk River across the river from Rock Island Point. Most of the immediate area is covered by Quaternary flood plain, colluvium, alluvium, and terrace deposits (Patton and others, 1977). Bedrock at Rock Island Point includes Cretaceous pillow basalt and andesite flows; andesitic tuff, volcanic conglomerate and breccia; chert and fine-grained cherty tuff; and coquinoidal limestone. The rocks are widely altered to dark green hornfels. To the northeast, the andesitic volcanic rocks are in contact with Cretaceous quartz-pebble conglomerate, quartzose sandstone, andesitic and dacitic volcanic rocks, volcanic graywacke, and mudstone (Patton and Miller, 1966; Patton and others, 1977). The Indian Mountain granitic pluton, and associated latite dikes up to several hundred feet thick, intrude the Cretaceous stratified rocks about 8 miles northeast of Rock Island Point. The pluton is exposed no closer than five miles from the Koyukuk River, although several small dikes crop out on or near the river's edge (Patton and Miller, 1966).

Placer gold was known in the Koyukuk Basin in the 1890s or earlier (Schrader, 1904). It was first discovered in the sand bars of the Koyukuk River, where the river gradient is low, perhaps 5 feet per mile. The Florence Bar placer area was one of three bars (Florence, Hughes, and Tramway) mined before 1898, the Florence Bar mines produced a total of about $4,000 in gold (approximately 200 ounces of gold at $20.67 per ounce) (Maddren, 1910 [B 442]; Cobb, 1975). Early miners described the gold from Florence Bar as very fine, suggesting that it traveled a substantial distance (Smith, 1913). The source of the gold is unknown.

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 gold was known in the Koyukuk Basin in the 1890s or earlier (Schrader, 1904). It was first discovered in the sand bars of the Koyukuk River. There is no record of the type of workings or their extent.

Production notes:

About $4,000 in gold (approximately 200 ounces of gold at $20.67 per ounce) was recovered from Florence Bar before 1898 (Maddren, 1910 [B 442]; Cobb, 1975). The total gold production from the placer mines on Florence Bar is unknown.

Reserves:

Additional comments:

This site is the Florence Bar, U.S. BLM MILS location 0020470014 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Schrader, 1904; Maddren, 1910 (B 442); Smith, 1913; Patton and Miller, 1966; Cobb, 1972; Cobb, 1975; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Smith, 1913; Cobb, 1975

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 06/04/04

Site name(s): Indian RiverTrend; IRT; IR

Site type: Prospects

ARDF no.: MZ004

Latitude: 65.9387 **Quadrangle:** MZ D-2

Longitude: 153.8639

Location description and accuracy:

This site represents several prospects in a linear, east-northeast-trending belt, informally called the Indian River trend, on the southeastern side of the Indian Mountains. The belt is marked by a well-defined color anomaly 8 miles long and a half-mile wide. The easternmost prospect is approximately 2 miles south of the Utopia Creek placer mine (MZ006). The site is centered on an area of drill holes in the northwest corner of section 8, T. 6 N., R. 24 E., Kateel River Meridian (State of Alaska Department of Natural Resources, 2000). The location is accurate within 1,000 feet.

Commodities:

Main: Ag, Au, Cu, Pb

Other: As, Ba, Sb

Ore minerals: Chalcopyrite, hematite, limonite, pyrite

Gangue minerals: Anhydrite, barite, gypsum, quartz, sericite

Geologic description:

The mineralization along the Indian River trend is in Lower Cretaceous andesitic volcanic rocks (Patton and others, 1977). The andesite is interbedded with pillow basalt, andesitic tuff, volcanic conglomerate, volcanic breccia, chert, cherty tuff, and coquinoidal limestone. An east-west, high-angle fault cuts the rocks, and small bodies of Cretaceous dacite and rhyolite porphyry intrude along the fault.

The dacite and rhyolite intrusive rocks are intensely silicified and contain disseminated pyrite (Miller and Ferrians, 1968). Oxidation of the pyrite resulted in the formation of conspicuous orange, red, and yellow gossans; about 10 color anomalies developed as a result of this oxidization occur along 6 miles of the fault (Kurtak and others, 2002). Semi-quantitative analyses of samples of typical altered, intrusive rock showed small but anomalous amounts of lead, copper, silver, and gold (Miller and Ferrians, 1968). The highest values for 5 samples of altered, pyritiferous, andesite and oxidized, pyritiferous dacite were 0.1 part per million (ppm) gold, 7 ppm silver, 300 ppm copper, and 300 ppm lead. Stream-sediment samples in the area contained 30 to 50 ppm copper and up to 20 ppm lead.

The Alaska Division of Geological & Geophysical Surveys collected 3 rock samples at 2 localities along the west side of Macaroni Creek (Liss and others, 1993). The samples included latite porphyry, leached porphyry, and andesite containing magnetite and sulfides. The sample of andesite with magnetite and sulfides contained 7 parts per billion (ppb) gold, 47 ppm arsenic, and 25 ppm antimony.

North Star Exploration, Inc. conducted exploration in the late 1990s across the Indian River trend area as part of a mineral evaluation of Doyon Limited's lands (North Star Exploration, Inc., 2000). The andesite and dacite in the prospect area have been moderately to intensely altered, mainly by argillization, sericitization, and silicification (North Star Exploration, Inc., 1999 [Mineral potential of the Hughes Block Interior Alaska]). Crosscutting, high-angle faults appear to offset mineralization at the IRT prospect and may be responsible for localizing alteration. Locally, the rocks consist of quartz-sericite-altered material cut by quartz-stockwork veins, faults and hydrothermal breccias, and pods of intense silicification. Outward from a core of silicification, clay- and propylitically-altered rocks are developed. Pyrite occurs locally in quartz as fine-grained disseminations and small spheroids. Veins of anhydrite and barite are also present. North Star's samples of altered andesite in the Indian River trend contained locally anomalous gold values (North

Star Exploration Inc., 2000). Their soil grids and other samples at the IRT prospect showed areas of mineralization up to 1,200 feet by 1,200 feet in area that contain up to 380 ppb gold, and anomalous values of arsenic and barite. Samples from several trenches on the prospect contained up to 327 ppb gold along 10 feet. The gold to silver ratios in samples from two of the soil grids, the My and Sili, are higher than grids elsewhere on the IRT property. North Star drilled 2 diamond core holes totaling 1,091 feet on the Indian River trend during 2000 (North Star Exploration, Inc., 2001). Samples of the core showed anomalous gold, silver, copper, lead, and zinc (North Star Exploration, Inc., 2001). Chalcopyrite and pyrite occur throughout much of the core and gypsum is present as an alteration product (Szumigala and others, 2001).

North Star also contracted an airborne (helicopter) magnetic, electromagnetic, and radiometric geophysical survey. Geophysical interpretation of the survey suggest that a window exists through the andesite into a unit that consists mainly of sedimentary rocks, and they indicate exploration potential for sediment-hosted as well as volcanic-hosted gold deposits (North Star Exploration, Inc., 2000). The linear trend of the small intrusions may represent a fossil hot springs environment and the IRT prospect may be the uppermost levels of an auriferous epithermal system (North Star Exploration, Inc., 1999 [Mineral potential of the Hughes Block Interior Alaska]).

The U.S. Bureau of Land Management sampled 2 sites along the Indian River trend from 1997 to 2000 (Kurtak and others, 2002). Analytical results from a sample of brick-red soil from the My soil grid about 0.2 miles east of Macaroni Creek, contained 91 ppb gold, 9,166 ppm lead, and 517 ppm barium. A sample of altered rhyolite with 5 percent pyrite assayed 36 ppb gold (Klieforth and others, 2001). The Bureau also collected 2 samples of silicified rhyolite with 3 percent pyrite, and 15 soil samples from a backfilled trench and a soil-grid line at the Macaroni prospect, near the north end of a 150-foot by 350-foot color anomaly (Kurtak and others, 2002). Seven of the soil samples had detectable gold values ranging from 6 to 24 ppb gold, but the other samples did not show anomalous metal values.

Alteration:

Argillic, propylitic, sericitic, and silicic alteration.

Age of mineralization:

Cretaceous or younger.

Deposit model:

Hot-spring Au-Ag (Cox and Singer, 1986; model 25a); Comstock epithermal veins (Cox and Singer, 1986; model 25c)

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

25a, 25c

Production Status: None

Site Status: Inactive

Workings/exploration:

The mineralization was first described by Miller and Ferrians (1968); their geochemical analyses of rock samples of typical altered intrusive rock contained small but anomalous amounts of lead, copper, silver, and gold. The highest analytical values for 5 samples of altered, pyritiferous, andesite and oxidized, pyritiferous, dacite were 0.1 part per million (ppm) gold, 7 ppm silver, 300 ppm copper, and 300 ppm lead. Stream-sediment samples in the area contained 30 to 50 ppm copper and up to 20 ppm lead.

The Alaska Division of Geological & Geophysical Surveys collected 3 rock samples at 2 localities along the west side of Macaroni Creek (Liss and others, 1993). The samples included latite porphyry, leached porphyry, and andesite with magnetite and sulfides. The sample of andesite with magnetite and sulfides contained 7 parts per billion (ppb) gold, 47 ppm arsenic, and 25 ppm antimony.

North Star Exploration, Inc. conducted exploration in the late 1990s across the Indian River trend area as part of a mineral evaluation of Doyon Limited's lands (North Star Exploration, Inc., 2000). The andesite and dacite in the prospect area have been moderately to intensely altered, mainly by argillization, sericitization, and silicification (North Star Exploration, Inc., 1999 [Mineral potential of the Hughes Block Interior

Alaska]). Crosscutting, high-angle faults appear to offset mineralization at the IRT prospect and may be responsible for localizing alteration. Locally, the rocks consist of quartz-sericite-altered material cut by quartz-stockwork veins, faults and hydrothermal breccias, and pods of intense silicification. Outward from a core of silicification, clay- and propylitically-altered rocks are developed. Pyrite occurs locally in quartz as fine-grained disseminations and small spheroids. Veins of anhydrite and barite are also present. North Star's samples of altered andesite in the Indian River trend contained locally anomalous gold values (North Star Exploration Inc., 2000). Their soil grids and other samples at the IRT prospect showed areas of mineralization up to 1,200 feet by 1,200 feet in area that contain up to 380 ppb gold, and anomalous values of arsenic and barite. Samples from several trenches on the prospect contained up to 327 ppb gold along 10 feet. The gold to silver ratios in samples from two of the soil grids, the My and Sili, are higher than grids elsewhere on the IRT property. North Star drilled 2 diamond core holes totaling 1,091 feet on the Indian River trend during 2000 (North Star Exploration, Inc., 2001). Samples of the core showed anomalous gold, silver, copper, lead, and zinc (North Star Exploration, Inc., 2001). Chalcopyrite and pyrite occur throughout much of the core and gypsum is present as an alteration product (Szumigala and others, 2001).

North Star also contracted an airborne (helicopter) magnetic, electromagnetic, and radiometric geophysical survey. Geophysical interpretation of the survey suggest that a window exists through the andesite into a unit that consists mainly of sedimentary rocks, and they indicate exploration potential for sediment-hosted as well as volcanic-hosted gold deposits (North Star Exploration, Inc., 2000). The linear trend of the small intrusions may represent a fossil hot springs environment and the IRT prospect may be the uppermost levels of an auriferous epithermal system (North Star Exploration, Inc., 1999 [Mineral potential of the Hughes Block Interior Alaska]).

The U.S. Bureau of Land Management sampled 2 sites along the Indian River trend from 1997 to 2000 (Kurtak and others, 2002). Analytical results from a sample of brick-red soil from the My soil grid about 0.2 miles east of Macaroni Creek, contained 91 ppb gold, 9,166 ppm lead, and 517 ppm barium. A sample of altered rhyolite with 5 percent pyrite assayed 36 ppb gold (Klieforth and others, 2001). The Bureau also collected 2 samples of silicified rhyolite with 3 percent pyrite, and 15 soil samples from a backfilled trench and a soil-grid line at the Macaroni prospect, near the north end of a 150-foot by 350-foot color anomaly (Kurtak and others, 2002). Seven of the soil samples had detectable gold values ranging from 6 to 24 ppb gold, but the other samples did not show anomalous metal values.

Production notes:

Reserves:

Additional comments:

This site is the Indian River trend, U.S. BLM MILS location 0020470019 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Miller and Ferrians, 1968; Patton and others, 1977; Liss and others, 1993; Oddenino and others, 1995; North Star Exploration Inc., 1999 (Mineral potential of the Hughes Block Interior Alaska); North Star Exploration Inc., 2000; State of Alaska Department of Natural Resources, 2000; Klieforth and others, 2001; North Star Exploration Inc., 2001; Szumigala and others, 2001; Kurtak and others, 2002; Interagency Minerals Coordinating Group, 2004.

Primary reference: Miller and Ferrians, 1968

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/04/05

Site name(s): Unnamed (upper Utopia Creek); Whiz-Bang

Site type: Occurrence

ARDF no.: MZ005

Latitude: 65.9871 **Quadrangle:** MZ D-2

Longitude: 153.7821

Location description and accuracy:

This lode occurrence is on the southeast flank of the Indian Mountains at the upper end of Utopia Creek. The site corresponds to Alaska Division of Geological Surveys sample location 92SL213E (Liss and others, 1993); it is in the southeast quarter of section 22, T. 7 N., R. 24 E., Kateel River Meridian. This occurrence is included in location 3 of Cobb (1972). The location is accurate.

Commodities:

Main: Ag, Au, Pb, Zn

Other: As, Ba, Cu, Sb

Ore minerals: Arsenopyrite, galena, malachite, pyrite, sphalerite, stibnite, tetrahedrite

Gangue minerals: Barite, dolomite?, epidote, quartz

Geologic description:

The rocks in the vicinity of upper Utopia Creek consist of Cretaceous andesitic and basaltic volcanic rocks interlayered with chert, cherty tuff, conglomerate, and coquinoidal limestone (Patton and others, 1977). The Indian Mountain pluton crops out approximately 2 miles north and west of the creek, and pod-like intrusive bodies of fine-grained, pyritiferous, silicified, felsic rock occur along an east-northeast-trending fault about 1.5 miles south of the creek.

The rocks in Utopia Creek are slightly metamorphosed andesite cut by fine-grained felsic dikes (Miller and Ferrians, 1968). Abundant boulders of massive white barite, up to 2 feet in diameter, are in the tailings of an abandoned placer mine near the head of Utopia Creek (MZ006). Some of the boulders contain fine-grained tetrahedrite, sphalerite, and galena. Two samples of the barite assayed up to 1.3 parts per million (ppm) gold, 700 ppm silver, 1,500 ppm copper, 1,500 ppm lead, 1,000 ppm antimony, and 3,000 ppm zinc. A stream-sediment sample taken near the upper end of the tailings contained 2,000 ppm lead and 700 ppm zinc; it also contained significant copper, gold, and barium. Miller and Ferrians (1968) note that the lode mineralization at this site does not appear to be associated directly with the Indian Mountain pluton, because no granitic rock occurs in the placer tailings. Instead, they hypothesize that the deposit consists of mineralized veins in the andesitic volcanic rocks.

Three lode mining claims and 1 placer mining claim (Cam and Whiz-Bang claims) were active over the upper part of Utopia Creek from 1971 to 1977 (Kardex file 047-012; unpublished record, Alaska Division of Mining, Land & Water). Azel Crandall and Joseph Manga performed assessment work that consisted of brushing lines, flagging lines, digging prospect pits, trenching, and collecting soil and rock samples for assaying.

The Alaska Division of Geological & Geophysical Surveys collected 9 rock samples of the placer tailings, including altered felsic volcanic breccia, massive barite, barite breccia with sulfides in fractures, a silicified vein with arsenopyrite and other sulfides, a coarsely crystalline quartz vein with sulfides and barite, and epidote-rich, sheared volcanic rock (Liss and others, 1993). The samples contained up to 1,860 parts per billion (ppb) gold, 50 or more parts per million (ppm) silver, 147 ppm arsenic, 31 ppm gallium, 96 ppm antimony, 20,000 or more ppm barium, 286 ppm copper, 21 ppm molybdenum, 1,602 ppm lead, and 1,156 ppm zinc.

North Star Exploration, Inc. explored the Indian Mountain area as part of a mineral evaluation of Doyon

Limited's lands in the late 1990's (North Star Exploration, Inc., 2000). North Star contracted an airborne (helicopter) magnetic-electromagnetic-radiometric survey that suggested extensive alteration of the volcanic bedrock in a high-angle-fault-bounded block. North Star also reported gold values greater than 1 ppm in rock samples and greater than 50 ppb in soil samples from the Utopia Creek area.

The U.S. Bureau of Land Management sampled mineral sites in the area of this occurrence (Kurtak and others, 2002). Their samples of barite boulders with pyrite, dolomite(?), and tetrahedrite(?) contained up to 53.7 percent barium, 5.565 ppm gold, 4,846 ppm lead, 1,108 ppm zinc, 344 ppm arsenic, 342 ppm silver, and 173 ppm antimony (Klieforth and others, 2001; Kurtak and others, 2002). A float sample of iron-stained fault breccia contained 1.95 percent lead, 599 ppm zinc, 160 ppm copper, and 100 ppb gold. Several panned-concentrate samples in the area were anomalous in barium, zinc, lead, and gold (Kurtak and others, 2002). Epidote-bearing quartz veinlets with trace malachite and tetrahedrite(?) cut andesite bedrock at the head of Utopia Creek. A sample of that mineralization contained 529 ppm barium and 194 ppm copper.

Alteration:
Silicification.

Age of mineralization:
Cretaceous or younger.

Deposit model:
Volcanic-hosted deposit: Polymetallic vein or possibly a porphyry copper (Cox and Singer, 1986; model 17; 22c)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
17?, 22c?

Production Status: None

Site Status: Inactive

Workings/exploration:
Three lode mining claims and 1 placer mining claim (Cam and Whiz-Bang claims) were active over the upper part of Utopia Creek from 1971 to 1977 (Kardex file 047-012; unpublished record, Alaska Division of Mining, Land & Water). Azel Crandall and Joseph Manga performed assessment work consisting of brushing lines, flagging lines, digging prospect pits, trenching, and collecting soil and rock samples for assaying.

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North Star Exploration, Inc. explored the Indian Mountain area as part of a mineral evaluation of Doyon Limited's lands in the late 1990's (North Star Exploration, Inc., 2000). North Star contracted an airborne (helicopter) magnetic-electromagnetic-radiometric survey that suggested extensive alteration of the volcanic bedrock in a high-angle-fault-bounded block. North Star also reported gold values greater than 1 ppm in rock samples and greater than 50 ppb in soil samples from the Utopia Creek area.

The U.S. Bureau of Land Management sampled mineral sites in the area of this occurrence (Kurtak and others, 2002). Their (selected) samples of barite boulders containing pyrite, dolomite(?), and tetrahedrite(?) contained up to 53.7 percent barium, 5.565 ppm gold, 4,846 ppm lead, 1,108 ppm zinc, 344 ppm arsenic, 342 ppm silver, and 173 ppm antimony (Klieforth and others, 2001; Kurtak and others, 2002). A float sample of iron-stained fault breccia contained 1.95 percent lead, 599 ppm zinc, 160 ppm copper, and 100 ppb gold. Several pan-concentrate samples in the area were anomalous in barium, zinc, lead, and gold (Kurtak and others, 2002). Epidote-bearing quartz veinlets with trace malachite and tetrahedrite(?) cut andesite bed-

rock at the head of Utopia Creek. A sample of that mineralization contained 529 ppm barium and 194 ppm copper.

Production notes:

Reserves:

Additional comments:

This site is the Whiz-Bang, U.S. BLM MILS location 0020470012 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Miller and Ferrians, 1968; Cobb, 1972; Patton and others, 1977; Liss and others, 1993; Oddenino and others, 1995; North Star Exploration Inc., 2000; Klieforth and others, 2001; Kurtak and others, 2002; Interagency Minerals Coordinating Group, 2004.

Primary reference: Miller and Ferrians, 1968; Kurtak and others, 2002

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 12/29/04

Site name(s): Utopia Creek

Site type: Mine

ARDF no.: MZ006

Latitude: 65.9940 **Quadrangle:** MZ D-2

Longitude: 153.6865

Location description and accuracy:

The Utopia Creek placer workings follow the channel of Utopia Creek for about 3 miles upstream from its junction with the Indian River. This site is located at the lower part of the placer tailings just east of the Utopia landing strip and approximately 1,000 feet southeast of the town of Utopia, in section 19, T. 7 N., R. 25 E., Kateel River Meridian. The workings are shown on the Melozitna D-2 quadrangle topographic map; they stretch across 6 sections in T. 7 N., R. 24 E. and R. 25 E. This site is location 3 of Cobb (1972). The location is accurate.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The rocks in the vicinity of of Utopia Creek area consist of Cretaceous andesite and basalt interlayered with chert, cherty tuff, conglomerate, and coquinoidal limestone (Patton and others, 1977). The Indian Mountain pluton crops out approximately 2 miles northwest of the placer workings, and podlike intrusions of fine-grained, pyritiferous, silicified, felsic rock occur along an east-northeast-trending fault about 1.5 miles south of the workings. The gradient of upper Utopia Creek is about 200 feet per mile; the gradient at the mouth is about 75 feet per mile. Unlike other gold-bearing streams in the area, Utopia Creek does not drain the Indian Mountain granodiorite intrusion (Miller and Ferrians, 1968).

Bedrock in Utopia Creek is slightly metamorphosed andesite cut by fine-grained felsic rock (Miller and Ferrians, 1968). Boulders of massive barite are in the tailings of an abandoned placer mine near the head of Utopia Creek, and some of those boulders contain tetrahedrite, sphalerite, and galena (Miller and Ferrians, 1968). That mineralization is described in record MZ005.

Gold was discovered in Utopia Creek in about 1906 (Cobb, 1975; Eberlein and others, 1977) and mining was reported as early as 1915. J.Q. Hackett, R.B. Norris, and C.B. Frank prospected and did a little mining on Utopia Creek in 1929 (Wimmler, 1929). L. McGee and a crew of 12 men began prospecting on Utopia Creek in 1936 (Smith, 1938). Overburden was stripped and a bedrock drain dug in 1937 by about a 20-man crew employed by McGee (Smith, 1939 [B 910A]). Large-scale mining was started in 1938 (Smith, 1939 [B 917-A]). McGee ran the operation and for several years employed approximately 30 men. At the time, Utopia Creek was the largest placer operation in the district (Smith, 1941). In 1939, McGee divided the property into two segments. The upstream section was mined by hydraulic methods when water was available. The paystreak in that portion of the creek was on the south side of the drainage. Heavy machinery and draglines were used on the downstream portion, where gravels were as much as 25 feet thick (Smith, 1941). Large-scale mining continued until 1952, when interest apparently waned (Cobb, 1973). U.S. Geological Survey topographic maps of the Melozitna quadrangle show workings along approximately 3.5 miles of Utopia Creek; the upper tailings continuing along a draw on the south side of the creek. The remains of a 40-foot long washing plant lie in a heavily vegetated area along the lower creek (Kurtak and others, 2002). The configuration of the tailings piles indicates that mining concentrated on deposits in the modern stream

channel. The average grade of the placer, which started at 0.032 ounce of gold per cubic yard, was down to 0.003 ounce per cubic yard by the last year of production (Kurtak and others, 2002).

At least 8,850 ounces of gold were mined on Utopia Creek (Cobb and Miller, 1981). The fineness of a placer gold sample from Utopia Creek was 849 (Metz and Hawkins, 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; medium

Site Status: Inactive

Workings/exploration:
Gold was discovered in Utopia Creek around 1906 (Cobb, 1975; Eberlein and others, 1977) and mining was reported as early as 1915. J.Q. Hackett, R.B. Norris, and C.B. Frank prospected and did a little mining on Utopia Creek in 1929 (Wimmler, 1929). L. McGee and a crew of 12 men began prospecting on Utopia Creek in 1936 (Smith, 1938). Overburden was stripped and a bedrock drain dug in 1937 by about a 20-man crew employed by McGee (Smith, 1939 [B 910A]). Large-scale mining was started in 1938 (Smith, 1939 [B 917-A]). McGee ran the operation and for several years employed approximately 30 men. At the time, Utopia Creek was the largest placer operation in the district (Smith, 1941). In 1939, McGee divided the property into two segments. The upstream section was mined by hydraulic methods when water was available. The paystreak in that portion of the creek was on the south side of the drainage. Heavy machinery and draglines were used on the downstream portion, where gravels were as much as 25 feet thick (Smith, 1941). Large-scale mining continued until 1952, when interest apparently waned (Cobb, 1973). U.S. Geological Survey topographic maps of the Melozitna quadrangle show workings along approximately 3.5 miles of Utopia Creek, with the upper tailings continuing along a draw on the south side of the creek. The remains of a 40-foot long placer wash plant lie in a heavily vegetated area along the lower creek (Kurtak and others, 2002). The configuration of the tailings piles indicates that mining concentrated on deposits in the modern stream channel. The average grade of the placer, which started at 0.032 ounce of gold per cubic yard, was down to 0.003 ounce per cubic yard by the last year of production (Kurtak and others, 2002).

Production notes:
Utopia Creek was probably the largest gold producer in the Koyukuk district (Smith, 1941) but there is no detailed record of production. Cobb and Miller (1981) estimate that about 8,850 ounces of gold were mined on Utopia Creek. However, the duration and extent of the mine workings suggest the recovery of substantially more gold. The fineness of a placer gold sample from Utopia Creek was 849 (Metz and Hawkins, 1981).

Reserves:

Additional comments:
This site is the Utopia Creek, U.S. BLM MILS location 0020470011 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:
Wimmler, 1929; Smith, 1938; Smith, 1939 (B 910); Smith, 1939 (B 917-A); Smith, 1941; Miller and Ferrians, 1968; Cobb, 1972; Cobb, 1973; Cobb, 1975; Eberlein and others, 1977; Patton and others, 1977; Cobb

and Miller, 1981; Metz and Hawkins, 1981; Oddenino and others, 1995; Kurtak and others, 2002; Interagency Minerals Coordinating Group, 2004.

Primary reference: Cobb, 1975

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 12/29/04

Site name(s): Flat Creek; Indian River

Site type: Prospects

ARDF no.: MZ007

Latitude: 65.9928 **Quadrangle:** MZ D-2

Longitude: 153.6442

Location description and accuracy:

The Flat Creek and Indian River placer prospects are southeast of the Indian Mountains in the Hughes mining district. Mining claims extend along Flat Creek for about 2 miles above its junction with the Indian River, then down Indian River for 6 miles. The northeastern part of the mining claims extends into the Hughes quadrangle. The site is located at the junction of Flat Creek with the Indian River, approximately 1.5 miles east of the Utopia townsite, near the center of section 20, T. 7 N., R. 25 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The rocks in the vicinity of these placer prospects consists of Cretaceous andesitic to basaltic volcanic rocks interlayered with chert, cherty tuff, conglomerate, and coquinoidal limestone (Patton and others, 1977). The Indian Mountain pluton crops out approximately 3 miles north and west of the placer workings, and podlike intrusions of fine-grained, pyritiferous, silicified, felsic rocks occur along an east-northeast-trending fault about 1 mile to the southwest (Patton and others, 1977). The fault may extend into the Flat Creek drainage. The area of the prospects is largely covered by extensive Quaternary alluvial and colluvial deposits.

Gold was first discovered on Indian River in the early 1900s (Eakin, 1916). The gold-bearing placers are almost entirely in the bed of the modern stream and no bench deposits are known. The principal placers on the river are in the Hughes quadrangle.

Four mining claims were staked on Flat Creek and at least 52 mining claims were staked on the Indian River in 1981 by J. Taylor (Kardex file 047-022; unpublished record, Alaska Division of Mining, Land & Water). The claims extended downstream into the Hughes quadrangle. No work other than the claim staking is recorded. The same area was restaked in 1983 by Kelly Dolphin, who recorded the Golden Eagle group of 59 mining claims. Work in 1984 and 1985 totaled about 70 person-days and consisted of geologic study, a magnetometer survey, air photo study, blocking out the paystreak with test pits, and sluicing a small yardage of samples. It is unclear which area of the claim block was worked. The area was restaked in 1987 by William Morterud and Wallace Saline, with help from Charles McMahon (Kardex file 047-027; unpublished record, Alaska Division of Mining, Land & Water). They located 8 mining claims on Flat Creek and 28 claims on Indian River. Annual affidavits of labor were filed for 36 to 37 mining claims from 1988 to 1991, and an affidavit of labor for 4 mining claims (Hankie #1 to #4) at the junction of Flat Creek and the Indian River was filed for 1994, 1996, 1997, and 1999 to 2002 (Kardex file 047-027; unpublished record, Alaska Division of Mining, Land & Water; unpublished Alaska Department of Natural Resources Office of the Recorder records). The labor totaled 217 person-days and included digging test pits on the banks of Flat Creek and the Indian River, making test cuts, and taking and testing surface samples. No production was noted for any of the above work. There is no record of work since 2002.

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:
Four mining claims were staked on Flat Creek and at least 52 mining claims were staked on the Indian River in 1981 by J. Taylor (Kardex file 047-022; unpublished record, Alaska Division of Mining, Land & Water). The claims extended downstream into the Hughes quadrangle. No work other than the claim staking is recorded. The same area was restaked in 1983 by Kelly Dolphin, who recorded the Golden Eagle group of 59 mining claims. Work in 1984 and 1985 totaled about 70 person-days and consisted of geologic study, a magnetometer survey, air photo study, blocking out the paystreak with test pits, and sluicing a small yardage of samples. It is unclear which area of the claim block was worked. The area was restaked in 1987 by William Morterud and Wallace Saline, with help from Charles McMahon (Kardex file 047-027; unpublished record, Alaska Division of Mining, Land & Water). They located 8 mining claims on Flat Creek and 28 claims on Indian River. Annual affidavits of labor were filed for 36 to 37 mining claims from 1988 to 1991, and an affidavit of labor for 4 mining claims (Hankie #1 to #4) at the junction of Flat Creek and the Indian River was filed for 1994, 1996, 1997, and 1999 to 2002 (Kardex file 047-027; unpublished record, Alaska Division of Mining, Land & Water; unpublished Alaska Department of Natural Resources Office of the Recorder records). The labor totaled 217 person-days and included digging test pits on the banks of Flat Creek and the Indian River, making test cuts, and taking and testing surface samples. No production was noted for any of the above work. There is no record of work since 2002.

Production notes:
There is no record of production but a small amount of gold may have been produced during the exploration of the many claims.

Reserves:
Probably none.

Additional comments:

References:
Eakin, 1916; Patton and others, 1977.

Primary reference: Kardex file 047-027; unpublished record, Alaska Division of Mining, Land & Water

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/07/05

Site name(s): Unnamed (southwest of Hochandochtla Mountain)

Site type: Occurrences

ARDF no.: MZ008

Latitude: 65.5124 **Quadrangle:** MZ C-4

Longitude: 154.8432

Location description and accuracy:

The Alaska Division of Geological and Geophysical Surveys (ADGGS) reported 6 occurrences of sulfide-bearing and/or veined granodiorite in a 6-square-mile area that extends from Hochandochtla Mountain to south of Anotleneega Mountain. The site is located at the most mineralized site, ADGGS station 92DNS113 (Solie and others, 1993 [Public-Data File 93-18]). It is at an elevation of about 1,600 feet, 0.4 mile southwest of the center of section 2, T. 1 N., R. 19 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Cu

Other: Bi, Mo, W

Ore minerals: Azurite, chalcopyrite, malachite, pyrite

Gangue minerals: Quartz, tourmaline

Geologic description:

The rocks in the vicinity of these occurrences consist of Lower Cretaceous andesite, pillow basalt, andesitic tuff, volcanic conglomerate, volcanic breccia, chert, cherty tuff, and coquinoidal limestone (Patton and others, 1977). Younger Cretaceous rocks include graywacke and mudstone. Intrusive rocks include Upper Cretaceous dacite and rhyolite, porphyry plugs(?), and a stock of fine-to medium-grained, biotite-hornblende granodiorite. The granodiorite has extensively hornfelsed the bedded country rocks.

In the 1970s, the U.S. Geological Survey identified chalcopyrite and malachite in a fine-grained granitic dike in hornfelsed volcanic rock just south of Hochandochtla Mountain (T.P. Miller, 1978, written commun., in Chapman and Patton, 1978). The Alaska Division of Geological & Geophysical Surveys subsequently collected 8 rock samples at 3 sites on Hochandochtla Mountain (Solie and others, 1993 [Public-Data File 93-18]). The samples included quartz- or quartz-tourmaline-veined biotite granodiorite that contains variable amounts of chalcopyrite, pyrite, malachite, and azurite; andesite with trace chalcopyrite; and andesite agglomerate with chalcopyrite. The samples contained up to 1,179 parts per million (ppm) copper, 47 ppm bismuth, 18 ppm molybdenum, 38 ppm antimony, 350 ppm cerium, and 80 ppm tungsten.

Alteration:

Widespread contact metamorphism (hornfelsing).

Age of mineralization:

Cretaceous or younger based on the age of the host rocks.

Deposit model:

Porphyry Cu (Cox and Singer, 1986; model 17)

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

17

Production Status: None

Site Status: Inactive

Workings/exploration:

In the 1970s, the U.S. Geological Survey identified chalcopyrite and malachite in a fine-grained granitic dike in hornfelsed volcanic rock just south of Hochandochtla Mountain (T.P. Miller, 1978, written commun., in Chapman and Patton, 1978). The Alaska Division of Geological & Geophysical Surveys subsequently collected 8 rock samples at 3 sites on Hochandochtla Mountain (Solie and others, 1993 [Public-data file 93-18]). The samples included quartz- or quartz-tourmaline-veined biotite granodiorite containing variable amounts of chalcopyrite, pyrite, malachite, and azurite; andesite with trace chalcopyrite; and andesite agglomerate with chalcopyrite.

Production notes:

Reserves:

Additional comments:

References:

Patton and others, 1977; Chapman and Patton, 1978; Solie and others, 1993 (Public-Data File 93-18).

Primary reference: Solie and others, 1993 (Public-data file 93-18)

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/06/05

Site name(s): Unnamed (south of VABM Flat)

Site type: Occurrences

ARDF no.: MZ009

Latitude: 65.6609 **Quadrangle:** MZ C-2

Longitude: 153.9841

Location description and accuracy:

Several occurrences of iron-stained felsic intrusive rock are on a half-mile-long section of ridge due south of hill 3214 (VABM Flat). The site corresponds to ADGGS station 92DNS158 (Solie and others, 1993 [Public-Data File 93-33]). It is at an elevation of 1,700 feet, 0.2 mile southeast of the center of section 13, T. 3 N., R. 23 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Au, Cu

Other: As, Mo, Pb, Sb, W

Ore minerals: Malachite

Gangue minerals:

Geologic description:

The rocks in the vicinity of these occurrences are part of a northeast-trending stock about a mile wide of fine- to medium-grained hornblende-biotite granodiorite (Patton and others, 1977). Patton and others (1977) correlate the granodiorite with the Upper Cretaceous Dulbatna Mountain pluton, dated by K-Ar methods at 82.3 +/-3 Ma (biotite) and 90.0 +/3 Ma (hornblende). The granodiorite intrudes and thermally alters Lower Cretaceous quartz-pebble conglomerate and quartzose sandstone just south of the occurrences, and andesitic and dacitic tuff, agglomerate, breccia, and tuffaceous graywacke about 1 mile to the north.

The Alaska Division of Geological and Geophysical Surveys collected 4 samples along the crest of a short ridge south of VABM Flat. Two samples of iron-stained felsic intrusive rock with sparse malachite were analyzed (Solie and others, 1993 [Public-Data File 93-33]). They contained up to 121 parts per million (ppm) arsenic, 120 parts per billion (ppb) gold, 1,185 ppm copper, 56 ppm molybdenum, 186 ppm lead, 16 ppm antimony, 11 ppm tin, and 15 ppm tungsten.

Alteration:

Country rocks are thermally metamorphosed.

Age of mineralization:

Upper Cretaceous or younger based on the age of the host rocks.

Deposit model:

Sn veins (Cox and Singer, 1986; model 15b), Porphyry Sn (Cox and Singer, 1986; model 20a), Sn-polymetallic veins (Cox and Singer, 1986; model 20b), Polymetallic veins (Cox and Singer, 1986; model 22c)

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

15b, 20a, 20b, 22c

Production Status: None

Site Status: Inactive

Workings/exploration:
Only limited sampling by the Alaska Division of Geological and Geophysical Surveys.

Production notes:

Reserves:

Additional comments:

References:
Patton and others, 1977; Solie and others, 1993 (Public-Data File 93-33).

Primary reference: Solie and others, 1993 (Public-Data File 93-33)

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/04/05

Site name(s): Unnamed (near VABM Flat)

Site type: Occurrences

ARDF no.: MZ010

Latitude: 65.6746 **Quadrangle:** MZ C-2

Longitude: 153.9210

Location description and accuracy:
Several lode occurrences occur in an area of about one-half square mile on the southeastern flank of hill 3214 (VABM Flat), south of upper Indian River. The site corresponds to ADGGS station 92BT319 (Solie and others, 1993 [Public-Data File 93-33]). It is at an elevation of about 2,050 feet, 0.1 mile south of the center of section 8, T. 3 N., R. 24 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Cu, Zn

Other: As, Bi, Mn, Sn, Sr

Ore minerals: Unspecified sulfides

Gangue minerals: Tourmaline

Geologic description:
The rocks in the vicinity of these occurrences are Lower Cretaceous, quartz-pebble conglomerate and quartzose sandstone; andesitic and dacitic tuff, breccia, and agglomerate; and tuffaceous graywacke (Patton and others, 1977). A 7-mile-long by 1-mile-wide stock of fine- to medium-grained hornblende-biotite granodiorite is within 0.5 mile of the occurrences and thermally alters the volcanic and sedimentary rocks. Patton and others (1977) correlate the stock with the Upper Cretaceous Dulbatna Mountain pluton, dated by K-Ar at 82.3 +/-3 Ma (biotite) and 90.0 +/3 Ma (hornblende).
The Alaska Division of Geological and Geophysical Surveys collected 4 samples along the crest of a short ridge southeast of VABM Flat and 3 were submitted for trace-element analysis (Solie and others, 1993 [Public-Data File 93-33]). Samples of tourmaline veins in hornfels and of sulfide-tourmaline veins contained up to 82 parts per million (ppm) arsenic, 52 ppm bismuth, 268 ppm copper, and 1,057 ppm manganese).

Alteration:
Rocks are thermally metamorphosed ('hornfelsed'). Tourmaline veins are bordered by unspecified alteration.

Age of mineralization:

Deposit model:
Sn veins (Cox and Singer, 1986; model 15b), Porphyry Sn (Cox and Singer, 1986; model 20a), Sn-polymetallic veins (Cox and Singer, 1986; model 20b)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
15b, 20a, 20b

Production Status: None

Site Status: Inactive

Workings/exploration:

The Alaska Division of Geological and Geophysical Surveys collected 4 rock samples along the crest of a ridge southeast of VABM Flat and 3 were submitted for trace-element analysis (Solie and others, 1993 [Public-Data File 93-33]).

Production notes:

Reserves:

Additional comments:

References:

Patton and others, 1977; Solie and others, 1993 (Public-Data File 93-33).

Primary reference: Solie and others, 1993 (Public-Data File 93-33)

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/04/05

Site name(s): Melozimoran Creek

Site type: Prospect

ARDF no.: MZ011

Latitude: 65.6012 **Quadrangle:** MZ C-1

Longitude: 153.1703

Location description and accuracy:
The locations of several placer prospect pits on and near Melozimoran Creek are uncertain. For this record, the site is located at the confluence of Melozimoran Creek with Little Melozitna River, in the SW1/4 of section 1, T. 9 N., R. 27 E., Kateel River Meridian.

Commodities:

Main: Au, Sn

Other:

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:
Melozimoran Creek has a meandering channel and low gradient. The rocks in the vicinity are Precambrian or Paleozoic, greenschist-grade micaceous quartzite and quartz-chlorite-muscovite schist and subordinate glaucophane-bearing schist, marble, and greenstone (Patton and others, 1977). The closest igneous body is the quartz monzonite and granite Melozitna pluton, whose northern contact is about 8 miles south of the confluence of Melozimoran Creek and Little Melozimoran River. Patton and others (1977) date the pluton as Early Cretaceous age on the basis of a K-Ar date of 111 +/- 3 Ma.
Placer mining or prospecting on Melozimoran Creek is poorly documented. A few prospect pits were sunk between 1913 and 1918 near the mouth of the creek and some gold and cassiterite were recovered (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: Yes; small

Site Status: Inactive

Workings/exploration:
Placer mining or prospecting on Melozimoran Creek is poorly documented. A few prospect pits were sunk between 1913 and 1918 near the mouth of the creek and some gold and cassiterite were recovered (Chapman and others, 1963).

Production notes:

An undetermined small amount of gold and cassiterite were recovered from Melozimoran Creek (Chapman, 1963).

Reserves:

Additional comments:

This site is the Melozimoran Creek, U.S. BLM MILS location 0020470015 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Chapman and others, 1963; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Chapman and others, 1963

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/19/05

Site name(s): Unnamed (south of Dulbatna Mountain)

Site type: Occurrences

ARDF no.: MZ012

Latitude: 65.3193 **Quadrangle:** MZ B-5

Longitude: 155.2669

Location description and accuracy:

Four lode occurrences are in a 6-square-mile area of ridges and hills due south of Dulbatna Mountain. The site corresponds to ADGGS station 92BT268 (Solie and others, 1993 [Public-Data File 93-18]). It is at an elevation of 1,600 feet, in the northwest corner of section 18, T. 2 S., R. 18 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Cu, Zn

Other: Bi, Mn, Sn, V

Ore minerals: Pyrite, unspecified sulfides

Gangue minerals: Carbonate, quartz

Geologic description:

The rocks in the vicinity of these occurrences are part of a northeast-trending, oval-shaped outcrop of fine- to medium-grained hornblende-biotite granodiorite that is approximately 2.5 miles wide and 4.5 miles long (Patton and others, 1977). Patton and others (1977) correlate the granodiorite with the Dulbatna Mountain pluton, which is dated by K-Ar at 82.3 +/- 3 Ma (biotite) and 89.0+/- 3 Ma (hornblende). The granodiorite intrudes and thermally alters the Lower Cretaceous volcanic and sedimentary country rocks to dark-green hornfels. These rocks consist of volcanic (tuffaceous) graywacke, and andesite and dacite tuff, breccia, and agglomerate.

The Alaska Division of Geological and Geophysical Surveys collected 7 rock samples in a 6-square-mile area along the northern contact of an 11-square-mile granodiorite body south of Dulbatna Mountain (Solie and others, 1993 [Public-Data File 93-18]). The samples included ferricrete in biotite hornfels, quartz-carbonate veins in hornfels, fine-grained sedimentary rock with sparse pyrite, graywacke with sulfide, and unmineralized biotite-hornblende granodiorite. The hornfels and graywacke samples contained up to 43 parts per million (ppm) bismuth, 188 ppm copper, 1,789 ppm manganese, 44 ppm tin, 264 ppm vanadium, and 162 ppm zinc.

Alteration:

Thermal metamorphism.

Age of mineralization:

Probably Late Cretaceous, assuming that the locally mineralized hornfels and graywacke reflects emplacement of the Dulbatna Mountain pluton.

Deposit model:

Porphyry Cu (Cox and Singer, 1986; model 17), Polymetallic veins (Cox and Singer, 1986; model 22c)

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

17, 22c

Production Status: None

Site Status: Inactive

Workings/exploration:

The Alaska Division of Geological and Geophysical Surveys collected 7 rock samples in a 6-square-mile area along the northern contact of an 11-square-mile granodiorite body south of Dulbatna Mountain (Solie and others, 1993 [Public-Data File 93-18]).

Production notes:

Reserves:

Additional comments:

References:

Patton and others, 1977; Solie and others, 1993 (Public-Data File 93-18).

Primary reference: Solie and others, 1993 (Public-Data File 93-18)

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/09/05

Site name(s): Sheri; Big Creek

Site type: Prospect

ARDF no.: MZ013

Latitude: 65.2757 **Quadrangle:** MZ B-4

Longitude: 154.6353

Location description and accuracy:

The Sheri prospect is south of Big Creek above its junction with the Melozitna River. At least 72 mining claims were located at this site in 1977 and 84 claims were worked on in 1979 (Kardex file 047-015; unpublished record, Alaska Division of Mining, Land & Water). The claims covered all or parts of sections 25, 26, 27, 34, 35, and 36, T. 2 S., R. 20 E., Kateel River Meridian; all or parts of sections 29, 30, 31, 32, and 33, T. 2 S., R. 21 E.; and all or part of section 6, T. 3 S., R. 21 E. For this record, the site is located at the approximate center of the claim block at hill 1529, which is about 0.4 mile north of the center of section 31, T. 2 S., R. 21 E. The location is accurate.

Commodities:

Main: U

Other:

Ore minerals:

Gangue minerals:

Geologic description:

The rocks in the vicinity of this prospect are Permian to Jurassic spilitic basalt and diabase largely metamorphosed to greenstone; and Lower Cretaceous, poorly-sorted conglomerate with pebble- to cobble-size clasts chiefly of mafic igneous rocks and variously-colored chert (Patton and others, 1977). The rocks generally are mildly thermally metamorphosed. A small intrusion of Upper Cretaceous dacite, and andesite porphyry flows and crystal tuff crops out about 3 miles northeast of the prospect area, and the western contact of the Lower Cretaceous, quartz monzonite Melozitna pluton is 3 miles to the east. The quartz monzonite probably accounts for the thermal metamorphism of the rocks in the Big Creek area.

The Cotter Corporation began work in the Big Creek area on May 23, 1977 with an airborne spectrometer survey and the staking 3 prospecting sites (Kardex file 047-015; unpublished record, Alaska Division of Mining, Land & Water). The prospecting sites were selected on the basis of a review of publicly released NURE data (Jim Paschis, oral commun., 2004). Seventy-two state mineral claims were subsequently staked concurrently with ground radiometric surveys and geochemical sampling. Staking was completed by June 9, 1977. A track etch (Alpha) survey was then conducted as well as geological mapping and measuring of section. Exploration in 1977 ended on June 29 after 38 days of work by 4 Cotter geologists and 2 Cotter field assistants, and an additional 18 days by 2 surveyors. Total expenditures on the Sheri claim group in 1977 totaled more than $120,000.

The Cotter Corporation continued work on the Sheri claim group in 1978. On September 1, 1978 Cotter geologists recovered the 250 etch cups distributed over the claims in 1977 (Kardex file 047-015; unpublished record, Alaska Division of Mining, Land & Water), and Paul DeRenne and Dave Park reviewed the field data and alpha track anomalies (Jim Paschis, oral commun., 2004). Four geologists worked in the area for 14 days, and 12 additional state mining claims were staked. Geological work included mapping traverses and geochemical sampling that included 21 stream-sediment samples, 2 rock chip samples, and 1 water sample. Total expenditures on the Sheri claim group in 1978 totaled more than $27,000. Affidavits of annual labor were filed for the 23 Sheri claims by the Cotter Corporation in April 1980 (unpublished Alaska Department of Natural Resources Office of the Recorder records). The claims were in good standing through

1980. There is no record of activity on this claim group after 1980.

Alteration:

Age of mineralization:

Deposit model:
Unknown, possibly Volcanogenic U (Cox and Singer, 1986; model 25f)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
25f?

Production Status: None

Site Status: Inactive

Workings/exploration:
The Cotter Corporation began work in the Big Creek area on May 23, 1977 with an airborne spectrometer survey and the staking 3 prospecting sites (Kardex file 047-015; unpublished record, Alaska Division of Mining, Land & Water). The prospecting sites were selected on the basis of a review of publicly released NURE data (Jim Paschis, oral commun., 2004). Seventy-two state mineral claims were subsequently staked concurrently with ground radiometric surveys and geochemical sampling. Staking was completed by June 9, 1977. A track etch (Alpha) survey was then conducted as well as geological mapping and measuring of section. Exploration in 1977 ended on June 29 after 38 days of work by 4 Cotter geologists and 2 Cotter field assistants, and an additional 18 days by 2 surveyors. Total expenditures on the Sheri claim group in 1977 totaled more than $120,000.

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Production notes:

Reserves:

Additional comments:
This site is the Sheri, U.S. BLM MILS location 0020470009 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:
Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Kardex file 047-015; unpublished record, Alaska Division of Mining, Land & Water

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/04/05

Site name(s): Unnamed (north of North Fork Hot Springs Creek)

Site type: Occurrences

ARDF no.: MZ014

Latitude: 65.2689 **Quadrangle:** MZ B-3

Longitude: 154.3171

Location description and accuracy:
Several occurrences are north of North Fork Hot Springs Creek in sections 34, 35, and 36, T. 2 S., R. 22 E., Kateel River Meridian. This site is located at U.S. Geological Survey sample 78AMM173A (U.S. Geological Survey, 2004). It is at an elevation of about 3,000 feet, in the NE1/4SE1/4 of section 34, T. 2 S., R. 22 E. The location is accurate to within 1,000 feet.

Commodities:

Main: Th, U

Other:

Ore minerals:

Gangue minerals:

Geologic description:
The area of these occurrences is underlain by the Melozitna pluton, a mid-Cretaceous (111+/-3 Ma), coarse-grained, porphyritic, biotite quartz monzonite and granite stock (Patton and others, 1977). The pluton contains above-average amounts of uranium and thorium (Eberlein and others, 1977). The U.S. Geological Survey sampled the pluton in 1978 during their investigations for uranium in western Alaska. A USGS sample of the granite (sample no. 78AMM173A) contained 97.2 parts per million (ppm) thorium and 37.6 ppm uranium (U.S. Geological Survey, 2004). Other USGS samples contained 72.7 to 173 ppm thorium and 17.6 to 52.1 ppm uranium.

Union Carbide Corp. staked 301 state mining claims in 1977 across this part of the Melozitna pluton (Kardex file 047-014; unpublished record, Alaska Division of Mining, Land & Water). Assessment work in 1978 was filed for 20 claims in the portion of the Hot claim block covering parts of sections 34, 35, and 36, T. 2S., R. 22 E. The 20 man-days of assessment work consisted of ground geologic examination, prospecting, airborne radiometric surveying, ground radiometric surveying, and geochemical sampling.

Alteration:

Age of mineralization:
The host rock is dated at 111+/-3 Ma (Patton and others, 1977).

Deposit model:
Granite-hosted uranium-thorium deposit; thorium-rare earth veins(?) (Bliss, 1992; model 11d)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
11d?

Production Status: None

Site Status: Inactive

Workings/exploration:

The U.S. Geological Survey sampled the Melozitna pluton in 1978 during their investigations for uranium in western Alaska. Union Carbide Corp. staked 301 state mining claims in 1977 across this part of the Melozitna pluton (Kardex file 047-014; unpublished record, Alaska Division of Mining, Land & Water). Assessment work in 1978 was filed for 20 claims in the part of the Hot claim block covering parts of sections 34, 35, and 36, T. 2S., R. 22 E. The assessment work consisted of ground geologic surveys, prospecting, airborne radiometric surveying, ground radiometric surveying, and geochemical sampling.

Production notes:

Reserves:

Additional comments:

References:

Eberlein and others, 1977; Patton and others, 1977; U.S. Geological Survey, 2004.

Primary reference: U.S. Geological Survey, 2004; this record

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/12/05

Site name(s): Wolf Creek; Yoder Creek; Younder Creek; Crooked Creek; West Creek

Site type: Mine

ARDF no.: MZ015

Latitude: 65.4124 **Quadrangle:** MZ B-3

Longitude: 154.0521

Location description and accuracy:

Placer gold was mined for about 8 miles of Wolf Creek. Claims extend from about 2 miles above its junction with the Melozitna River and the mining continued upstream for 6 miles. The site is at the midpoint of the mining claims, 0.2 mile west of the center of section 12, T. 1 S., R. 23 E., Kateel River Meridian. The location is accurate to within 500 feet. This record includes gold placer mining claims staked on unnamed tributaries to Wolf Creek.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Upper Wolf Creek drains the northwestern part of the Lower Cretaceous (111 +/3 Ma) Melozitna pluton, a stock of porphyritic, locally gneissic, biotite quartz monzonite (Patton and others, 1977). The lower 8 miles of Wolf Creek crosses an area of Cretaceous to Precambrian rocks covered by Quaternary surficial deposits. The rocks include Precambrian or Paleozoic quartzite and micaceous quartzite, and subordinate quartz-mica schist, marble, and calc-silicate rock; Permian to Jurassic, spilitic basalt and diabase; and Lower Cretaceous conglomerate.

Mining claims were located by Leon and Ethel Tromblee on Yoder, Younder, Crooked, and West creeks from 1955 to 1957 (Kardex file 047-002; unpublished record, Alaska Division of Mining, Land & Water). Younder Creek is described by them as a tributary of the Melozitna River, but its location apparently coincides with that of Wolf Creek on the 1962 edition of the Melozitna B-3 topographic map; and West Creek may coincide with West Fork on the B-3 map. The Tromblees located 21 claims on Younder Creek from 1955 to 1956; 9 mining claims on Crooked Creek in 1956 and 1957; and 4 claims on West Creek in 1957. The only development work on these claims was sinking shafts and building a cabin in 1957. Francois Masschelin and George Swanson staked 13 mining claims on West Creek from 1957 to 1959, but there is no record of work on their claims (Kardex file 047-011; unpublished record, Alaska Division of Mining, Land & Water).

Kenneth Frederic staked 19 mining claims on Wolf Creek in 1983 (Kardex files 047-020 and 047-021; unpublished records, Alaska Division of Mining, Land & Water). In 1984, Frederic melted through the permafrost on Big Red claim #7, and dug a shaft 11 feet deep on bench gravels. He also dug numerous test holes, up to 5 feet deep, on adjacent claims.

Nancy Castle located the Wolfie #1 to #5 claims in 1984 and Bill Suess assisted in sinking shafts up to 5 feet deep (Kardex file 047-023; unpublished record, Alaska Division of Mining, Land & Water). Gravel from the shafts was tested for placer gold by putting the material through a rocker box. Additional samples were sent to Anchorage for testing. An 11-foot shaft was sunk in 1985. By 1986, Castle held 32 mining claims on Wolf Creek; and Suess conducted annual labor consisting of burning timber to melt permafrost while sinking shafts, timber-cribbing shafts and drifts, and digging open cuts on the benches. The shafts

ranged from 8 to 20 feet deep, and the bench cuts ranged from 3 to 6 feet deep. The 32 claims were worked on and maintained through 2004, with 32 to 75 person-days of work per year (Kardex file 047-023; unpublished record, Alaska Division of Mining, Land & Water; unpublished Alaska Department of Natural Resources Office of the Recorder records). The work included building a windlass, digging shafts up to 27 feet deep, hand sluicing gravel, drifting, mining the creek with hand tools, and processing mined material through a hand sluice. Several tributaries to Wolf Creek were also staked at that time. Assessment work included test pits and surface sampling in 1992 on the Fox #1 to #3 claims (Kardex file 047-026; unpublished record, Alaska Division of Mining, Land & Water); the Beaver #1 to #6 claims (Kardex file 047-025; unpublished record, Alaska Division of Mining, Land & Water); and the Pike #1 claim (Kardex file 047-024; unpublished record, Alaska Division of Mining, Land & Water). No work was recorded on those tributaries after 1992, but the 32 claims on Wolf Creek were active through 2004 (unpublished Alaska Department of Natural Resources Office of the Recorder records).

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:
Mining claims were located by Leon and Ethel Tromblee on Yoder, Younder, Crooked, and West Creeks from 1955 to 1957 (Kardex file 047-002; unpublished record, Alaska Division of Mining, Land & Water). Younder Creek is described by them as a tributary of the Melozitna River, but its location apparently coincides with that of Wolf Creek on the 1962 edition of the Melozitna B-3 topographic map; and West Creek may coincide with West Fork on the B-3 map. The Tromblees located 21 claims on Younder Creek from 1955 to 1956; 9 mining claims on Crooked Creek in 1956 and 1957; and 4 claims on West Creek in 1957. The only development work known on these claims was sinking shafts and building a cabin in 1957. Francois Masschelin and George Swanson staked 13 mining claims on West Creek from 1957 to 1959, but there is no record of work on their claims (Kardex file 047-011; unpublished record, Alaska Division of Mining, Land & Water).

Kenneth Frederic staked 19 mining claims on Wolf Creek in 1983 (Kardex files 047-020 and 047-021; unpublished records, Alaska Division of Mining, Land & Water). In 1984, Frederic melted through the permafrost on Big Red claim #7, and dug a shaft 11 feet deep on bench gravels. He also dug numerous test holes, up to 5 feet deep, on adjacent claims.

Nancy Castle located the Wolfie #1 to #5 claims in 1984 and Bill Suess assisted in sinking shafts up to 5 feet deep (Kardex file 047-023; unpublished record, Alaska Division of Mining, Land & Water). Gravel from the shafts was tested for placer gold by putting the material through a rocker box. Additional samples were sent to Anchorage for testing. An 11-foot shaft was sunk in 1985. By 1986, Castle held 32 mining claims on Wolf Creek; and Suess conducted annual labor consisting of burning timber to melt permafrost while sinking shafts, timber-cribbing shafts and drifts, and digging open cuts on the benches. The shafts ranged from 8 to 20 feet deep, and the bench cuts ranged from 3 to 6 feet deep. The 32 claims were worked on and maintained through 2004 (Kardex file 047-023; unpublished record, Alaska Division of Mining, Land & Water; unpublished Alaska Department of Natural Resources Office of the Recorder records). The work included building a windlass, digging shafts up to 27 feet deep, hand sluicing gravel, drifting, mining the creek with hand tools, and processing mined material through a hand sluice. Several tributaries to Wolf Creek were also staked at that time. Assessment work included test pits and surface sampling in 1992 on the

Fox #1 to #3 claims (Kardex file 047-026; unpublished record, Alaska Division of Mining, Land & Water); the Beaver #1 to #6 claims (Kardex file 047-025; unpublished record, Alaska Division of Mining, Land & Water); and the Pike #1 claim (Kardex file 047-024; unpublished record, Alaska Division of Mining, Land & Water). No work was recorded on those tributaries after 1992, but the 32 claims on Wolf Creek were active through 2004 (unpublished Alaska Department of Natural Resources Office of the Recorder records).

Production notes:

There has been considerable activity intermittently on a number of claims on Wolf Creek and its tributaries from 1955 to 2004; there is no record of production but they have been some.

Reserves:

Apparently none.

Additional comments:

This site is the Younder Creek, U.S. BLM MILS location 0020470017 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Kardex files 047-002, 047-011, 047-020, 047-021, 047-023, 047-024, 047-025, and 047-026; unpublished records, Alaska Division of Mining, Land & Water; this record

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/07/05

Site name(s): Moran Creek

Site type: Mine

ARDF no.: MZ016

Latitude: 65.3713 **Quadrangle:** MZ B-1

Longitude: 153.3614

Location description and accuracy:

There are reports of placer gold and tin mining on Moran Creek, but several creeks in the Tanana and Melozitna quadrangles have been referred to as Moran Creek (Chapman and others, 1963). This site is located at the junction of Moran Creek and Green Creek, in section 29, T. 1 S, R. 27 E., Kateel River Meridian. However, the locations of prospect pits or placer mines on and near this Moran Creek are uncertain; some of the work attributed to Moran Creek may have taken place on other creeks known by the same name.

Commodities:

Main: Au, Sn

Other:

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The headwaters of Moran Creek are marked by the contact between metamorphic rocks and the Melozitna pluton; the lower 4 miles above its mouth on the Little Melozitna River is in the pluton (Patton and others, 1977). The metamorphic rocks are Precambrian or Paleozoic, greenschist-grade, quartz-chlorite-muscovite schist and micaceous quartzite and subordinate greenstone, glaucophane-bearing schist, and marble. The Melozitna pluton is a Lower Cretaceous (111+/- 3 Ma), porphyritic, locally gneissic, biotite quartz monzonite and granite.

There are early reports of placer gold and tin mining on Moran Creek, but several creeks in the Tanana and Melozitna quadrangles were called Moran Creek (Chapman and others, 1963). Most of the references to Moran Creek probably are to Tozimoran Creek in the Tanana quadrangle (Szumigala and others, 2004). The locations of workings on Moran Creek in either quadrangle are not well documented. Martin (1920) reported that gravels said to contain 2.5 pounds of stream tin (cassiterite) per cubic yard were discovered on Moran Creek, a tributary of the Melozi, in 1918 and that about 6 men were prospecting and digging a trench that year. Fred Zickwolf prospected near the head of Moran Creek, a tributary of the Tozimoran Creek, in 1926 and reported finding good values in gold and stream tin in the modern alluvium and on the left-limit benches (Wimmler, 1927). The creek gravels average 3 to 4 feet thick, and are overlain by 3 to 20 feet of muck, with the thicker muck chiefly along the valley edge. With the exception of thin exposed gravels, the entire deposit is frozen. During placer mining
by Zickwolf in 1924, 1,200 square feet of bedrock, overlain by about 3 feet of gravel, yielded 1,500 pounds of tin concentrate in addition to the gold recovered (Wimmler, 1927). The placer tin occurrence attracted the attention of others and Zickwolf's holding were optioned to other parties (Wimmler, 1927). J. Elliot, Frank Miller, J. McCade, and Bob Kelly prospected on Moran Creek in 1929 (Wimmler, 1929). A little prospecting for placer gold was conducted in 1931, 1934, and 1935 (Smith, 1933; Smith, 1936; Smith, 1937). 'Tuffy' Eddington worked on Moran Creek, on Golden Creek (MZ018), and elsewhere in this area through the 1940's and 1950's (Heiner and others, 1968).

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:
There are early reports of placer gold and tin mining on Moran Creek, but several creeks in the Tanana and Melozitna quadrangles were called Moran Creek (Chapman and others, 1963). Most of the references to Moran Creek probably are to Tozimoran Creek in the Tanana quadrangle (Szumigala and others, 2004). The locations of workings on Moran Creek in either quadrangle are not well documented. Martin (1920) reported that gravels said to contain 2.5 pounds of stream tin (cassiterite) per cubic yard were discovered on Moran Creek, a tributary of the Melozi, in 1918 and that about 6 men were prospecting and digging a trench that year. Fred Zickwolf prospected near the head of Moran Creek, a tributary of the Tozimoran, in 1926 and reported finding good values in gold and stream tin in the modern alluvium and on the left-limit benches (Wimmler, 1927). The creek gravels average 3 to 4 feet thick, and are overlain by 3 to 20 feet of muck, with the thicker muck chiefly along the valley edge. With the exception of thin exposed gravels, the entire deposit is frozen. The placer tin occurrence attracted the attention of others and Zickwolf's holding were optioned to other parties (Wimmler, 1927). J. Elliot, Frank Miller, J. McCade, and Bob Kelly prospected on Moran Creek in 1929 (Wimmler, 1929). A little prospecting for placer gold was conducted in 1931, 1934, and 1935 (Smith, 1933; Smith, 1936; Smith, 1937). 'Tuffy' Eddington worked on Moran Creek, on Golden Creek (MZ018), and elsewhere in this area through the 1940's and 1950's (Heiner and others, 1968).

Production notes:
During placer mining by Zickwolf in 1924, 1,200 square feet of bedrock, overlain by about 3 feet of gravel, yielded 1,500 pounds of tin concentrate and an undetermined amount of gold (Wimmler, 1927).

Reserves:

Additional comments:
This site is the Moran Creek, U.S. BLM MILS location 0020470008 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:
Martin, 1920; Wimmler, 1927; Wimmler, 1929; Smith, 1933; Smith, 1936; Smith, 1937; Chapman and others, 1963; Heiner and others, 1968; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004; Szumigala and others, 2004.

Primary reference: Wimmler, 1927; Chapman and others, 1963

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/31/05

Site name(s): Illinois Creek

Site type: Mine

ARDF no.: MZ017

Latitude: 65.2660 **Quadrangle:** MZ B-1

Longitude: 153.1338

Location description and accuracy:

The Illinois Creek placer mine (Cobb, 1972, location 6) is in section 33, T. 2 S., R. 28 E., Kateel River Meridian. It is approximately 6.5 miles upstream from the mouth of Illinois Creek on the Yukon River, and 2.5 miles east of Switchback Mountain. The location is accurate within half a mile. Illinois Creek has several tributaries that have been placer mined, including Golden Creek (MZ018) , Linda Creek, and several tributaries with names that suggest mining including Gold Run Creek, Miner Creek, Nugget Creek, and Shovel Creek.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

The rocks in the vicinity of Illinois Creek and its tributaries are Precambrian or Paleozoic, greenschist-grade micaceous quartzite and quartz-chlorite-muscovite schist, and subordinate glaucophane-bearing schist, marble, and greenstone (Patton and others, 1977). The closest igneous body is the quartz monzonite and granite Melozitna pluton, whose southern border is about 8 miles north of Illinois Creek. Patton and others (1977) date the pluton as Early Cretaceous based on a K-Ar date of 111 +/- 3 Ma. The Kaltag fault, an east-northeast, high-angle structure, is approximately 7 miles south of Illinois Creek.

Good prospects were reported in 1911 on Illinois Creek, but prospecting was seriously hindered by thick, thawed gravel deposits (Eakin, 1912; Cobb, 1975). One hole was sunk to a depth of 133 feet without reaching bedrock, but several beds bearing fine gold were intersected (Eakin, 1913). In 1929, there was renewed interest in known occurrences of placer tin on Illinois Creek, its tributary Golden Creek (MZ018), and Moran Creek (MZ016). At different times there were reports that the placer concentrates contained considerable cassiterite as well as gold (Wimmler, 1929). A little drilling was done on Illinois Creek in 1929 but the work was soon suspended. An undetermined small amount of placer gold has been recovered on Illinois Creek, but no cassiterite (Chapman and others, 1963). From 1978 to 1982, placer mining took place on Illinois Creek at its junction with Golden Creek (MZ018) (Kardex file 047-010; unpublished record, Alaska Division of Mining, Land & Water). The stream gradient of Illinois Creek is about 75 feet per mile.

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:

Good prospects were reported in 1911 on Illinois Creek, but prospecting was seriously hindered by thick, thawed gravel deposits (Eakin, 1912; Cobb, 1975). One hole was sunk to a depth of 133 feet without reaching bedrock, but several beds bearing fine gold were intersected (Eakin, 1913). In 1929, there was renewed interest in earlier-known occurrences of placer tin on Illinois Creek, its tributary Golden Creek (MZ018), and Moran Creek (MZ016). At different times there were reports that the placer concentrates contained considerable cassiterite as well as gold (Wimmler, 1929). A little drilling was done on Illinois Creek in 1929 but the work was soon suspended. From 1978 to 1982, placer mining took place on Illinois Creek at its junction with Golden Creek (MZ018) (Kardex file 047-010; unpublished record, Alaska Division of Mining, Land & Water).

Production notes:

An undetermined small amount of placer gold was recovered on Illinois Creek from 1911 to 1982, but no cassiterite (Chapman and others, 1963).

Reserves:

Additional comments:

This site is the Illinois Creek, U.S. BLM MILS location 0020470003 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Eakin, 1912; Eakin, 1913; Wimmler, 1929; Chapman and others, 1963; Cobb, 1972; Cobb, 1975; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Cobb, 1975

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/18/05

Site name(s): Golden Creek; Shale Creek; Linda Creek

Site type: Mines

ARDF no.: MZ018

Latitude: 65.2902 **Quadrangle:** MZ B-1

Longitude: 153.0146

Location description and accuracy:

Golden Creek has been mined for 3 miles in the Melozitna quadrangle and on its eastern continuation in the Tanana quadrangle. The mine is shown on the B-1 U.S. Geological Survey topographic map in the NE1/4 of section 25, T. 2 S., R. 28 E., Kateel River Meridian. The location is accurate to within 200 feet. This site is location 7 of Cobb (1972).

Commodities:

Main: Au, Sn

Other:

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

The rocks in the vicinity of Golden Creek and its tributaries are Precambrian or Paleozoic, greenschist-grade micaceous quartzite and quartz-chlorite-muscovite schist, and subordinate glaucophane-bearing schist, marble, and greenstone (Patton and others, 1977). The closest igneous body is the quartz monzonite and granite Melozitna pluton, whose southern border is about 6 miles north of Golden Creek. Patton and others (1977) date the pluton as Early Cretaceous based on a K-Ar date of 111 +/- 3 Ma. The Kaltag fault, an east-northeast, high-angle structure, is approximately 7 miles south of Golden Creek.

Wimmler (1929) reported renewed interest in previously-known occurrences of placer tin on Illinois Creek (MZ017), its tributary Golden Creek, and Moran Creek (MZ016). At different times there were reports that the placers contained considerable cassiterite in the concentrates, as well as gold. According to Chapman and others (1963) placer gold was recovered from Golden Creek, but no cassiterite. 'Tuffy' Eddington worked on Moran Creek (MZ016), Golden Creek, and elsewhere in this area through the 1940's and 1950's (Heiner and others, 1968). Nineteen claims were located by E.R. Farrell, P. Soulombe, and J.A. Elliot in 1955 and the claims may have extended into the Tanana quadrangle (Kardex file 047-001; unpublished record, Alaska Division of Mining, Land & Water). Cobb (1973) described the gold occurrences in the Melozitna district as thin bench and alluvial gravel deposits. The gradient of Golden Creek is about 50 feet per mile.

Most of the recent placer mining in the Melozitna quadrangle has occurred on Golden Creek and its tributaries. In 1978, Phillip and J.S. Ramstad located at least 30 placer mining claims along Golden Creek eastward from its junction with Illinois Creek (Kardex file 047-001; unpublished record, Alaska Division of Mining, Land & Water). Five claims were also located by Ramstad and Yukon Mining, Inc. in 1978 on Illinois Creek at its junction with Golden Creek. Ramstad's mining activities included digging test pits, drilling test holes with a 5-inch churn drill, digging prospect trenches with a dragline, clearing land, stripping overburden, and bulldozer and dragline mining. Ramstad and Yukon Mining, Inc. worked in the area from 1978 through at least 1994, with over 600 man-days of work in 1988 and 1992; there was active mining in 1993 on Golden Creek (Kardex files 047-001, 047-010, and 047-032; unpublished record, Alaska Division of Mining, Land & Water; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993; Bundtzen and others, 1994). Wayne Gibson began open-cut mining on Golden Creek in 1993, mostly in the Tanana quadrangle. In the Melozitna quadrangle, he had 20 claims by 2002 on Golden Creek up-

stream from Illinois Creek to the junction of Queen Creek, as well as 7 claims along Illinois Creek above and below its junction with Golden Creek (State of Alaska Department of Natural Resources, 2002; Szumigala and others, 2004). Gibson planned to use a bulldozer and sluice box during open-cut mining in 2002, but there was no mining in 2003 or 2004 (Brent Martellaro, oral commun., 2004).

Some prospecting has also been done on tributaries to Golden Creek. Six state mining claims were located on Linda Creek in 1994 by Neil Beaton Jr., but no mining activity was recorded (Kardex file 047-033; unpublished record, Alaska Division of Mining, Land & Water). Wayne Gibson located 4 state mining claims on Shale Creek in 1990 just above its junction with Golden Creek (Kardex file 047-031; unpublished record, Alaska Division of Mining, Land & Water). Gibson tested and sampled the gravels in 1993, and dug 8-foot-deep holes in 1994 to test the material for placer gold. Gibson continued to maintain his claims from 1995 to 1999 (unpublished Alaska Department of Natural Resources Office of the Recorder records).

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: Inactive

Workings/exploration:

Wimmler (1929) reported renewed interest in previously-known occurrences of placer tin on Illinois Creek (MZ017), its tributary Golden Creek, and Moran Creek (MZ016). 'Tuffy' Eddington worked on Moran Creek (MZ016), Golden Creek, and elsewhere in this area through the 1940's and 1950's (Heiner and others, 1968). Nineteen claims were located by E.R. Farrell, P. Soulombe, and J.A. Elliot in 1955 and the claims may have extended into the Tanana quadrangle (Kardex file 047-001; unpublished record, Alaska Division of Mining, Land & Water).

Most of the recent placer mining in the Melozitna quadrangle has occurred on Golden Creek and its tributaries. In 1978, Phillip and J.S. Ramstad located at least 30 placer mining claims along Golden Creek eastward from its junction with Illinois Creek (Kardex file 047-001; unpublished record, Alaska Division of Mining, Land & Water). Five claims were also located by Ramstad and Yukon Mining, Inc. in 1978 on Illinois Creek at its junction with Golden Creek. Ramstad's mining activities included digging test pits, drilling test holes with a 5-inch churn drill, digging prospect trenches with a dragline, clearing land, stripping overburden, and bulldozer and dragline mining. Ramstad and Yukon Mining, Inc. worked in the area from 1978 through at least 1994, with over 600 man-days of work in 1988 and 1992, and was actively mining in 1993 on Golden Creek (Kardex files 047-001, 047-010, and 047-032; unpublished record, Alaska Division of Mining, Land & Water; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993; Bundtzen and others, 1994). Wayne Gibson began open-cut mining on Golden Creek in 1993, mostly in the Tanana quadrangle. In the Melozitna quadrangle, he had 20 claims by 2002 on Golden Creek upstream from Illinois Creek to the junction of Queen Creek, as well as 7 claims along Illinois Creek above and below its junction with Golden Creek (State of Alaska Department of Natural Resources, 2002; Szumigala and others, 2004). Gibson planned to use a bulldozer and sluice box during open-cut mining in 2002, but there was no mining in 2003 or 2004 (Brent Martellaro, oral commun., 2004).

Some prospecting has also been done on tributaries to Golden Creek. Six state mining claims were located on Linda Creek in 1994 by Neil Beaton Jr., but no mining activity was recorded (Kardex file 047-033; unpublished record, Alaska Division of Mining, Land & Water). Wayne Gibson located 4 state mining claims on Shale Creek in 1990 just above its junction with Golden Creek (Kardex file 047-031; unpublished record, Alaska Division of Mining, Land & Water). Gibson tested and sampled the gravels in 1993, and dug 8-

foot-deep holes in 1994 to test the material for placer gold. Gibson continued to maintain his claims from 1995 to 1999 (unpublished Alaska Department of Natural Resources Office of the Recorder records).

Production notes:

An undetermined amount of gold was recovered from Golden Creek, but no cassiterite (Chapman, 1963).

Reserves:

Additional comments:

This site is the Golden Creek, U.S. BLM MILS location 0020470002 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Wimmler, 1929; Chapman and others, 1963; Heiner and others, 1968; Cobb, 1972; Cobb, 1973; Patton and others, 1977; Swainbank and others, 1991; Bundtzen and others, 1992; Swainbank and others, 1993; Bundtzen and others, 1994; Oddenino and others, 1995; State of Alaska Department of Natural Resources, 2002; Interagency Minerals Coordinating Group, 2004; Szumigala and others, 2004.

Primary reference: Cobb, 1975; Kardex files 047-001, 047-010, and 047-032; unpublished record, Alaska Division of Mining, Land & Water;

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/19/05

Site name(s): Unnamed (south side of Dulbi River)

Site type: Occurrence

ARDF no.: MZ019

Latitude: 65.1104 **Quadrangle:** MZ A-6

Longitude: 155.6502

Location description and accuracy:
This lode occurrence is on the south side of Dulbi River. The site corresponds to ADGGS station 92DNS133 (Solie and others, 1993 [Public-data file 93-18]). It is at an elevation of about 400 feet, in the SE1/4 of section 30, T. 4 S., R. 16 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: As, Sb

Other:

Ore minerals: Limonite

Gangue minerals:

Geologic description:
The rocks in the vicinity of this occurrence are Lower Cretaceous, volcanic graywacke; massive, poorly-sorted conglomerate with pebble- to cobble-size clasts chiefly of mafic igneous rocks and diversely-colored chert; and Tertiary(?), light gray to pink rhyolite tuff and breccia (Patton and others, 1977).
The Alaska Division of Geological and Geophysical Surveys collected a sample of limonitic fault breccia in black sedimentary rocks on the south side of Dulbi River (Solie and others, 1993 [Public-data file 93-18]). The sample contained 2,760 parts per million (ppm) arsenic and 29 ppm antimony.

Alteration:
Oxidation.

Age of mineralization:

Deposit model:
Fault-related epigenetic mineralization; possibly hot-spring Au-Ag (Cox and Singer, 1986; model 25a); Creede epithermal veins (Cox and Singer, 1986; model 25b); Comstock epithermal veins (Cox and Singer, 1986; model 25c)

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

Production Status: None

Site Status: Inactive

Workings/exploration:
The Alaska Division of Geological and Geophysical Surveys collected a mineralized sample here.

Production notes:

Reserves:

Additional comments:

References:

Patton and others, 1977; Solie and others, 1993 (Public-data file 93-18).

Primary reference: Solie and others, 1993 (Public-data file 93-18)

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/01/05

Site name(s): Fox Creek

Site type: Prospect

ARDF no.: MZ020

Latitude: 65.0547 **Quadrangle:** MZ A-5

Longitude: 155.3280

Location description and accuracy:
Eakin (1916) reported two gold placer prospects, a half-mile apart, on Fox Creek, in section 13, T. 5 S., R. 17 E., Kateel River Meridian. It is difficult to reconcile his map and modern maps and the locations of the prospects are uncertain. For this record, the site is located midway between their presumed positions, near the center of section 13. But this location is only approximate.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The drainage basin of Fox Creek is underlain by Upper Cretaceous sandstone, quartz conglomerate, shale, and siltstone (Patton and others, 1977). These rocks are bounded on the northwest and southeast by massive, poorly-sorted, conglomerate with igneous pebbles to cobble size; it is of Albian (Early Cretaceous) age. No igneous rocks are mapped in the Fox Creek drainage.
There is only one reference to placer mining activity on Fox Creek. Eakin (1916) reported sluicing on three claims during 1913. The placer claims were in a flat valley about 700 feet wide. 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:
There is only one reference to placer mining on Fox Creek. Eakin (1916) reported sluicing on three claims during 1913. The placer claims were in a flat valley about 700 feet wide. There is no record of any production.

Production notes:
No record of any production but there may be a small amount.

Reserves:

Additional comments:
This site is the Fox Creek, U.S. BLM MILS location 0020470010 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:
Eakin, 1916; Eberlein and others, 1977; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Eberlein and others, 1977

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/07/05

Site name(s): Unnamed (west of central Black Sand Creek)

Site type: Occurrences

ARDF no.: MZ021

Latitude: 65.0725 **Quadrangle:** MZ A-4

Longitude: 154.9053

Location description and accuracy:

Several lode occurrences are in a mile-square area on the valley wall and hills west of central Black Sand Creek. The site corresponds to ADGGS station 92BT311 at the center of 5 sample sites (Solie and others, 1993 [Public-data file 93-18]). It is on a small knob at an elevation of 1,400 feet, on the east boundary of section 12, T. 5 S., R. 19 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Cu, Pd, Pt

Other: Bi, Cr, Mn, Sn, Te, V, Zn

Ore minerals: Chalcopyrite, chromite, magnetite, malachite, unspecified sulfides

Gangue minerals:

Geologic description:

Patton and others (1977) describe the rocks in the area of these occurrences as Permian to Jurassic, spilitic basalt and diabase largely metamorphosed to greenstone, and Lower Cretaceous, massive, poorly-sorted conglomerate with pebble- to cobble-size clasts, chiefly of mafic igneous rocks and chert. Dillon and others (1983) describe the rocks as greenschist-grade, lower Mesozoic and upper Paleozoic basalt, diabase, hornblende gabbro, and basaltic volcaniclastic rocks. The dominant rock type at the occurrences is meta-basalt (greenstone). Small bodies of medium-grained biotite granite, aplite, pegmatite, and leucocratic granite also crop out in the area. The granitic rocks are assumed to be Lower Cretaceous in age based on a K-Ar date of 111+/- 3 Ma on biotite from the Melozitna pluton which is probably related to the granaztic rocks at this site (Patton and others, 1977).

The Alaska Division of Geological & Geophysical Surveys collected 8 rock samples and a panned-concentrate sample in and near the area of these occurrences (Solie and others, 1993 [Public-data file 93-18]). Two float samples of greenstone or gabbro with sulfides contained up to 64 parts per million (ppm) bismuth, 252 ppm copper, 1,467 ppm manganese, 94 ppm tin, 43 ppm tellurium, 452 ppm vanadium, and 133 ppm zinc. Bedrock samples included layered mafic rock with probable chromite; basalt with sparse chalcopyrite and malachite; magnetite-bearing pyroxene-plagioclase gabbro; gabbro with whitish veins; and ultramafic rock. These samples contained up to 1.3 ppm silver, 10 parts per billion (ppb) gold, 73 ppm bismuth, 1,491 ppm chromium, 930 ppm copper, 20 ppb palladium, 20 ppb platinum, 64 ppm tin, 45 ppm tellurium, 966 ppm vanadium, and 113 ppm zinc.

Alteration:

Age of mineralization:

At least some of the mineralization (chiefly platinum, palladium, and chromium) probably is syngenetic with the Permian to Jurassic mafic and ultramafic rocks. There may be an overprint of later mineralization related to the Lower Cretaceous granite bodies.

Deposit model:

Duluth Cu-Ni-PGE (Cox and Singer, 1986; model 5a); Noril'sk (Cox and Singer, 1986; model 5b); possible

Polymetallic vein overprint (Cox and Singer, 1986; model 22c)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
5a, 5b, 22c

Production Status: None

Site Status: Inactive

Workings/exploration:
Only limited sampling by government geologists.

Production notes:

Reserves:

Additional comments:

References:
Patton and others, 1977; Dillon and others, 1983; Solie and others, 1993 (Public-data file 93-18).

Primary reference: Solie and others, 1993 (Public-data file 93-18)

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 02/01/05

Site name(s): Zincabou

Site type: Prospect

ARDF no.: MZ022

Latitude: 65.0035 **Quadrangle:** MZ A-4

Longitude: 154.8560

Location description and accuracy:

The Zincabou prospect is at an elevation of about 3,100 feet on a northern ridge of the Kokrines Hills, approximately 6 miles north of Horner Hot Springs. The prospect covers less than one square-mile and extends into the Ruby quadrangle. The site is in the NE 1/4 of section 5, T. 6 S., R. 20 E., Kateel River Meridian. The location is accurate to within 2,000 feet.

Commodities:

Main: Cu, Zn

Other: Au, Pb

Ore minerals: Arsenopyrite, chalcopyrite, galena, pyrite, sphalerite

Gangue minerals: Carbonates, quartz

Geologic description:

The rocks in the vicinity of the Zincabou prospect are mainly greenschist-grade, lower Mesozoic and upper Paleozoic, marine basalt and pelitic sedimentary rocks, and mafic and ultramafic intrusive rocks. To the east, they are in thrust contact with lower-plate, pre-Cretaceous, amphibolite-grade schist, gneiss, and marble (Patton and others, 1977; Dillon and others, 1983). Thrust breccias up to 5 feet thick separate the overlying greenschist-grade rocks (greenstone) from the amphibolite-grade schist and gneiss (North Star Exploration Inc., 1999 [DLR99-33]). Zincabou Creek flows parallel to the schistosity and probable bedding of the country rocks (North Star Exploration Inc., 1999 [DLR99-33]). Aplite, pegmatite, and leucocratic apophyses of Cretaceous granite also crop out in the prospect area (Dillon and others, 1983).

Mineralization consists of pyrite, arsenopyrite, sphalerite, chalcopyrite, and galena in quartz-carbonate veins and stockworks that cut the thrust breccias (North Star Exploration, Inc., 1999 [DLR 99-33]). In the 1970's, WGM, Inc. located 2 mineralized breccia zones, 3.5 to 5 feet thick, that are roughly concordant with the contact between greenstone and gneiss. Graphitic schist and chlorite schist contain zones of disseminated sulfides as much as 15 feet thick, and quartz-carbonate-sulfide veins. Rock samples contained as much as 7.4 parts per million (ppm) silver, 343 ppm copper, 1 percent zinc, and 4,000 ppm lead. Copper and gold values are erratic but locally high. A sample of a rusty colored, weakly silicified quartzite containing 10 percent pyrite, mainly along fracture surfaces; it assayed 1.6 ppm gold, 0.8 ppm silver, 148 ppm copper, and 556 ppm zinc (DiMarchi and others, 1991). The prospect has been variously interpreted as structurally-controlled epithermal veins, skarn, a stockwork vein system, or a massive-sulfide replacement deposit (North Star Exploration Inc., 1999 [DLR 99-33]).

The Zincabou prospect was discovered by WGM, Inc. in 1975 during a soil sampling program following a regional stream-sediment sampling program (North Star Exploration Inc., 1999 [DLR 99-33]). Anomalous values of zinc and lead in stream-sediment samples were traced to a thrust breccia cut by arsenopyrite-bearing veins carrying significant zinc, lead, copper, and manganese values. WGM, Inc. worked in the area until 1979; their work included regional stream-sediment sampling and airborne radiometric surveys. Central Alaska Gold Co. evaluated the Zincabou prospect in 1990. North Star Exploration, Inc. conducted sampling and geologic mapping for Doyon Limited in 1998 (North Star Exploration, Inc., 1999 [DLR 99-33]).

Alteration:

Silicification.

Age of mineralization:

Deposit model:
Kipushi Cu-Pb-Zn (Cox and Singer, 1986; model 32c); Polymetallic veins (Cox and Singer, 1986; model 22c); Creede epithermal (Zn)-Au (Cox and Singer, 1986; model 25b)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
22c, 25b, 32c

Production Status: None

Site Status: Inactive

Workings/exploration:
The Zincabou prospect was discovered by WGM, Inc. in 1975 during a soil sampling program following a regional stream-sediment sampling program (North Star Exploration Inc., 1999 [DLR 99-33]). Anomalous values of zinc and lead in stream-sediment samples were traced to a thrust breccia cut by arsenopyrite-bearing veins carrying significant zinc, lead, copper, and manganese values. WGM, Inc. worked in the area until 1979; their work included regional stream-sediment sampling and airborne radiometric surveys. Central Alaska Gold Co. evaluated the Zincabou prospect in 1990. North Star Exploration, Inc. conducted sampling and geologic mapping for Doyon Limited in 1998 (North Star Exploration, Inc., 1999 [DLR 99-33]).

Production notes:

Reserves:

Additional comments:
The Zincabou Creek prospect is on lands selected by Doyon, Limited. For further information, contact Doyon, Limited, 1 Doyon Place, Suite 300, Fairbanks, Alaska 99701-2941.

References:
Patton and others, 1977; Dillon and others, 1983; DiMarchi and others, 1991; North Star Exploration Inc., 1999 (DLR 99-33).

Primary reference: DiMarchi and others, 1991; North Star Exploration Inc., 1999 (DLR 99-33)

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/10/05

Site name(s): Unnamed (south tributary of Black Sand Creek)

Site type: Prospect

ARDF no.: MZ023

Latitude: 65.0100 **Quadrangle:** MZ A-4

Longitude: 154.8068

Location description and accuracy:
This prospect is on the west valley wall of a north-flowing tributary of Black Sand Creek, about a mile from the south edge of the Melozitna A-4 quadrangle. It is at an elevation of about 1,300 feet, 0.5 mile east-northeast of the center of section 33, T. 5 S., R. 20 E., Kateel River Meridian.

Commodities:

Main: Au, Zn

Other:

Ore minerals: Sulfides

Gangue minerals: Carbonate, quartz

Geologic description:
The rocks in the vicinity of this prospect consist of pre-Cretaceous, amphibolite-grade gneiss, dolomitic marble, quartzite, quartz schist, and granodiorite gneiss. These rocks are in thrust or low-angle fault contact with upper-plate, greenschist-grade, lower Mesozoic and upper Paleozoic, marine sedimentary rocks and basalt and mafic and ultramafic intrusive rocks (Patton and others, 1977; Dillon and others, 1983). Aplite, pegmatite, and leucocratic apophyses of Cretaceous granite crop out less than one mile west of the prospect (Dillon and others, 1983).

The country rock at the prospect is chiefly graphitic and chloritic pelitic schist (North Star Exploration, Inc., 1999 [DLR 99-33]). The mineralization is similar to that at the Zincabou prospect (MZ022). It includes zones of disseminated sulfides and quartz-carbonate veins that parallel schistosity. The deposit has been variously interpreted as a structurally-controlled epithermal veins, skarn, stockwork veins, or a massive-sulfide replacement deposit (North Star Exploration Inc., 1999 [DLR 99-33]).

There has been sporadic exploration of this prospect for about 30 years (North Star Exploration, Inc., 1999 [DLR 99-33]). WGM, Inc. explored it from 1975 to 1977 and in 1979; Central Alaska Gold Co. worked on the property from 1989 to 1990; and North Star Exploration, Inc. explored it in 1998.

Alteration:

Age of mineralization:

Deposit model:
Kipushi Cu-Pb-Zn (Cox and Singer, 1986; model 32c); Polymetallic veins (Cox and Singer, 1986; model 22c); Zn-Pb skarn (Cox and Singer, 1986; model 18c); Creede epithermal (Zn)-Au (Cox and Singer, 1986; model 25b)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
18c, 22c, 25b, 32c

Production Status: None

Site Status: Inactive

Workings/exploration:

There has been sporadic exploration of this prospect for about 30 years (North Star Exploration, Inc., 1999 [DLR 99-33]). WGM, Inc. explored it from 1975 to 1977 and 1979; Central Alaska Gold Co. worked on the property from 1989 to 1990; and North Star Exploration, Inc. explored it in 1998.

Production notes:

Reserves:

Additional comments:

The prospect is on land selected by Doyon, Limited. For further information, contact Doyon, Limited, 1 Doyon Place, Suite 300, Fairbanks, Alaska 99701-2941.

References:

Patton and others, 1977; Dillon and others, 1983; North Star Exploration Inc., 1999 (DLR 99-33).

Primary reference: North Star Exploration Inc., 1999 (DLR 99-33)

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/10/05

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

Site type: Prospect

ARDF no.: MZ024

Latitude: 65.0664 **Quadrangle:** MZ A-4

Longitude: 154.6225

Location description and accuracy:
This lode prospect is at the head of Glacier Creek, a north-flowing tributary of Hot Springs Creek, in the southwestern part of the Kokrines Hills. The site is at an elevation of 2,700 feet, about 0.2 mile south-southwest of the center of section 9, T. 5 S., R. 21 E., Kateel River Meridian.

Commodities:

Main: Cu, Fe

Other: W

Ore minerals: Chalcopyrite, pyrite, sphalerite(?), wolframite

Gangue minerals: Diopside, epidote, garnet, wollastonite

Geologic description:
The upper part of Glacier Creek is underlain by pre-Cretaceous, amphibolite-grade granite and granodiorite gneiss, with subordinate dolomitic marble, micaceous quartzite, quartz-mica schist, and biotite amphibolite (Patton and others, 1977; Dillon and others, 1983). The rocks are intruded by mid- Cretaceous granite of the Melozitna pluton, which is cut by tourmaline-bearing pegmatite and aplite dikes (Dillon and others, 1983; DiMarchi and others, 1991).

Mineralization consists of carbonate-hosted skarn that contains sparse chalcopyrite, pyrrhotite, wolframite, and possibly sphalerite in a matrix of garnet, epidote, diopside, and wollastonite (DiMarchi and others, 1991; North Star Exploration, Inc., 1999 [DLR 99-33]). One rock sample contained up to 6 percent combined pyrrhotite and chalcopyrite. Mineralized rock samples contained as much as 824 parts per million (ppm) copper, 1,358 ppm zinc, and 230 ppm tungsten. No anomalous gold values are reported. The Glacier Creek prospect has been interpreted as a calc-silicate skarn in a roof pendant over the Melozitna pluton (North Star Exploration Inc., 1999 [DLR 99-33]).

This prospect is within areas of geochemical sampling programs over land block 18 of Doyon Limited. Work was done here by WGM, Inc. in 1975-77 and 1979; by Central Alaska Gold Co. in 1989 and 1990; and by North Star Exploration, Inc. in 1998 (North Star Exploration Inc., 1999 [DLR 99-33]).

Alteration:
Metasomatism of carbonate-bearing rocks.

Age of mineralization:
Mid-Cretaceous or younger, on the basis of a K-Ar radiometric date of 111 +/- 3 Ma on the Melozitna pluton that is probably related to the mineralization of this prospect (Patton and others, 1977).

Deposit model:
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: Inactive

Workings/exploration:

This prospect is within areas of geochemical sampling programs over land block 18 of Doyon Limited. Work was done here by WGM, Inc. in 1975-77 and 1979; by Central Alaska Gold Co. in 1989 and 1990; and by North Star Exploration, Inc. in 1998 (North Star Exploration Inc., 1999 [DLR 99-33]).

Production notes:

Reserves:

Additional comments:

This prospect is on land selected by Doyon, Limited. For further information, contact Doyon, Limited, 1 Doyon Place, Suite 300, Fairbanks, Alaska 99701-2941.

References:

Patton and others, 1977; Dillon and others, 1983; DiMarchi and others, 1991; North Star Exploration Inc., 1999 (DLR 99-33).

Primary reference: North Star Exploration Inc., 1999 (DLR 99-33)

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/10/05

Site name(s): Unnamed (west of Gold Mountain); 'Arizona Creek'

Site type: Prospect

ARDF no.: MZ025

Latitude: 65.1672 **Quadrangle:** MZ A-2

Longitude: 153.9959

Location description and accuracy:
This prospect is at an elevation of about 2,200 feet at the head of what is locally called Arizona Creek. It is about 8 miles west-southwest of Gold Mountain in the SW1/4 of section 5, T. 4 S., R. 24 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Mo

Other: Ag, Pb, U

Ore minerals: Molybdenite, pyrite

Gangue minerals: Fluorite, quartz, tourmaline

Geologic description:
The rocks in the vicinity of this prospect are Lower Cretaceous (111+/- 3 Ma K-Ar), coarse-grained, porphyritic, biotite quartz monzonite and granite of the Melozitna pluton (Patton and others, 1977). At the prospect, the granite commonly is iron stained and cut by aplite and pegmatite dikes, and it contains xenoliths or roof pendants of Paleozoic or Precambrian, quartz biotite gneiss and migmatite (DiMarchi and others, 1991).

The prospect consists of iron-stained, altered granite cut by a stockwork quartz-pyrite-molybdenite veins. Fluorite and tourmaline are common (DiMarchi and others, 1991). North Star Exploration, Inc. (1999 [DLR 99-33]) interprets the deposit as a weakly developed molybdenum porphyry carrying elevated values of, silver, lead and uranium. It is unclear whether the aplite and pegmatite dikes were intruded before or after the mineralization.

Stream-sediment sampling by WGM, Inc. from 1975 to 1977 yielded uranium values as high as 370 parts per million (ppm), molybdenum values as high as 54 ppm, and lead values as high as 49 ppm. The highest molybdenum content in a rock sample was 600 ppm (North Star Exploration, Inc., 1999 [DLR 99-33]). Gold contents of rock samples are low, but many samples had elevated silver values (DiMarchi and others, 1991).

Alteration:

Age of mineralization:
Probably Early Cretaceous, the age of the host rock.

Deposit model:
Porphyry Mo (Cox and Singer, 1986; model 21b)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21b

Production Status: None

Site Status: Inactive

Workings/exploration:

Geochemical sampling programs were conducted in Doyon land block 18, which includes the area of this prospect. The work here was done by WGM, Inc. from 1975 to 1977 and in 1979; by Central Alaska Gold Co. in 1989 and 1990; and by North Star Exploration, Inc. in 1998 (North Star Exploration Inc., 1999 [DLR 99-33]).

Production notes:

Reserves:

Additional comments:

This prospect is on land selected by Doyon, Limited. For further information, contact Doyon, Limited, 1 Doyon Place, Suite 300, Fairbanks, Alaska 99701-2941.

References:

Patton and others, 1977; DiMarchi and others, 1991; North Star Exploration Inc., 1999 (DLR 99-33).

Primary reference: North Star Exploration Inc., 1999 (DLR 99-33)

Reporter(s): G.E. Graham (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/12/05

Site name(s): Unnamed (north of Ninemile Point); Ninemile Creek

Site type: Prospect

ARDF no.: MZ026

Latitude: 65.1168 **Quadrangle:** MZ A-2

Longitude: 153.8225

Location description and accuracy:

This lode prospect is at an elevation of about 400 feet on the west bank of an unnamed creek that is locally called Ninemile Creek; it flows south into the Yukon River at Ninemile Point. The prospect is slightly more than 3 miles north of the Yukon River and about 4 miles north of the eastern tip of Burns Island. The site, informally called the Ninemile Creek prospect, is in the northwest corner of section 30, T. 4 S., R. 25 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: W

Other: Cu, Fe

Ore minerals: Chalcopyrite, pyrite, wolframite

Gangue minerals: Diopside, epidote, garnet, wollastonite

Geologic description:

The rocks in the area of the Ninemile Creek prospect are Paleozoic quartz-feldspar-biotite gneiss and biotite-bearing quartzite, with subordinate quartz-biotite schist, marble, and calc-silicate rock (Patton and others, 1977). The gneiss is garnetiferous, locally contains sillimanite, and includes bodies of gneissic and massive quartz monzonite. To the south, the gneiss and quartzite grade into pelitic schist containing small bodies of marble and greenstone. The bedrock is covered by Quaternary silt and fine sand to the east in the Sunset Creek drainage. The Lower Cretaceous Melozitna pluton intrudes the metamorphic rocks several miles to the north. The Kaltag Fault, a regional northeast-striking, high-angle fault whose trace parallels the northern banks of the Yukon River, is south of the prospect.

Geochemical sampling programs were conducted in Doyon land block 18, which includes the Ninemile Creek prospect area; the work was done , by WGM, Inc. from 1975 to 1977 and in 1979; by Central Alaska Gold Co. in 1989 and 1990; and by North Star Exploration, Inc. in 1998 (North Star Exploration Inc., 1999 [DLR 99-33]).

The geology and mineralization of the Ninemile Creek prospect is poorly known. North Star Exploration, Inc., 1999 [DLR 99-33]) reports that it is similar to the Glacier Creek (MZ024) and Montana Creek (MZ028) prospects, which are calc-silicate skarns that consist of garnet, epidote, diopside, and wollastonite withchalcopyrite, pyrite, and wolframite. North Star classifies the Ninemile Creek prospect as a tungsten skarn, with wolframite as the dominant ore mineral. No analytical results are available.

Alteration:

Metasomatism of carbonate-bearing rocks.

Age of mineralization:

Probably roughly coeval with emplacement of the Lower Cretaceous Melozitna pluton, dated at 111+/- 3 Ma (Patton and others, 1977).

Deposit model:

W 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:
Geochemical sampling programs were conducted in Doyon land block 18; this includes the Ninemile Creek prospect area, by WGM, Inc. from 1975 to 1977 and in 1979; by Central Alaska Gold Co. in 1989 and 1990; and by North Star Exploration, Inc. in 1998 (North Star Exploration Inc., 1999 [DLR 99-33]). No samples analyses have been published.

Production notes:

Reserves:

Additional comments:
The Ninemile Creek prospect is on land selected by Doyon, Limited. For further information, contact Doyon, Limited, 1 Doyon Place, Suite 300, Fairbanks, Alaska 99701-2941.

References:
Patton and others, 1977; North Star Exploration Inc., 1999 (DLR 99-33).

Primary reference: North Star Exploration Inc., 1999 (DLR 99-33)

Reporter(s): G.E. Graham (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/12/05

Site name(s): Hudson Creek

Site type: Prospect

ARDF no.: MZ027

Latitude: 65.2350 **Quadrangle:** MZ A-2

Longitude: 153.6609

Location description and accuracy:
A placer gold prospect on Hudson Creek was identified on a map by Eakin (1916), but it is difficult to reconcile that map with modern maps and locate it exactly. Mining claims were in staked in 1989 in sections 11 and 14, T. 3 S., R. 25 E., Kateel River Meridian (Kardex file 047-029; unpublished record, Alaska Division of Mining, Land & Water). For this record, the site is located on one of those claims at the junction of Hudson Creek with a west-flowing tributary, in the SE1/4 of section 11, T. 3 S., R. 25 E. The location is accurate.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The rocks in the vicinity of Hudson Creek and its headwaters are Precambrian or Paleozoic, greenschist-grade, quartz-chlorite-muscovite schist and micaceous quartzite and subordinate greenstone, glaucophane-bearing schist, and marble (Patton and others, 1977). The prospect is less than 1 mile west of a small stock of porphyritic, biotite quartz monzonite east of Gold Mountain. Patton and others (1977) correlate the quartz monzonite, which is altered and slightly cataclastic, with the Lower Cretaceous Melozitna pluton, dated at 111 +/- 3 Ma. The upper reaches of Hudson Creek parallel the quartz monzonite-schist contact.

Eakin (1916) reported a placer gold prospect on Hudson Creek, but did not describe any mining or production. Pete Vournas staked 8 mining claims in 1989 along Hudson Creek in sections 11 and 14, T. 3 S., R. 25 E. (Kardex file 047-029; unpublished record, Alaska Division of Mining, Land & Water). He did assessment work on the claims in 1990, but there is no record of any further work.

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:

Eakin (1916) reported a placer gold prospect on Hudson Creek, but did not describe any mining or production. Pete Vournas staked 8 mining claims in 1989 along Hudson Creek in sections 11 and 14, T. 3 S., R. 25 E. (Kardex file 047-029; unpublished record, Alaska Division of Mining, Land & Water). He did assessment work on the claims in 1990, but there is no record of any further work.

Production notes:

Reserves:

Additional comments:

This site is the Hudson Creek, U.S. BLM MILS location 0020470006 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Eakin, 1916; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Eakin, 1916

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/31/05

Site name(s): Unnamed (headwaters of Montana Creek); MC

Site type: Prospect

ARDF no.: MZ028

Latitude: 65.2301 **Quadrangle:** MZ A-2

Longitude: 153.5240

Location description and accuracy:

This lode prospect, informally called the Montana Creek prospect, is near the headwaters of Montana Creek, about 7 miles north of the mouth of the creek on the Yukon River. At least 90 mining claims were located at this site in the late 1970's (Kardex file 047-016; unpublished record, Alaska Division of Mining, Land & Water). The center of the claim block is in the northeast quarter of section 16, T. 3 S., R. 26 E., Kateel River Meridian. The location is accurate.

Commodities:

Main: Au

Other: Sn, W

Ore minerals: Pyrite, pyrrhotite

Gangue minerals: Amphibole, diopside, epidote, garnet, quartz, wollastonite

Geologic description:

The rocks in the vicinity of the Montana Creek prospect are Paleozoic quartz-feldspar-biotite gneiss and biotite-bearing quartzite, and subordinate quartz-biotite schist, marble, and calc-silicate rock (Patton and others, 1977). The gneiss is garnetiferous, locally contains sillimanite, and includes bodies of gneissic and massive quartz monzonite. The gneiss and quartzite grade into pelitic schist containing small bodies of marble and greenstone to the east, and into an elongate body of marble parallel to Montana Creek near the prospect. The prospect is about 1 mile east of a small, porphyritic, biotite quartz monzonite stock east of Gold Mountain. The stock is altered and slightly cataclastic. Patton and others (1977) correlate it with the Lower Cretaceous Melozitna pluton, which has a K-Ar date of 111+/-3 Ma.

WGM, Inc. discovered mineralization at this prospect while conducting a regional geochemical sampling program from 1975 to 1977 on Doyon land block 18 (DiMarchi and others, 1991). Their panned-concentrate samples from Montana Creek contained as much as 18 parts per million (ppm) tin and 150 ppm tungsten, but there were no anomalous gold values. Followup panned-concentrate samples contained up to 2 ppm gold, 160 ppm tin, and 290 ppm tungsten. Pyritic quartz vein float was assayed but did not contain significant metal values.

In 1978, Resource Associates of Alaska, Inc. located 90 mining claims, known as the MC claims, under an exploration agreement with Houston Oil & Minerals Corp. (Kardex file 047-016; unpublished record, Alaska Division of Mining, Land & Water). Exploration work in 1979 and 1980 included geological, geochemical, and geophysical surveys on the claims and surrounding area. Geological work consisted of mapping structures, alteration, mineralization, and the bedrock along ridge crests, stream valleys, and other areas with rock outcrops. The mineralization was observed principally in metamorphic and bedded rocks, including sandy carbonate, that strike north and border a granitic gneiss complex. Geochemical surveys in 1979 consisted of collecting and analyzing 446 soil and rock samples on a grid with 400-foot spacing, and targeted sampling in areas of known mineralization. The exploration showed that zones of anomalous geochemical values coincide with fractures in sandy carbonate and granitic gneiss. About 13,200 feet of ground magnetic surveys indicated that areas of anomalous magnetic susceptibility coincide with pyrrhotite mineralization in garnet-bearing amphibolite (probably skarn).

The geology and mineralization at this prospect is poorly known. North Star Exploration, Inc. (1999

[DLR 99-33]) reported that it is similar to the Glacier Creek (MZ024) and Ninemile Creek (MZ026) prospects, which they interpret as sulfide-bearing, garnet-epidote-diopside-wollastonite skarn deposits.

Alteration:
Metasomatism of carbonate-bearing rocks.

Age of mineralization:
Probably roughly coeval with emplacement of the Lower Cretaceous Melozitna pluton, dated by K-Ar at 111+/- 3 Ma (Patton and others, 1977).

Deposit model:
W 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:
WGM, Inc. discovered mineralization at this prospect while conducting a regional geochemical sampling program from 1975 to 1977 on Doyon land block 18 (DiMarchi and others, 1991). Their panned-concentrate samples from Montana Creek contained as much as 18 parts per million (ppm) tin and 150 ppm tungsten, but there were no anomalous gold values. Followup panned-concentrate sample yielded up to 2 ppm gold, 160 ppm tin, and 290 ppm tungsten. Pyritic quartz vein float was assayed but did not contain significant metal values.

In 1978, Resource Associates of Alaska, Inc. located 90 mining claims, known as the MC claims, under an exploration agreement with Houston Oil & Minerals Corp. (Kardex file 047-016; unpublished record, Alaska Division of Mining, Land & Water). Exploration work in 1979 and 1980 included geological, geochemical, and geophysical surveys on the claims and surrounding area. Geological work consisted of mapping structures, alteration, mineralization, and the bedrock along ridge crests, stream valleys, and other areas with rock outcrops. The mineralization was observed principally in metamorphic and bedded rocks, including sandy carbonate, that strike north and border a granitic gneiss complex. Geochemical surveys in 1979 consisted of collecting and analyzing 446 soil and rock samples on a grid with 400-foot spacing, and targeted sampling in areas of known mineralization. The exploration showed that zones of anomalous geochemical values coincide with fractures in sandy carbonate and granitic gneiss. About 13,200 feet of ground magnetic surveys indicated that areas of anomalous magnetic susceptibility coincide with pyrrhotite mineralization in garnet-bearing amphibolite (probably skarn).

The geology and mineralization at this prospect is poorly known. North Star Exploration, Inc. (1999 [DLR 99-33]) reported that it is similar to the Glacier Creek (MZ024).

Production notes:

Reserves:

Additional comments:
The Montana Creek prospect is on land selected by Doyon, Limited. For further information, contact Doyon, Limited, 1 Doyon Place, Suite 300, Fairbanks, Alaska 99701-2941.

This site is the Montana, U.S. BLM MILS location 0020470005 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:
Patton and others, 1977; DiMarchi and others, 1991; Meinert, 1992; North Star Exploration Inc., 1999 (DLR 99-33); Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: DiMarchi and others, 1991

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/14/05

Site name(s): Mason Creek

Site type: Mines

ARDF no.: MZ029

Latitude: 65.2265 **Quadrangle:** MZ A-1

Longitude: 153.3752

Location description and accuracy:

Mason Creek is about 8 miles long and flows southeast into Mason Slough on the Yukon River, about 7.5 miles west-southwest of Kallands. Two placer mines were listed by Cobb (1972, locations 4 and 5) on Mason Creek. One is just below the mouth of Henderson Creek; the other is just below the mouth of Buster Creek (also called Last Chance Creek). The mine near Henderson Creek is in the southwestern quarter of section 17, T. 3 S., R. 27 E., Kateel River Meridian; the one near Buster Creek is on the border between sections 27 and 34, T. 3 S., R 27 E. This site is located on Mason Creek midway between the junctions of Henderson and Buster creeks. The location is accurate.

Commodities:

Main: Au

Other: Sn

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:

Bedrock in the area of Mason Creek is Precambrian or Paleozoic, greenschist-grade, quartz-chlorite-muscovite schist and micaceous quartzite, with subordinate greenstone, glaucophane-bearing schist, and marble (Patton and others, 1977). The closest igneous body is a small, porphyritic, biotite quartz monzonite stock east of Gold Mountain and approximately 5 miles west of the junction of Henderson and Mason creeks. The quartz monzonite is altered and slightly cataclastic. Patton and others (1977) correlate the stock with the Lower Cretaceous Melozitna pluton, which has a K-Ar date of 111+/- 3 Ma.

Bedrock in Mason Creek is quartz-sericite and quartz-chlorite schist, (Chapman and others, 1963). Foliation in the schist generally strikes north and dips moderately to steeply east. Quartz veins and lenses cut the schist in the stream valley. Chapman and others (1963) did not list any lode mineralization here, and Cobb (1975) reported that no lode source has been identified for the gold in Mason Creek. The gradient of the creek is about 75 feet per mile.

Prospecting and small-scale mining began in 1908 on Mason Creek. During 1908, about $700 in gold (about 34 ounces) was recovered at the mouth of Buster (Last Chance) Creek, where the gravels were as much as 7 feet thick (Maddren, 1910 [B 410]). Placer gold in pellets about the size of bird shot were reported from the head of Mason Creek (Maddren, 1909). The gold was localized in the bottom few inches of the gravel and upper few feet of bedrock (Chapman and others, 1963). In 1917, a hydraulic plant was installed in an area where the placer ground was 12 to 20 feet thick. The unfrozen wash gravels on the benches bordering the creek remained relatively unprospected (Martin, 1919). In 1918, a small amount of cassiterite was recovered with gold during placer mining (Martin, 1920). A hydraulic plant was operated by Warren and Ferrell in 1926 and they reported pay gravel on the stream benches (Wimmler, 1927). Warren and Ferrell ground sluiced and shoveled gravels on a bench deposit near the lower end of Mason Creek (Wimmler, 1929). The mined bench is about 200 to 300 feet above the level of the modern creek. The bench was said to be extensive, to contain good average gold content, and to be up to 1,500 feet wide. A good water supply was obtained by a ditch from upper Mason Creek and the partners claimed good potential for a dredge operation. Several rows of prospect shafts were put down in the creek bed from a point 2

miles from Mason Slough upstream for 3.5 miles. In this area, the deposit reportedly is 500 to 600 feet wide with an average thickness of 15 feet, about half of which is muck. The ground is mostly frozen, with some thawed channels and easily washed clay overlying bedrock. John Minook also did a little mining on Mason Creek with the aid of an automatic dam (Wimmler, 1929). Prospecting continued from 1929 to 1932 and another hydraulic system was installed at one site on Mason Creek. Exploratory drilling was done near the mouth of Buster Creek in 1941 and 1942 (Chapman and others, 1963).

In July 1944, the U. S. Geological Survey examined drill holes, at least 6 prospect pits, and placer cuts on Mason Creek between Henderson and Buster Creeks in search of the bedrock source of the placer cassiterite (Chapman and others, 1963). The placer workings just below Henderson Creek appear to have been limited to the modern creek gravel deposits, although it is possible that some bench gravel was mined. The ground that was mined near Henderson Creek was as much as 800 feet long, at least 100 feet wide, and 5 to 8 feet thick,. However, the Survey's panned-concentrate samples from sluice box tailraces yielded only 2 small gold flakes and no cassiterite or magnetite. Several other panned concentrates from abandoned workings contained no cassiterite and only a little gold. A prospector reported that bench ground on the west side of Mason Creek contained 15 cents per square foot (0.004 ounce per square foot) in coarse gold, with some richer spots (Chapman and others, 1963).

Jacob Berry and Robert Spitzer located claims on Mason Creek in 1965 (Kardex file 047-0096; unpublished record, Alaska Division of Mining, Land & Water), Harold and Janet Gillam located 13 state mining claims on Mason and Henderson creeks in 1981, and in 1982 spent 69 days rebuilding a trail to the claims and digging prospect pits to define the placer paystreak. They(?) maintained 12 to 13 mining claims from 1983 to 1995. There is no information after 1955.

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:
Prospecting and small-scale mining began in 1908 on Mason Creek. During 1908 gold worth $700 (about 34 ounces) was recovered at the mouth of Buster (Last Chance) Creek, where the gravels were as much as 7 feet thick (Maddren, 1910 [B 410]). Placer gold in pellets about the size of bird shot were reported from the head of Mason Creek (Maddren, 1909). The gold was localized in the bottom few inches of the gravel and upper few feet of bedrock (Chapman and others, 1963). In 1917, a hydraulic plant was installed in an area where the placer ground was 12 to 20 feet thick. The unfrozen wash gravels on the benches bordering the creek remained relatively unprospected (Martin, 1919). In 1918, a small amount of cassiterite was recovered along with gold during placer mining (Martin, 1920). A hydraulic plant was operated by Warren and Ferrell in 1926 and they reported pay gravel on the stream benches (Wimmler, 1927). Warren and Ferrell ground sluiced and shoveled gravels on a bench near the lower end of Mason Creek (Wimmler, 1929). The mined bench lies 200 to 300 feet above the level of the modern creek. The bench was said to be extensive, to contain good average gold content, and to be up to 1,500 feet wide. A good water supply was obtained by a ditch from upper Mason Creek and the partners claimed good potential for a dredge operation. Several rows of prospect shafts were put down in the creek bed from a point 2 miles from Mason Slough upstream for 3.5 miles. In this area, the deposit reportedly is 500 to 600 feet wide with an average thickness of 15 feet, about half of which is muck. The ground is mostly frozen, with some thawed channels and easily washed clay overlying bedrock. John Minook also did a little mining on Mason Creek with the aid of an

automatic dam (Wimmler, 1929). Prospecting continued from 1929 to 1932 and another hydraulic system was installed at one site on Mason Creek. Exploratory drilling was done near the mouth of Buster Creek in 1941 and 1942 (Chapman and others, 1963).

In July 1944, the U. S. Geological Survey examined drill holes, at least 6 prospect pits, and placer cuts on Mason Creek between Henderson and Buster Creeks in search of the bedrock source of the placer cassiterite (Chapman and others, 1963). The placer workings just below Henderson Creek appear to have been limited to the modern creek gravel deposits, although it is possible that some bench gravel was mined. The worked ground near Henderson Creek was as much as 800 feet long, at least 100 feet wide, and 5 to 8 feet thick, but the Survey's pan-concentrate samples from sluice box tailraces yielded only 2 small gold flakes and no cassiterite or magnetite. Several other pan concentrates from abandoned workings contained no cassiterite and only a little gold. A prospector reported that prospected bench ground on the west side of Mason Creek yielded 15 cents per square foot (0.004 ounce per square foot) in coarse gold, with some richer spots (Chapman and others, 1963).

Jacob Berry and Robert Spitzer located claims on Mason Creek in 1965 (Kardex file 047-0096; unpublished record, Alaska Division of Mining, Land & Water), Harold and Janet Gillam located 13 state mining claims on Mason and Henderson creeks in 1981, and in 1982 spent 69 days rebuilding a trail to the claims and digging prospect pits to define the placer paystreak. They(?) maintained 12 to 13 mining claims from 1983 to 1995. Any work since 1995 is unknown.

Production notes:

Mason Creek was a small producer of placer gold. In 1908, $700 worth of gold (about 34 ounces) was mined. Sluicing in 1909 yielded as much as $27 per shovel (about 1.3 ounces recovered per day per man shoveling into a sluice box) (Maddren, 1910 ([B 410]; Chapman and others, 1963). Birdshot-sized nuggets of placer gold recovered near Henderson Creek reportedly were 900 fine (gold value of $18.60 per ounce of nuggets at a gold price of $20.67 per ounce) (Chapman and others, 1963).

Reserves:

Additional comments:

This site is the Mason Creek, U.S. BLM MILS location 0020470001 (Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004).

References:

Maddren, 1909; Maddren, 1910 (B 410); Martin, 1919; Martin, 1920; Wimmler, 1927; Wimmler, 1929; Smith, 1934; Chapman and others, 1963; Cobb, 1972; Cobb, 1975; Patton and others, 1977; Oddenino and others, 1995; Interagency Minerals Coordinating Group, 2004.

Primary reference: Wimler, 1929; Chapman and others, 1963

Reporter(s): G.E. Graham, D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/17/05

Site name(s): Unnamed (near Kallands)

Site type: Prospect

ARDF no.: MZ030

Latitude: 65.1870 **Quadrangle:** MZ A-1

Longitude: 153.0609

Location description and accuracy:
Kallands (also known as Hub Roadhouse) is a small settlement on the north bank of the Yukon River at the mouth of Illinois Creek The discovery of a placer tin deposit was first reported by Eakin (1913)near Calland [sic] (Wimmler, 1929). The location is assumed to be north of the Yukon River near the mouth of Illinois Creek, but it cannot be precisely located. This site is located at Kallands.

Commodities:

Main: Au, Sn

Other:

Ore minerals: Cassiterite, gold

Gangue minerals:

Geologic description:
The rocks in the vicinity of Kallands are a mix of Quaternary flood plain deposits, colluvium, alluvium, and terrace deposits (Patton and others, 1977). The rocks on the north side of the Yukon River in the vicinity of Illinois Creek are pelitic schist with interbedded marble and greenstone. The Lower Cretaceous Melozitna Pluton, a quartz-monzonite and granite stock, crops out approximately 13 miles to the north. The Kaltag fault, an east-northeast-striking, high-angle fault, crosses the Kallands area.

Wimmler (1929) reported that that a new discovery of placer tin near Kallands led to renewed interest in previously known occurrences of cassiterite on Illinois Creek (MZ017), Golden Creek (MZ018), and Moran Creek (MZ016). A hand drill was rushed into the area, and a little drilling was done on Illinois Creek, but its operation was soon suspended. At different times there were unverified reports that prospecting in this area produced a considerable quantity of of high-grade cassiterite concentrate, as well as some gold. Wimmler (1929) noted that the gravels could be processsed to produce a high-grade tin concentrate. The stream gradient of Illinois Creek is about 75 feet per mile.

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:

Wimmler (1929) reported that that a new discovery of placer tin near Kallands led to renewed interest in previously known occurrences of cassiterite on Illinois Creek (MZ017), Golden Creek (MZ018), and Moran Creek (MZ016). A hand drill was rushed into the area, and a little drilling was done on Illinois Creek, but its operation was soon suspended.

Production notes:

At different times there were unverified reports that prospecting in this area produced a considerable quantity of of high-grade cassiterite concentrate, as well as some gold (Wimmler, 1929).

Reserves:

Additional comments:

References:

Eakin, 1913; Wimmler, 1929; Patton and others, 1977.

Primary reference: Wimmler, 1929

Reporter(s): D.J. Szumigala (Alaska Division of Geological and Geophysical Surveys)

Last report date: 01/03/05

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