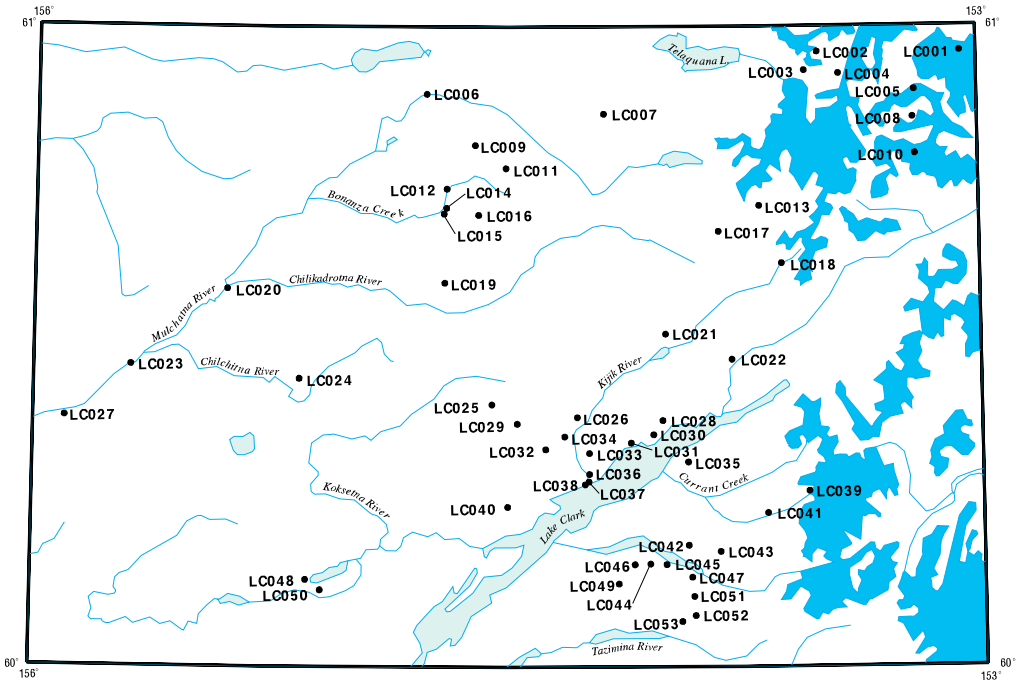
Alaska Resource Data File

U.S. Department of the Interior - U.S. Geological Survey

Lake Clark 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 Lake Clark 1:250,000-scale quadrangle, Alaska

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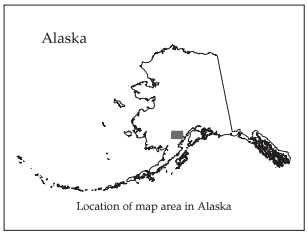

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OPEN-FILE REPORT 98-359

Site name(s): Neacola River

Site Type: Occurrence

ARDF no. LC001

Latitude: 60.96 **Quadrangle:** LC D-1

Longitude: 153.05

Location description and accuracy:
Occurrence is on peak 6,805 in the Neacola Mountains, NW corner of the Lake Clark D-1 quadrangle. Corresponds with locality 6 of Nelson and others (1985) and locality 19 of MacKevett and Holloway (1977). Sec. 17, T. 10 N., R. 21 W., of the Seward Meridian. Accurate within 1,200 meters.

Commodities:
Main: Cu, Mo **Other:** Pb?

Ore minerals: Azurite, bornite, molybdenite

Gangue minerals: Quartz

Geologic description:
Disseminated quartz veins containing pyrite, azurite, and traces of bornite in medium- to coarse-grained biotite-hornblende granodiorite (Nelson and others, 1983; unit Ti4). The quartz veins locally contain 3,600 ppm Mo and 8,800 ppm Cu.

Alteration:
Unknown

Workings/Exploration:
Veins locally contain 3,600 ppm Mo and 8,800 ppm Cu (Nelson and others, 1985).

Age of mineralization:
Veins cut Tertiary granodiorite.

Deposit model:
Porphyry Cu-Mo (Cox and Singer, 1986; model 21a)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Area is very rugged and partly covered by glaciers. Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A, Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no. LC002

Latitude: 60.96 **Quadrangle:** LC D-2

Longitude: 153.51

Location description and accuracy:
About 3 km northwest of Telaquana Pass, on a mountain peak surrounded by glaciers. Locality 38 of MacKevett and Holloway (1977). Sec. 15, T. 10 N., R. 24 W., of the Seward Meridian. Location accurate within 1.6 km.

Commodities:
Main: Cu **Other:** Ag, Zn

Ore minerals: Chalcopyrite, pyrhhotite, pyrite, sphalerite

Gangue minerals:

Geologic description:
Skarn deposit; marble interbedded with schist , phyllite, and metamorphosed mafic volcanic rocks in a large roof pendant in granitic rocks (Nelson and others, 1983). Mineralization consists of pyrite, pyrhhotite and minor amounts of chalcopyrite and sphalerite in granitic rocks and in metasedimentary roof pendants (MacKevett and Holloway, 1977). Quite similar to the nearby Glacier Fork occurrence (ARDF number LC008) and another unnamed occurrence (ARDF number LC010).

According to Nelson and others (1983, unit MzPzm), some of the metasedimentary rocks may correlate with the Kakhonak Complex of Permian (?), Triassic, and Jurassic age in the Iliamna quadrangle, and some may be graywacke of Jurassic and Cretaceous (?) age that has been metamorphosed by nearby plutonic rocks. Some of the metamorphosed volcanic rocks, especially in roof pendants, are probably part of the volcanic rocks of Tertiary age (Tv). Nelson and others (1983, unit Ti16) describe the granitic rocks as medium-grey, medium-grained biotite-hornblende granodiorite. Potassium-argon dates on biotite and hornblende from one speciman of this unit yielded ages of about 31 to 35 m.y. (Reed and Lanphere,1972; 1973).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
The granodiorite that produced the skarn has potassium-argon dates on biotite and hornblende of about 31 to 35 m.y. (Reed and Lanphere,1972; 1973).

Deposit model:
Porphyry Cu or Cu skarn (Cox and Singer, 1986; model 17 or 18b)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Reed and Lanphere,1972; Reed and Lanphere,1973; U.S. Geological Survey, 1977, unpublished information; MacKevett and Holloway, 1977; Nelson and others, 1983; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B

Primary reference: MacKevett and Holloway, 1977

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Telaquana River

Site Type: Occurrence

ARDF no. LC003

Latitude: 60.931 **Quadrangle:** LC D-2

Longitude: 153.552

Location description and accuracy:
Approximately 1.8 km north (upstream) from confluence of an unnamed southward flowing stream and the Telaquana River. This is locality 3 of Nelson and others (1985) and locality 17 of MacKevett and Holloway (1977). SW1/4NW1/4 sec. 28, T. 10 N., R. 24 W., of the Seward Meridian. Accurate to within 450 m.

Commodities:
Main: Mo **Other:**

Ore minerals: Molybdenite, pyrite

Gangue minerals:

Geologic description:
Sparse desseminations of molybdenite in contact zone of granodiorite and metamorphosed volcanic sedimentary rocks related to a roof pendant with marble that is heavily iron-stained and pyritized. Three of eight rock samples collected contained Mo, one sample with 3,200 ppm Mo (Nelson and others, 1985). The occurrence coincides with NW trending faults and a NE lineament. The granodiorite is a medium-gray, medium-grained biotite-hornblende granodiorite (Nelson and others, 1983, unit Ti16). Potassium-argon dates on biotite and hornblende from one speciman of this unit yielded ages of about 31 to 35 m.y. (Reed and Lanphere,1972; 1973).

Alteration:
Pyritization, strong iron-staining, and chlorite-epidote alteration of granodiorite.

Workings/Exploration:
Three of eight rock samples collected contained Mo (one with 3,200 ppm Mo). Nelson and others (1985) reported a weak halo of anomalous zinc concentration. No geochemical values provided.

Age of mineralization:
Tertiary or younger. Potassium-argon dates on biotite and hornblende from one granodiorite specimen yielded ages of about 31 to 35 m.y. (Reed and Lanphere,1972; 1973).

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:

Site is in Lake Clark National Park and Preserve.

References:

Reed and Lanphere,1972; Reed and Lanphere,1973; Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Telaquana Pass

Site Type: Occurrence

ARDF no. LC004

Latitude: 60.926 **Quadrangle:** LC D-2

Longitude: 153.442

Location description and accuracy:
In a divide between the Telaquana River drainage and the Neacola River drainage, about 11.2 km E-SE from the mouth of Telaquana River. This is locality 4 of Nelson and others (1985) and locality 18 of Mackevett and Holloway (1977). NE1/4SE1/4 sec. 25, T. 10 N., R. 24 W., of the Seward Meridian. Location accurate to within 300 m.

Commodities:
Main: Mo **Other:**

Ore minerals: Magnetite, molybdenite, pyrite, pyrrhotite

Gangue minerals: Quartz

Geologic description:
Resource Associates of Alaska (1976) reported molybdenite in veinlets of quartz and pyrite in quartz diorite near contact with granite. Large area of iron-staining due to weathering of pyrite veins and disseminated pyrite and pyrrhotite. MacKevett and Holloway (1977) describe the occurrence as being hosted in a composite Tertiary granitic pluton. Nelson and others (1983, unit Ti17) describe the rocks as uniformly grayish-white, coarse-grained biotite granite with lesser biotite-hornblende granite and granodiorite. There is some magnetite in quartz-magnetite veins. Adjacent granite is not mineralized. Resource Associates of Alaska (1976) reported a sample that yielded 2,200 ppm Mo. Nelson and others (1985) could not confirm the molybdenite occurrence.

The age of the granite host rock is Tertiary. Potassium-argon dates on samples from this granitic body range from 35 to 41 m.y. (Reed and Lanphere,1972; 1973).

Alteration:
Unknown

Workings/Exploration:
Resource Associates of Alaska (1976) reported a sample that yielded 2,200 ppm Mo.

Age of mineralization:
Granite host is Tertiary. Potassium-argon dates on samples from this granitic body range from 35 to 41 m.y. (Reed and Lanphere,1972; 1973).

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Reed and Lanphere,1972; Reed and Lanphere,1973; Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no. LC005

Latitude: 60.9 **Quadrangle:** LC D-1

Longitude: 153.2

Location description and accuracy:
On or near the mountaintop in the Neacola Mountains that is about 11.3 km SW of peak 6,805 (Neacola River occurrence - ARDF number LC001). Located in the NW corner of the Lake Clark D-1 quadrangle; occurrence #5 of Lambeth (1978). Location is only known within 5 km.

Commodities:
Main: Mo **Other:** W

Ore minerals: Molybdenite

Gangue minerals:

Geologic description:
Lambeth (1978) described the occurrence as coarse molybdenite with tungsten in fracture in quartz monzonite. Nelson and others (1983, unit Ti17) described the bedrock as granite and biotite-hornblende granite and granodiorite. Potassium-argon dates from samples of unit Ti17 range from about 35 to 41 m.y. (Reed and Lanphere, 1972; 1973). The rocks in the south seem to be younger than the rocks in the north (Nelson and others, 1983).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Mineralization is Tertiary or younger. Potassium-argon dates from samples of this plutonic body range from about 35 to 41 m.y. (Reed and Lanphere, 1972; 1973).

Deposit model:
Porphyry Mo, Low-F ? (Cox and Singer, 1986; model 21b ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
MAS/MILS sequence number 0020930025 (Bureau of Mines, 1995). Site is in Lake Clark National Park and Preserve. This unnamed occurrence may actually be the Neacola River occurrence (ARDF number LC001).

References:
Reed and Lanphere, 1972; Reed and Lanphere, 1973; Lambeth, 1978; Nelson and others, 1983; Bureau of Mines, 1995

Primary reference: Lambeth, 1978

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no. LC006

Latitude: 60.895 **Quadrangle:** LC D-5

Longitude: 154.759

Location description and accuracy:
3.2 km east of VABM Summit, north of Mulchatna River. This is locality 1 of Nelson and others (1985). SE1/4SW1/4 sec. 3, T. 9 N., R. 31 W., of the Seward Meridian. Locality is accurate within 300 m.

Commodities:
Main: Au ? **Other:**

Ore minerals:

Gangue minerals:

Geologic description:
The U.S. Bureau of Mines (1973) reported nine lode claims at this locality, which is the only indication of mineral resources. Nelson and others (1983, unit KJs) described the bedrock in the area as interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present. Scattered stocks and locally abundant dikes of intermediate to felsic composition intrude these sedimentary rocks. Adjacent to some of the larger igneous bodies are narrow contact aureoles of pelitic hornfels.

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Post Cretaceous to Jurassic ?

Deposit model:
Unknown

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

Production: None **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
None.

References:
U.S. Bureau of Mines, 1973; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Summit Creek

Site Type: Occurrence

ARDF no. LC007

Latitude: 60.864 **Quadrangle:** LC D-4

Longitude: 154.194

Location description and accuracy:
Locality is on an unnamed northwesterly flowing tributary of Summit Creek, about 4.7 km NNW of VABM Trail. Locality 2 of Nelson and others (1985) and the VABM Trail gold anomaly of Eakins and others (1978). SE1/4SW1/4 sec. 14, T. 9 N., R. 28 W., of the Seward Meridian. Accurate within 500 m.

Commodities:
Main: Au **Other:** Ag, Sn

Ore minerals: Gold

Gangue minerals:

Geologic description:
Occurrence detected from pan concentrates only, no rock samples taken. Stream sediment samples yield up to 500 ppm Au, 30 ppm Ag, and 500 ppm Sn (Eakins and others, 1978). The nearby bedrock is composed of a rhyolite or dacite dome complex and quartz monzonite intrusions (?) that has been locally sericitized, silicified, and contains gossan (Eakins and others, 1978).

Alteration:
The dome complex has been locally sericitized, silicified, and contains gossan (Eakins and others, 1978).

Workings/Exploration:
Stream sediment samples yield up to 500 ppm Au, 30 ppm Ag, and 500 ppm Sn (Eakins and others, 1978).

Age of mineralization:
Bedrock is Teriary to Cretaceous.

Deposit model:
Unknown

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Eakins and others, 1978; Nelson and others, 1985

Primary reference: Eakins and others, 1978

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Glacier Fork

Site Type: Occurrence

ARDF no. LC008

Latitude: 60.857 **Quadrangle:** LC D-1

Longitude: 153.206

Location description and accuracy:
Occurrence is on a peak surrounded by glaciers in the Neacola Mountains, central portion of the Lake Clark D-1 quadrangle. Locality 5 of Nelson and others (1985). SE1/4NE1/4 sec. 20, T. 9 N., R. 22 W., of the Seward Meridian. Accurate within 450 meters.

Commodities:
Main: Au, Cu **Other:** Ag, Zn

Ore minerals: Arsenopyrite, chalcopyrite, pyrrhotite, sphalerite

Gangue minerals: Garnet

Geologic description:
Nelson and others (1985) describe a high-grade, iron-poor, garnet-rich skarn deposit that consists of marble interbedded with schist and phyllite and metamorphosed mafic volcanic rocks in a large roof pendant in granitic rocks (Nelson and others, 1983). Mineralization consists of layers and veinlets of massive to disseminated pyrrhotite, chalcopyrite, arsenopyrite, and sphalerite. Nokleberg and others (1987) reported chip samples grading 20 g/t Ag, 0.38 g/t Au, 0.76 percent Cu, 3.4 percent Zn. Similar occurrences include the two unnamed occurrences (ARDF number LC002 and LC010) in the Neacola Mountains.

According to Nelson and others (1983, unit MzPzm), some of the metasedimentary rocks may correlate with the Kakhonak Complex of Permian (?), Triassic, and Jurassic age in the Iliamna quadrangle, and some may be graywacke of Jurassic and Cretaceous (?) age that has been metamorphosed by nearby plutonic rocks. Some of the metamorphosed volcanic rocks, especially in roof pendants, are probably part of the volcanic rocks of Tertiary age (Tv).

Alteration:
Unknown

Workings/Exploration:
Nokleberg and others (1987; 1997) reported chip samples grading 20 g/t Ag, 0.38 g/t Au, 0.76 percent Cu, 3.4 percent Zn.

Age of mineralization:
Permian (?) through Tertiary (?).

Deposit model:
Cu skarn (Cox and Singer, 1986; model 18b)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Discovered in 1978 by B.L. Reed. Referenced in Nelson and others, 1985, locality 5 as 'B.L. Reed and D.R. Cox, Oral Communication, 1980.' Site is in Lake Clark National Park and Preserve.

References:
Nelson and others, 1983; Nelson and others, 1985; Nockleberg and others, 1987; Nockleberg and others, 1997

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Bonanza Hills; VABM Trail

Site Type: Occurrence

ARDF no. LC009

Latitude: 60.815 **Quadrangle:** LC D-5

Longitude: 154.604

Location description and accuracy:
Along an unnamed N-NW flowing tributary of the Mulchatna River, about 5.6 km north of the juncture of Glacier Creek with Bonanza Creek. This is aproximately locality 8 of Nelson and others (1985) and locality 179 of Eakins and others (1978). SW1/4NE1/4 sec. 6, T. 8 N., R. 30 W., of the Seward Meridian. Locality accurate within 500 m.

Commodities:
Main: Au **Other:** Sn, W

Ore minerals: Chalcopyrite, gold, pyrite, scheelite

Gangue minerals:

Geologic description:
The site includes: narrow zones of en echelon arsenopyrite and stibnite-bearing quartz veins in shale and sandstone country rock adjacent to a small quartz monzonite plutons and dacite porphyry. The extensive sericitic and silic altered quartz monzonite is one of the numerous small intrusive bodies found in the central part of the Lake Clark 1:250,000 scale quadrangle mapped and identified by Eakins and others (1978); (Nelson and others, 1983, unit TKi5). One of these plutons yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). The plutons intrude Lower Cretaceous shale and sandstone, part of the regionally extensive Upper Jurassic and Lower Cretaceous flysch (Nokleberg and others, 1997). Anomalous stream sediment concentrates near small intrusive bodies containing disseminated chalcopyrite and pyrite. Eakins and others (1978) reported pan concentrates that yield anomalous gold (70 ppm), tin (1,000 ppm), and tungsten (2,000 ppm).

Alteration:
Extensive sericitic and silic alteration of the quartz monzonite (Nokleberg and others, 1997).

Workings/Exploration:
Pan concentrates yield anomalous 70 ppm Au, 1,000 ppm Sn, and 2,000 ppm W (Eakins and others, 1978).

Age of mineralization:
Rocks of the quartz monzonite unit yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). Thus the veins in the host rock aer Late Cretaceous or younger.

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
None.

References:
Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985; Nokleberg and others, 1997

Primary reference: Eakins and others, 1978

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Occurrence

ARDF no. LC010

Latitude: 60.8 **Quadrangle:** LC D-1

Longitude: 153.2

Location description and accuracy:
On peak 4,910 in the Neacola Mountains. In Sec. 5, T. 8 N., R. 22 W., of the Seward Meridian. Accurate within 5 km.

Commodities:
Main: Cu **Other:**

Ore minerals: Chalcopyrite

Gangue minerals:

Geologic description:
Skarn deposit: marble interbedded with schist, phyllite, and metamorphosed volcanic rocks in a large roof pendant in granitic rocks. Nelson and others (1983, unit Ki1) describe the granitic rocks as medium-grey, medium-grained sericitized granodiorite. Lambeth (1978) described the occurrence as several occurrences of chalcopyrite in roof pendant of interbedded limestone and andesite. Quite similar to the nearby Glacier Fork occurrence (ARDF number LC008) and another unnamed occurrence (ARDF number LC002). According to Nelson and others (1983, unit MzPzm), some of the metasedimentary rocks may correlate with the Kakhonak Complex of Permian (?), Triassic, and Jurassic age in the Iliamna quadrangle, and some may be graywacke of Jurassic and Cretaceous (?) age that has been metamorphosed by nearby plutonic rocks. Some of the metamorphosed volcanic rocks, especially in roof pendants, are probably part of the volcanic rocks of Tertiary age (Tv).

Alteration:
Plagioclase phenocrysts in the granodiorite show varying degrees of sericitization (Nelson and others, 1983).

Workings/Exploration:
Unknown

Age of mineralization:
The granodiorite associated with the skarn has a Cretaceous age. The rocks of the roof pendant range in age from Permian (?) to Tertiary (?).

Deposit model:
Cu skarn (Cox and Singer, 1986; model 18b)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
MAS/MILS sequence number 0020930026 (Bureau of Mines, 1995). Site is in Lake Clark National Park and Preserve. This unnamed occurrence may actually be the Glacier Fork occurrence (ARDF number LC008).

References:
Lambeth, 1978; Nelson and others, 1983; Bureau of Mines, 1995

Primary reference: Lambeth, 1978

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Bonanza Hills; Bonanza

Site Type: Occurrence

ARDF no. LC011

Latitude: 60.779 **Quadrangle:** LC D-5

Longitude: 154.506

Location description and accuracy:
Approximately 230 m SW of the top of peak 3,710 in the Bonanza Hills. Locality 10 of Nelson and others (1985) and locality 157 of Eakins and others (1978). SW1/4SW1/4 sec. 14, T. 8 N., R. 30 W., of the Seward Meridian. Locality accurate within 400 m.

Commodities:
Main: Ag, Au **Other:** Pb, Sb

Ore minerals: Arsenopyrite, gold, stibnite

Gangue minerals: Quartz

Geologic description:
Narrow zones of en echelon, arsenopyrite and stibnite-bearing quartz veins in shale and sandstone country rock adjacent to a small quartz monzonite plutons and dacite porphyry. The extensive sericitic and silic altered quartz monzonite is one of the numerous small intrusive bodies found in the central part of the Lake Clark 1:250,000 scale quadrangle mapped and identified by Eakins and others (1978), and (Nelson and others (1983, unit TKi5). One of these plutons yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). The plutons intrude Lower Cretaceous shale and sandstone, part of the regionally extensive Upper Jurassic and Lower Cretaceous flysch (Nokleberg and others, 1997).
Rock chip analyses yield up to 46 ppm Au, 38 ppm Ag, and 1,400 ppm Pb. Gold concentration is estimated to be as much as 42.86 g/t (1.25 oz/ton). The bedrock is poorly exposed and additional sampling is needed to evaluate the prospect.

Alteration:
Extensive sericitic and silicically altered quartz monzonite (Nokleberg and others, 1997).

Workings/Exploration:
Rock chip analyses yield up to 46 ppm Au, 38 ppm Ag, and 1,400 ppm Pb. Gold is estimated to be as much as 42.86 g/t (1.25 oz/ton).

Age of mineralization:
Rocks of the quartz monzonite unit yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). Thus, veins are is Late Cretaceous or younger.

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
None.

References:
Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985; Nokleberg and others, 1997

Primary reference: Eakins and others, 1978

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Pass Creek; Cash Creek

Site Type: Prospect

ARDF no. LC012

Latitude: 60.747 **Quadrangle:** LC C-5

Longitude: 154.694

Location description and accuracy:
Prospect is along an east to southeast flowing tributary of Bonanza Creek. This locality is plotted according to Jasper's (1961) map of the Bonanza Creek area.The Pass Creek on the USGS Lake Clark D-5 topographic map is labeled by Jasper (1961) as Cash Creek. This is locality 8 of Cobb (1972) and locality 7 of MacKevett and Holloway (1977). NE1/4 sec. 34, T. 8 N., R. 31 W., of the Seward Meridian. Location accurate to within 800 m.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
The Pass Creek is a placer gold deposit. Jasper (1961) reported: evidence indicates that glacial scouring was not an important erosional factor in this area, it is believed that pre-glacial alluvials were undisturbed, and that placer gold concentrations remain more or less as originally deposited along the creek . The valley surface width varies from 300 to 700 feet with an average width of 400 feet. The valley alluvials are mostly uniform gravels with some boulders, interpreted as reworked glacial deposits. Bedrock is shale, argillite, and graywacke cut by porphyritic granitic dikes. The sediments strike N 40 to 45 E, and dip varies from 60 to 75 SW.

Alteration:
Not applicable

Workings/Exploration:
Jasper (1961) reports a little ground sluicing. Pass (Cash) Creek reportedly (unconfirmed) has the coarsest gold in the Bonanza Creek area.

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: None **Status:** Inactive

Production notes:
Details unknown.

Reserves:
No reserves

Additional comments:

Some confusion may occur from mistaken tributary names. Pass Creek on the USGS Lake Clark D-5 topographic map is labeled by Jasper (1961) as Cash Creek. Essentially part of the Bonanza Creek placer deposit.

References:

Jasper, 1961; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-485; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B

Primary reference: Jasper, 1961

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Twin Lakes East

Site Type: Occurrence

ARDF no. LC013

Latitude: 60.72 **Quadrangle:** LC C-2

Longitude: 153.7

Location description and accuracy:
Locality is on Peak 6,515 approximately 4.8 km NE of the eastern end of Twin Lakes.This is locality 12 of Nelson and others (1985) and locality 20 of MacKevett and Holloway (1977).Sec. 8, T. 7 N., R. 25 W., of the Seward Meridian.Locality is accurate to within 1.6 km.

Commodities:
Main: Cu **Other:**

Ore minerals: Bornite, chalcopyrite, pyrrhotite

Gangue minerals:

Geologic description:
Disseminated chalcopyrite, bornite, and associated pyrrhotite occur in mafic to intermediate metavolcanic rocks interbedded with marble (Nelson and others, 1985; 1983, unit Tvf). Nelson and others (1983) report small intrusive bodies that range in composition from granite to gabbro also occur in vicinity. Potassium-argon ages range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
The metavolcanic rocks that host the mineralization have potassium-argon ages, by D.L. Turner, that range from 56.2 to 62.7 m.y. (Eakins and others, 1983).

Deposit model:
Kuroko massive sulfide ? or Porphyry Cu, skarn related ? (Cox and Singer, 1986; model 28a ? or 18a?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
28a ? or 18a ?

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, 1976; MacKevett and Holloway, 1977; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Bonanza Creek

Site Type: Mine

ARDF no. LC014

Latitude: 60.717 **Quadrangle:** LC C-5

Longitude: 154.695

Location description and accuracy:
Near intersection of Bonanza Creek and Little Bonanza Creek.Placer deposits extend from 'Gill's camp' at least 6 km upstream to above Cabin (or Cash) Creek and about 6 km downstream to Caribou Creek (Alaska Division of Mines and Minerals, 1961).This is locality 7 of Nelson and others (1985), localities 1 and 5 of MacKevett and Holloway (1977), and localities 1 and 6 of Cobb (1972).Locality of 'Gill's camp' accurate within 100 m.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals: not applicable

Geologic description:
Bonanza Creek is both placer gold deposit and gold-quartz vein occurrence. Jasper (1961) reported: evidence indicates that glacial scouring was not an important erosional factor in this area, it is believed that pre-glacial alluvials were undisturbed, and that placer gold concentrations remain more or less as originally deposited along Bonanza Creek . The valley surface width varies from 300 to 700 feet with an average width of 400 feet. The valley alluvials are mostly uniform gravels with some boulders, interpreted as reworked glacial deposits. Stream gradient is 1 to 1.5 percent. The near-surface ground water level suggests a fairly loose gravel due to lack of sufficient sediment to 'tighten' the ground. Under these circumstances, the greater gold concentrations (if any) may be on or near bedrock (Jasper, 1961).

Bedrock is shale, argillite, and graywacke cut by porphyritic granitic dikes. The sediments strike N 40 to 45 E, and dip varies from 60 to 75 SW. Many quartz veins were noted by Jasper (1961) but only one was closely examined. The 12-foot-wide mineralized shear zone contains quartz veins with 5 to 6 percent pyrite, minor arsenopyrite, and some free gold. The shear zone stikes E, and dips 45 to 50 N. The shear zone extends 150 feet up slope. The quartz occurs in more or less continuous stringer from a few inches to 10 or 12 inches in width. One pan sample taken accross 18 inches of outcrop showed 3 fine gold colors. The sample was not crushed to free possible gold included in quartz fragments (Jasper, 1961)

Alteration:
Not applicable

Workings/Exploration:
Brooks (1913) reported first encouraging prospects from benches of Bonanza Creek. By 1914, hand drills were in use to test placer ground in the Bonanza Creek drainage (Brooks, 1915; Jasper, 1961).

Jasper (1961) described the historic activity at Bonanza Creek: O.B. Millet was one of the original locators and spent 5 years propsecting his claims. He first sunk a 14 foot shaft which had to be abandoned because his hand pump could not handle the amount of water. Millet did not reach bedrock but he reported finding pay. He next

got $400 (including nuggets up to $1.50 - with gold at $20.67/oz) from 100 cubic yards of material from a narrow channel 80 feet above the 14 foot shaft. In the mid-1920s, Millet brought a 4-inch hand drill and a hand pump to test the valley alluvials. Six holes were drilled - three holes 6 miles below Gill camp and three holes 1.75 miles below Gill camp. The gold values were too low to warrent a mining operation. During the 1930's, a 4-inch drill was brought to the area overland from Nondalton. Enroute several holes were drilled on Dummy and Chilikindrotna Creeks with discouraging results. No holes were put down on Bonanza Creek due to lack of funds and the venture was abandoned.

Cobb (1973) indicated that there has been extensive prospecting, but total production, including from tributaries, was less than 150 oz. The valley might be capable of supporting a small dredge or a dragline operation.

Age of mineralization:
Quaternary.

Deposit model:
Placer Au and Au-quartz veins or Polymetallic veins ? (Cox and Singer, 1986; model 39a and 36a or 22c ?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a, 36a, or 22c

Production: Yes; small **Status:** Inactive

Production notes:
Principal site of prospecting in Mulchatna basin; total gold production since 1912 of the area probably less than 3,000 oz (Nelson and others, 1985).

Reserves:

Additional comments:
None.

References:
Brooks, 1913; Brooks, 1915; Smith, 1915; Smith, 1917; Brooks, 1925; Smith, 1915; Capps, 1932; Capps, 1935; Jasper, 1961; Cobb, 1976, OFR 76-485; Cobb, 1972, MF-378; Cobb, 1973, B 1374; Cobb, 1974, B 1374; MacKevett and Holloway, 1977; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Eakins and others, 1978

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Synneva (Scynneva) Creek

Site Type: Mine

ARDF no. LC015

Latitude: 60.708 **Quadrangle:** LC C-5

Longitude: 154.703

Location description and accuracy:
Locality is a 215 m long cut along Synneva Creek, about 270 m upstream from confluence of Bonanza Creek and Synneva Creek. This is part of locality 7 Nelson and others (1985) and locality 7 of Cobb (1972). SE1/4SW1/4 sec. 10, T. 7 N., R. 31 W., of the Seward Meridian. Locality is accurate to within 100 m.

Commodities:
Main: Au **Other:** Sn, W

Ore minerals: Cassiterite, gold, scheelite

Gangue minerals:

Geologic description:
Synneva (Scynneva) Creek is a placer gold deposit. Analysis of heavy concentrates yield 60 percent cassiterite and 1.36 percent tungsten (Eakins and others, 1978). Jasper (1961) reported: evidence indicates that glacial scouring was not an important erosional factor in this area, it is believed that pre-glacial alluvials were undisturbed, and that placer gold concentrations remain more or less as originally deposited along the creek. The valley alluvials are mostly uniform gravels with some boulders, interpreted as reworked glacial deposits. Bedrock is shale, argillite, and graywacke cut by porphyritic granitic dikes. The sediments strike N 40 to 45 E, and dip varies from 60 to 75 SW.

Alteration:
Not applicable

Workings/Exploration:
Work began in about 1957, and was limited to hand methods (ground-sluice and shovel-in). One man worked the mouth of the narrow gulch moving about 800 to 900 cubic yards, from which an unconfirmed $1,200 was recovered. There was no evidence to indicate that bedrock had been reached (Jasper, 1961).
Analysis of heavy concentrates yield 60 percent cassiterite and 1.36 percent tungsten (Eakins and others, 1978).

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: Yes; small **Status:** Probably inactive

Production notes:
Jasper (1961) mentioned about 35 oz Au production, but probably much more was unreported (Eakins and others, 1978).

Reserves:
No reserves

Additional comments:
Essentially part of the Bonanza Creek placer deposit.

References:
Jasper, 1961; Cobb, 1972, MF-378; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-485; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Eakins and others, 1978

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Bonanza Hills; Main Saddle

Site Type: Prospect

ARDF no. LC016

Latitude: 60.706 **Quadrangle:** LC C-5

Longitude: 154.593

Location description and accuracy:
Occurrence extends about 1.5 km along a ridge, between peak 3,860 and peak 3,966, in the Bonanza Hills, approximately 3.5 km E-SE of Little (Upper) Bonanza Creek. Locality 9 of Nelson and others (1985) and locality 130 of Eakins and others (1978). SW1/4SW1/4 sec. 6, T. 7 N., R. 30 W., of the Seward Meridian. Locality accurate within 400 m.

Commodities:
Main: Ag, Cu, Pb **Other:** Au

Ore minerals: Arsenopyrite, chalcopyrite, galena, tetrahedrite

Gangue minerals: Quartz

Geologic description:
A quartz-sulfide vein system containing tetrahedrite, arsenopyrite, galena, and chalcopyrite cuts sedimentary rocks and dacite hornfels. One vein system is exposed as 3-meter-wide zone of quartz sulfide 'splatter' veinlets that extends at least 150 meters along strike and to a depth of 50 meters. Channel samples have average values of 103 g/t (3 oz/ton) Ag and 0.5 percent combined Cu and Pb. Analyses also yield gold up to 2.24 ppm (Eakins and others, 1978).

The contact-metamorphosed dacite flow and sedimentary sequence is part of unit KJs (Nelson and others, 1983). It consists of interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present. Scattered stocks and locally abundant dikes of intermediate to felsic composition intrude these sedimentary rocks. Contact aureoles of pelitic hornfels are adjacent to some of the larger igneous bodies. The nearby intrusive rocks include rhyolite dikes and a Late Cretaceous, two-mica, hypabyssal, granite pluton (Nokleberg and others, 1997).

Alteration:
Unknown

Workings/Exploration:
Channel samples have average values of 103 g/t (3 oz/ton) Ag and 0.5 percent combined Cu and Pb. Analyses also yield gold up to 2.24 ppm (Eakins and others, 1978).

Age of mineralization:
Tertiary to Cretaceous or younger.

Deposit model:
Porphyry Cu or Polymetallic vein (Cox and Singer, 1986; model 17 or 22c)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
Nokleberg and others (1987; 1997) report an estimated 45,000 tonnes grading 81 g/t Ag, 0.15 g/t Au, 0.15% Cu, and 0.67 percent Pb.

Additional comments:
None.

References:
Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1983; Nelson and others, 1985; Nokleberg and others, 1987; Nokleberg and others, 1997

Primary reference: Eakins and others, 1978

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Twin Lakes West

Site Type: Occurrence

ARDF no. LC017

Latitude: 60.68 **Quadrangle:** LC C-3

Longitude: 153.83

Location description and accuracy:
About 2.1 km north of the eastern arm of Twin Lakes on peak 5,280. The 1.3 km wide, oval-shaped occurrence extends approximately 7.3 km S-SE across Twin Lakes, terminating near peak 5,570. Corresponds with locality 11 of Nelson and others (1985) and locality 21 of MacKevett and Holloway (1977).Sec. 22, T. 7 N., R. 26 W., of the Seward Meridian. Longitude and latitude of occurrence is accurate within 1,200 m.

Commodities:
Main: Cu, Pb, Zn **Other:**

Ore minerals: Chalcopyrite, galena, hematite, pyrite, sphalerite

Gangue minerals: Calcite, chlorite, epidote

Geologic description:
Mineralization occurs as fine-grained disseminations and hairline fracture fillings of pyrite and lesser chalcopyrite, sphalerite, and galena in silicified rhyolite and rhyolite-dacite volcanic rocks and breccias (Nelson and others, 1983). Resource Associates of Alaska (1976) considered the setting as a possible volcanic vent center. These rocks have undergone epidote and chlorite alteration, silicification, and lesser sericitization. The volcanic rocks have potassium-argon ages that range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Alteration:
The volcanic rocks have undergone epidote and chlorite alteration, silicification, and lesser sericitization.

Workings/Exploration:

Age of mineralization:
The volcanic rocks that host the mineralization have potassium-argon ages that range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:

Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Headwaters of Kijik River; including Franklin Gulch; Ingersol Gulch; Kellet Creek; and Lincoln Gulch

Site Type: Prospect

ARDF no. LC018

Latitude: 60.63 **Quadrangle:** LC C-2

Longitude: 153.63

Location description and accuracy:
The headwaters of the Kijik River are approximately 7 km southeast of the eastern tip of Twin Lakes. This location includes Franklin Gulch, Ingersol Gulch, Kellet Creek, and Lincoln Gulch (drainage names not on USGS 1:63,360 scale map).Location could be up to 5 km (or more) away from plotted point.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Martin and Katz (1910) report alluvium to be auriferous in headwaters of Kijik River to include Franklin Gulch, Ingersol Gulch, Kellet Creek, and Lincoln Gulch.
The dominant bedrock in the area is a multiphase hypabyssal leucocratic grayish-pink biotite granite pluton with diverse crystallinity and texture (Nelson and others, 1983; unit Ti13).

Alteration:
Not applicable

Workings/Exploration:
Martin and Katz (1910; 1912) reported prospects found in auriferous alluvium.

Age of mineralization:
Placer deposits are Quaternary. The age of the possible source of gold is a Tertiary granite (Nelson and others, 1983, unit Ti13).

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

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

Production: None **Status:** Inactive

Production notes:
Unknown

Reserves:
No reserves

Additional comments:
Location of the various headwaters is uncertain. No detailed map of area found. Site is in Lake Clark National Park and Preserve.

References:
Martin and Katz, 1910; Martin and Katz, 1912; Smith, 1915; Smith, 1917; Cobb, 1976, OFR 76-485; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B

Primary reference: Martin and Katz, 1910

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Ptarmigan Creek

Site Type: Prospect

ARDF no. LC019

Latitude: 60.6 **Quadrangle:** LC C-5

Longitude: 154.7

Location description and accuracy:
The location appears to include the whole of Ptarmigan Creek. Individual prospects not delineated. Location plotted as approximate midpoint of Ptarmigan Creek. Location could extend up to 13 km both upstream and downstream.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Brooks (1913) reported encouraging placer gold results from benches along Ptarmingan Creek. Ptarmigan Creek drains a diverse group of rocks: sedimentary rocks (unit KJs), volcanic rocks (unit Tv), plutonic rocks (unit TKi6), and the Chilikadrotna Greenstone. The Chilikadrotna Greenstone is a Late Silurian unit of weakly metamorphosed basalt, andesite, chert, limestone, and tuffaceous sedimentary rocks. Fossils from a limestone lens in the Chilikadrotna Greenstone suggest an early Late Silurian age (Bundtzen and others, 1979). Nelson and others (1983) described the unit KJs as interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present. Small diorite bodies (unit TKi6) intrude these sedimentary rocks. One diorite pluton yielded a potassium-argon age on hornblende of 69.4 +/- 2.1 m.y. (Eakins and others, 1978) Adjacent to some of the larger igneous bodies are narrow contact aureoles of pelitic hornfels. Unit Tv includes: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown

Age of mineralization:
The placer gold is Quaternary, the source of gold could come from a variety of rocks with diverse ages.

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

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

Production: Undetermined **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
Cobb (1976) indicates that the location of the creek is not given, and because no other mention of the creek occurs, the report is suspect.

References:
Brooks, 1913; Cobb, 1976, OFR 76-485; Eakins and others, 1978; Bundtzen and others, 1979; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B

Primary reference: Brooks, 1913

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Lambert's Bar

Site Type: Occurrence

ARDF no. LC020

Latitude: 60.59 **Quadrangle:** LC C-7

Longitude: 155.39

Location description and accuracy:
Occurrence (mine ?) is at the confluence of the Chilikadrotna River with the Mulchatna River. Sec. 22, T. 6 N., R. 35 W., of the Seward Meridian. Accurate within 1.6 km.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Lambert's Bar is a placer gold occurrence (mine ?) on the Mulchatna River. The most abundant bedrock in the areas upstream of the locality is unit KJs. Nelson and others (1983) described unit KJs as interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present. Scattered stocks and locally abundant dikes of intermediate to felsic composition intrude these sedimentary rocks. Adjacent to some of the larger igneous bodies are narrow contact aureoles of pelitic hornfels. Unit KJs is intruded (locally) by various Cretaceous to Tertiary plutons. The plutons include a quartz monzonite. One pluton yielded a potassium-argon age on hornblende of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). Also present is Unit Tv of Nelson and others (1983) which includes: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown

Age of mineralization:
The placer gold is Quaternary, the source of gold could come from a variety of rocks with diverse ages.

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

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

Production: Undetermined **Status:** Undetermined

Production notes:
Unknown

Reserves:
No reserves

Additional comments:

References:

Cobb, 1973, B 1374 (Cobb cites unpublished data as reference to locality); Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Nelson and others, 1983

Primary reference: Cobb, 1973, B 1374

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Link

Site Type: Occurrence

ARDF no. LC021

Latitude: 60.52 **Quadrangle:** LC C-3

Longitude: 154

Location description and accuracy:
6.4 km W-NW of Portage Lake, in Sec. 15, T. 5 N., R. 27 W., of the Seward Meridian. Accurate within 500 meters.

Commodities:
Main: Au **Other:** Ag

Ore minerals:

Gangue minerals:

Geologic description:
The only information is that the U.S. Bureau of Mines (1995) reported as a lode gold and silver deposit.

The bedrock in the vicinity of the occurrence is Tertiary volcanic rocks. The rocks of this unit include: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows (Nelson and others, 1983, unit Tv). Potassium-argon ages for this unit (Tv) range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978) indicating a Tertiary age for the host rocks to the mineralization.

Deposit model:
Unknown

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
MAS/MILS sequence number 0020930009 (Bureau of Mines, 1995). Site is in Lake Clark National Park and Preserve.

References:
Eakins and others, 1978; Nelson and others, 1983; Bureau of Mines, 1995

Primary reference: Bureau of Mines, 1995

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Otter Lake

Site Type: Occurrence

ARDF no. LC022

Latitude: 60.48 **Quadrangle:** LC B-3

Longitude: 153.79

Location description and accuracy:
Locality is on the slope about 650 m NW of Otter Lake. This is locality 14 of Nelson and others (1985) and locality 22 of MacKevett and Holloway (1977). Sec. 35, T. 5 N., R. 26 W., of the Seward Meridian. Locality is accurate to within 1.6 km. Coordinates are for a point in the center of the occurrence. The occurrence is 2.6 km wide and extends 3.2km NE and SW from plotted location.

Commodities:
Main: Cu **Other:** Zn

Ore minerals: Chalcopyrite, pyrite, sphalerite

Gangue minerals:

Geologic description:
West of Otter Lake, chlorite schists contain interbedded argillites, cherts, and recrystallized limestone. The schist contains disseminated chalcopyrite in massive pyrite. Within the Lake Clark schist belt. MacKevett and Holloway (1977) describe the rocks as Paleozoic (?) schists, largely of volcanic derivation; inlcudes both mafic and felsic volcanic schist. Felsic meta-volcanic rocks northeast of Portage Lake (located NW of Otter Lake) are considered to be a favorable host for network type copper-zinc deposit (Resource Associates of Alaska, 1976). Limestone beds are common hosts for mineralization.

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Host is Paleozoic ?

Deposit model:
Kuroko massive sulfide ? (Cox and Singer, 1986; model 28a ?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
28a ?

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Resource Associates of Alaska, Inc., 1976

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Mulchatna

Site Type: Occurrence

ARDF no. LC023

Latitude: 60.471 **Quadrangle:** LC B-8

Longitude: 155.693

Location description and accuracy:
About 13 km northeast of VABM Overlook, near where the southeast flowing Springway Creek enters the Mulchatna River. NW1/4 sec. 3, T. 4 N., R. 37 W., of the Seward Meridian. Locality is accurate to within 800 m.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Spurr (1900) reported placer gold, too flaky and fine to save, 200 miles from mouth of river as early as 1890. Brooks (1904) reported gold has long been known in the upper reaches of the river. Placer said to yield $4-5 per day per man in 1903, but area too remote for mining. Cobb (1976) indicated he thought Brooks (in 1904 report) may have been discussing placers of Bonanza Creek.

The most abundant bedrock in the areas upstream of the claims is unit KJs (Nelson and others, 1983). Unit KJs is described as interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present. Scattered stocks and locally abundant dikes of intermediate to felsic composition intrude these sedimentary rocks. Adjacent to some of the larger igneous bodies are narrow contact aureoles of pelitic hornfels. Unit KJs is intruded (locally) by various Cretaceous to Tertiary plutons. The plutons include quartz monzonite, grano-diorite, diorite, and rhyolite dikes. Also present is Unit Tv of Nelson and others (1983) which includes rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Three placer gold claims noted in 1973 by the U.S. Bureau of Mines.

Age of mineralization:
The placer gold is Quaternary, the source of gold could come from a variety of rocks with diverse ages.

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

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

Production: Undetermined **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
Cobb and Reed (1981) mention gold in most river bars of the Mulchatna River, with most prospecting occurring around the late 1890's or early 1900's.

References:
Spurr, 1900; Brooks, 1904; Katz, 1910; Martin and Katz, 1910; Smith, 1915; Smith, 1917; Cobb, 1973, B 1374; U.S. Bureau of Mines, 1973; Cobb, 1976, OFR 76-485; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A

Primary reference: U.S. Bureau of Mines, 1973

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Charlie Creek

Site Type: Prospect

ARDF no. LC024

Latitude: 60.45 **Quadrangle:** LC B-6

Longitude: 155.16

Location description and accuracy:
Approximately 9.6 km N-NE of Mesa Mountain nearly 2.2 km upstream from the confluence an unnamed SW flowing tributary of the Chilchitna River. Locality 13 of Nelson and others (1985) and locality 16 of MacKevett and Holloway (1977). Sec. 10, T. 4 N., R. 34 W., of the Seward Meridian. Locality accurate within 1.6 km.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Prospect, which includes fifteen placer gold claims, occurs at the contact of a sedimentary rocks and quartz monzonite. The sedimentary package includes: interbedded medium-gray, medium- to fine-grained lithic graywacke, silty sandstone, black shale, and local conglomerate (Nelson and others, 1983; unit KJs). The quartz monzonite is part of the numerous small intrusive bodies found in the central part of the Lake Clark 1:250,000 scale quadrangle mapped and identified by Eakins and others (1978). One of these plutons yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown

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: Undetermined **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
None.

References:
U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Pass Lake West

Site Type: Occurrence

ARDF no. LC025

Latitude: 60.41 **Quadrangle:** LC B-5

Longitude: 154.55

Location description and accuracy:
An extensive arcuate shaped occurrence centered approximately at a point 8 km upstream from the mouth of an unnamed northwest flowing tributary of the Koksetna River. The occurrence extends roughly 6.5 km northwest and 8 km south of this location and is about 2.9 km wide. Locality 15 of Nelson and others (1985) and locality 23 of MacKevitt and Holloway (1977). Sec. 30, T. 4 N., R. 30 W., of the Seward Meridian. Locality accurate within 1.6 km.

Commodities:
Main: Ag, Cu **Other:** Mo, Zn

Ore minerals:

Gangue minerals:

Geologic description:
Weak geochemical anomalies associated with granite and rhyolite that may include breccia pipes. Granite is less fractured and iron-stained than rhyolite (Nelson and others, 1985).

The granite is part of the numerous, mostly quartz monzonite intrusive bodies found in the central part of the Lake Clark 1:250,000 scale quadrangle mapped and identified by Eakins and others (1978); (Nelson and others, 1983; unit TKi5). One of these plutons yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). The rhyolite is part of unit Tv. Unit Tv is described by Nelson and others (1983) to include: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for this unit (Tv) range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Unknown

Workings/Exploration:
Unknown, although Resource Associates of Alaska (1976) completed a sampling program that identified the occurrence.

Age of mineralization:
Late Cretaceous or younger. Rocks of the quartz monzonite unit yielded a potassium-argon biotite age of 71.3 +/- 2.1 m.y. (Eakins and others, 1978). Potassium-argon ages for the rhyolite, unit Tv, range from 56.2 to 62.7 m.y. (Eakins and others, 1978)

Deposit model:
Porphyry Cu - Mo ? (Cox and Singer, 1986; model 21a ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, 1976; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Kijik Mountain; Kijik Mountain North

Site Type: Occurrence

ARDF no. LC026

Latitude: 60.39 **Quadrangle:** LC B-4

Longitude: 154.28

Location description and accuracy:
Approximately 5.6 km north of Kijik Mountain, near peak 3,180. Locality 19 of Nelson and others (1985) and locality 27 of MacKevett and Holloway (1977). Sec. 35, T. 4 N., R. 29 W., of the Seward Meridian. Locality accurate within 1.6 km.

Commodities:
Main: Zn **Other:** Ag, Pb

Ore minerals: Pyrite, pyrrhotite

Gangue minerals:

Geologic description:
Area of widespread zinc and trace lead anomalies associated with silicified zones in felsic volcanic rocks. Several zones of intense fracturing and iron-staining contain 1 percent to 3 percent pyrrhotite or pyrite. Samples taken from zones of intense fracturing and iron-staining yielded values of 220 to 260 ppm Zn (Resource Associates of Alaska, 1976). The volcanic rocks include: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows (Nelson and others, 1983; unit Tv). Potassium-argon ages for Unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Iron-staining, silicic alteration, and slight chloritic alteration of volcanic rocks (Resource Associates of Alaska, 1976).

Workings/Exploration:
Samples taken from zones of intense fracturing and iron-staining yielded values of 220 to 260 ppm Zn (Resource Associates of Alaska, 1976).

Age of mineralization:
Tertiary; volcanic host for mineralization has potassium-argon ages that range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Deposit model:
Kuroko massive sulfide ? (Cox and Singer, 1986; model 28a ?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
28a ?

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Prospect

ARDF no. LC027

Latitude: 60.39 **Quadrangle:** LC B-8

Longitude: 155.9

Location description and accuracy:
About 6.8 km west-northwest of VABM Overlook, where generally northward flowing tributaries enter the Mulchatna River. Sec. 32, T. 4 N., R. 38 W., of the Seward Meridian. Locality accurate within 1.6 km.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Only information is that 162 placer gold claims were staked here near the Mulchatna River (U.S. Bureau of Mines, 1973).

The most abundant bedrock in the areas upstream of the claims is a Jurassic to Creataceous flysch sequence (Nelson and others, 1983; unit KJs). Unit KJs is described as interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present. Scattered stocks and locally abundant dikes of intermediate to felsic composition intrude these sedimentary rocks. Adjacent to some of the larger igneous bodies are narrow contact aureoles of pelitic hornfels. Unit KJs is intruded (locally) by various Cretaceous to Tertiary plutons. The plutons include quartz monzonite, monzodiorite, grano-diorite, diorite, and rhyolite dikes. Also present is Unit Tv of Nelson and others (1983) which includes rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown

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: Undetermined **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
Cobb and Reed (1981) mention gold in most river bars of the Mulchatna River, with most prospecting occurring around the late 1890's or early 1900's.

References:
U.S. Bureau of Mines, 1973; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A

Primary reference: U.S. Bureau of Mines, 1973

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Portage Creek

Site Type: Occurrence

ARDF no. LC028

Latitude: 60.385 **Quadrangle:** LC B-3

Longitude: 154.01

Location description and accuracy:
Prospect is located about 3.6 km north of the mouth of Portage Creek. Locality 23 of Nelson and others (1985) and locality 15 of MacKevett and Holloway (1977). Sec. 5, T. 3 N., R. 27 W., of the Seward Meridian. Locality accurate within 800 m.

Commodities:
Main: Au **Other:** Ag

Ore minerals: Gold

Gangue minerals:

Geologic description:
Only information is that lode claims (U.S. Bureau of Mines, 1973) are located along part of the Lake Clark fault.

Near the claims, the fault separates metamorphic rocks of Paleozoic to Mesozoic age and Tertiary volcanic rocks. The claims appear to straddle the Lake Clark Fault and span both lithologies. According to Nelson and others (1983, unit MzPzm), metamorphosed mafic volcanic rocks are the most widespread rocks of this unit; they are aphanitic and were probably originally composed of plagioclase and pyroxene, and locally olivine and amphibole. These rocks have been altered, and they now consist mostly of chlorite, epidote, and fibrous amphibole. Other lithologies of this unit include: phyllite, schist, quartzite, marble, calc-silicate rocks, serpentinite, gabbro, and chert. Unit Tv is described by Nelson and others (1983) to include rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
The metamorphic rocks consist mostly of chlorite, epidote, and fibrous amphibole (Nelson and others, 1983).

Workings/Exploration:
Unknown

Age of mineralization:
Unknown

Deposit model:
Unknown

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Pass

Site Type: Prospect

ARDF no. LC029

Latitude: 60.38 **Quadrangle:** LC B-4

Longitude: 154.47

Location description and accuracy:
About 10.8 km NW of Kijik Lake. Locality 16 of Nelson and others (1985) and locality 24 of MacKevett and Holloway (1977). Sec. 3, T. 3 N., R. 30 W., of the Seward Meridian. Locality is accurate to within 2.0 km.

Commodities:
Main: Cu, Pb **Other:** Ag, Mo, Sb, Zn

Ore minerals: Argentiferous tetrahedrite (?), chalcopyrite, galena, molybdenite, pyrite, pyrrhotite

Gangue minerals: Quartz

Geologic description:
Iron-staining reported to be related to stockwork-fracture filling of pyrite and (or) pyrrhotite and varying amounts of chalcopyrite, galena, and tetrahedrite (?). Resource Associates of Alaska (1976) reported values up to 470 ppm Ag, 3,000 ppm Cu, 1,500 ppm Pb, and 3,600 ppm Zn. Mineralization is associated with a silicified, brecciated zone in propylitically altered dacite porphyry, possibly an explosive vent breccia, part of unit Tv (Nelson and others, 1983). Unit Tv includes rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for Unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Iron-staining, silicification, and propylization of the dacite.

Workings/Exploration:
Resource Associates of Alaska (1976) reported values up to 470 ppm Ag, 3000 ppm Cu, 1500 ppm Pb, and 3600 ppm Zn. Eakins and others (1978) reported a Mo anomaly of 66 ppm.

Age of mineralization:
Tertiary; potassium-argon ages for rocks of Unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Deposit model:
Porphyry Cu - Mo ? (Cox and Singer, 1986; model 21a ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
No ore grade mineralization has been discovered (Nelson and others, 1985). Site is in Lake Clark National Park and Preserve.

References:

Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1983; Nelson and others, 1985; Nokleberg and others, 1987; Young and others, 1997

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:
Last report date: 6/15/98

Site name(s): Portage Creek

Site Type: Mine

ARDF no. LC030

Latitude: 60.363 **Quadrangle:** LC B-3

Longitude: 154.039

Location description and accuracy:
Portage Creek, which flows southward, empties into Lake Clark. Mining extends from the mouth of Portage Creek to about 2.75 km upstream. This is locality 24 of Nelson and others (1985), locality 8 of MacKevett and Holloway (1977), and locality 9 of Cobb (1972). Sec. 7, 17, and 18 T. 3 N., R. 27 W., of the Seward Meridian.

Commodities:
Main: Au **Other:** Ba

Ore minerals: Gold

Gangue minerals:

Geologic description:
Bundtzen and Kline (1979) described the Portage Creek placer deposits. The stream gravels in the canyon (upper claims) are undergoing rapid transport by periodic floods which move large amounts of gravel and boulders. The stream gradient in the canyon drops about 500 ft/mile (100 m/km). Downstream from the canyon (lower claims) is a large alluvial fan delta. Former bedrock channels may be 120 ft (40 meters) or more in depth. The stream gradient in fan-delta complex drops about 200 ft/mile (40 m/km). Portage Creek is crossed by the NE-trending Lake Clark fault zone. Bundtzen and Kline (1979) indicate that the placer deposits formed in response to relatively short-term hydraulic events, contrasting with older, more developed heavy mineral placers of interior Alaska. Most or all gravel in the Portage Creek area are thawed.

Bedrock in the vicinity includes Tertiary volcanics (rhyolitic breccia, ash-flow tuff, flows and intrusive rocks - and subordinate mafic to intermediate flows) and late Paleozoic-early Mesozoic metamorphic rocks (Nelson and others, 1983; units Tv and MzPzm).

Alteration:
Not applicable

Workings/Exploration:
Early mining work was by primitive pick and shovel methods. Hydraulic methods were used between 1939 and 1958 utilizing an earthen dam, flume, hydraulic pipe, and hydraulically operated winch.

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: Yes; small **Status:** Active

Production notes:
A total production figure for Portage Creek is not available. Probably no more than 1,000 oz of gold was produced since discovery in about 1900 (Bundtzen and Kline, 1979).

Reserves:
No reserves

Additional comments:
Lode source of gold has not been found, but believed to be close. Site is in Lake Clark National Park and Preserve.

References:
Martin and Katz, 1910; Martin and Katz, 1912; Brooks, 1913; Brooks, 1914; Smith, 1915; Smith, 1917; Martin, 1919; Martin, 1920, Capps, 1932; Capps, 1935; Smith, 1941; Eakins, 1970; Cobb, 1972, MF-378; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-485; MacKevett and Holloway, 1977; Bundtzen and Kline, 1979; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Bundtzen and Kline, 1979

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Blanca Dinero

Site Type: Occurrence

ARDF no. LC031

Latitude: 60.35 **Quadrangle:** LC B-3

Longitude: 154.11

Location description and accuracy:
Occurrence is about 5.8 km west of the mouth of Portage Creek, in Sec. 15, T. 3 N., R. 28 W., of the Seward Meridian. Accurate within 1,600 meters.

Commodities:
Main: Asbestos **Other:**

Ore minerals:

Gangue minerals:

Geologic description:
Only indication of occurrence is report by U.S. Bureau of Mines (1995) as an asbestos deposit.

The bedrock in the vicinity of the occurrence is Tertiary volcanic rocks. The rocks of this unit include: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows (Nelson and others, 1983; unit Tv). Potassium-argon ages for this unit (Tv) range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Tertiary or younger; potassium-argon ages for this unit (Tv) range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Deposit model:
Unknown

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
MAS/MILS sequence number 0020930010 (Bureau of Mines, 1995). Site is in Lake Clark National Park and Preserve.

References:
Eakins and others, 1978; Nelson and others, 1983; Bureau of Mines, 1995

Primary reference: Bureau of Mines, 1995

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Kijik Lake; Thompson

Site Type: Occurrence

ARDF no. LC032

Latitude: 60.34 **Quadrangle:** LC B-4

Longitude: 154.38

Location description and accuracy:
Nearly 5.0 km N-NW of Kijik Lake. Locality 17 of Nelson and others (1985) and locality 25 of MacKevett and Holloway (1977). Sec. 18, T. 3 N., R. 29 W., of the Seward Meridian. Locality accurate within 1.6 km.

Commodities:
Main: Cu **Other:** Ag, Zn

Ore minerals: Chalcopyrite, pyrite

Gangue minerals:

Geologic description:
The anomaly occurs in a structural zone where biotitic, chloritic, and strong silicic alterated dacite porphyry and breccia have been mineralized by 1 percent to 3 percent pyrite and traces of chalcopyrite (?) (Nelson and others, 1983; unit Tv). Mineralization spreads out along a NW-SE fault; possible breccia pipe or intrusive plug localized by the NW-SE fault. Analysis of rock sample yielded 5.8 ppm Ag, 180 ppm Cu, and 275 ppm Zn. Potassium-argon ages for this unit (Tv) range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Biotite, chloritic, and strong silicic alteration of the dacite.

Workings/Exploration:
Analysis of rock sample yielded 5.8 ppm Ag, 180 ppm Cu, and 275 ppm Zn.

Age of mineralization:
Tertiary or younger; potassium-argon ages for the volcanic rocks range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Overall, anomaly is weak. This may also be locality 2 of Mackevett and Holloway (1977) which corresponds with the Thompson prospects, 2 and 3, of Cobb (1972). Site is in Lake Clark National Park and Preserve.

References:
Cobb, 1972, MF-378; Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Prospect

ARDF no. LC033

Latitude: 60.334 **Quadrangle:** LC B-4

Longitude: 154.242

Location description and accuracy:
Prospect is on the southwestern flank of Kijik Mountain. Locality 20 of Nelson and others (1985) and locality 14 of MacKevett and Holloway (1977). NE1/4SW1/4 sec. 24, T. 3 N., R. 29 W., of the Seward Meridian. Locality accurate within 400 m.

Commodities:
Main: Au, Mo **Other:**

Ore minerals: Molybdenite

Gangue minerals: Quartz

Geologic description:
Molybdenum claim in rhyolite and associated granite bodies (Nelson and others, 1983; unit Tv). Unit Tv includes rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. MacKevett and Holloway (1977) speculated that the claim is located in an area of quartz veining. Potassium-argon ages for Unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Tertiary or younger; potassium-argon ages for the host rock range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1986

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Kijik River; Thompson

Site Type: Prospect

ARDF no. LC034

Latitude: 60.36 **Quadrangle:** LC B-4

Longitude: 154.32

Location description and accuracy:
Approximately 4.0 km NW of Kijik Mountain; on peak 3,440 - 1.9 km west of Kiljik River. Locality 18 of Nelson and others (1985), locality 26 of MacKevett and Holloway (1977), and the approximate location of locality 4 of Cobb (1972). Sec. 9, T. 3 N., R. 29 W., of the Seward Meridian. Locality accurate within 2.0 km.

Commodities:
Main: Cu **Other:** Ag, Mo, Pb, Zn

Ore minerals: Argentiferous galena, arsenopyrite, chalcopyrite, molybdenite, pyrite, sphalerite

Gangue minerals: Calcite, quartz, rhodochrosite

Geologic description:
Granodiorite stock and rhyolite (Nelson and others, 1983; unit Tv) cut by 0.64-2.54 cm thick N-S trending quartz-chalcopyrite and quartz-pyrite-arsenopyrite veins. Mineralization also disseminated in the rhyolite and granodiorite (Resource Associates of Alaska, 1976). Grab samples contain up to 0.25 percent Cu and 0.17 percent Mo (Nokleberg and others, 1997). Nokleberg and others (1997) describe the site as: a large area of dessiminated sulfides in, and adjacent to an early Tertiary dacite porphyry. Orange gossan covers over a 3 square kilometer area with extensive stockwork and zones of sericite and sulfides. The dacite porphyry has undergone extensive propylitic and silicic alteration. Potassium-argon ages for host rock range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Moxham and Nelson (1952) reported the 'Thompson silver-lead claims' occur near here and consist of arsenopyrite with a little galena (argentiferous?), chalcopyrite, sphalerite, and pyrite in a gangue of calcite and rhodochrosite. This mineralization was reported to occur in a 183 m wide shear zone in granitic rock (but authenticity unknown).

Alteration:
Extensive propylitic and silicic alteration of the dacite porphyry (Nokleberg and others, 1997).

Workings/Exploration:
Samples taken by Resource Associates of Alaska (1976) were anomalous in copper and silver. Grab samples contain up to 0.25 percent Cu and 0.17 percent Mo (Nokleberg and others, 1997).

Age of mineralization:
Tertiary or younger; potassium-argon ages for the host rock range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Deposit model:
Porphyry Cu or Polymetallic vein (Cox and Singer, 1986; model 17 or 22c)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
Estimated reserves of 91 million tonnes (Nokleberg and others, 1997).

Additional comments:
Older descriptions are of questionable reliability. Locality 4 of Cobb (1972) probably the same as locality 3 of MacKevett and Holloway (1977), the Thompson claims. Site is in Lake Clark National Park and Preserve.

References:
Brooks, 1913; Brooks, 1914; Smith, 1915; Smith, 1917; Smith, 1942; Smith, 1942; Moxham and Nelson, 1952; Wedow and others, 1952; Berg and Cobb, 1967; Eakins, 1970; Cobb, 1972, MF-378; Cobb, 1976, OFR 76-485; Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985; Nokleberg and others, 1997

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): North Currant Creek

Site Type: Occurrence

ARDF no. LC035

Latitude: 60.32 **Quadrangle:** LC B-3

Longitude: 153.93

Location description and accuracy:
Locality is about 4 km northeast of the mouth of Currant Creek and includes the unnamed tributaries of Currant Creek. This is locality 26 of Nelson and others (1985) and locality 28 of MacKevett and Holloway (1977). Sec. 26, T. 3 N., R. 27 W., of the Seward Meridian. Accurate to within 1,600 meters, the occurence may extend up to 2.5 km downstream from the plotted point.

Commodities:
Main: Cu **Other:**

Ore minerals: Chalcopyrite, hematite, pyrite

Gangue minerals:

Geologic description:
Mineralization is in form of disseminations and fracture fillings of pyrite and chalcopyrite in strongly iron-stained intermediate volcanics and in the neighboring hypabyssal granitic to granodioritic intrusives near contact of Tertiary granitic rocks and Tertiary volcanic rocks. Interpreted by Resource Associates of Alaska (1976) as a volcanic neck or breccia pipe, composed of highly fractured, silicified, and recrystallized volcanic rocks. Resource Associates of Alaska (1976) reported a nearby stream sediment sample with value of 1,200 ppm Cu.

Alteration:
Volcanic rocks are silicified, recrystallized, and iron-stained.

Workings/Exploration:
Resource Associates of Alaska (1976) reported a stream sediment sample with value of 1,200 ppm Cu.

Age of mineralization:
Tertiary or younger.

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
General area of interest is highly iron-stained with hematite and oxidized pyrite. Site is in Lake Clark National Park and Preserve.

References:

Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Gull

Site Type: Prospect

ARDF no. LC036

Latitude: 60.29 **Quadrangle:** LC B-4

Longitude: 154.24

Location description and accuracy:
Prospect is roughly 2.3 km upstream from mouth of Kijik River. Locality 21 of Nelson and others (1985) and locality 12 of MacKevett and Holloway (1977). Locality accurate within 1,600 m.

Commodities:
Main: Au **Other:** Cu, Pb

Ore minerals:

Gangue minerals:

Geologic description:
The only information is that two lode claims were staked in granite porphyry (U.S. Bureau of Mines, 1973). The granite porphyry has phenocrysts of quartz, plagioclase, and potassic feldspar up to 4 mm across in a groundmass of quartz, potassic feldspar, and plagioclase grains up to 1 mm across (Nelson and others, 1983; unit TKi10).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Granite is Cretaceous to Tertiary (Nelson and others, 1983; unit TKi10).

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

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

Production: None **Status:** Probably inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Dick's Lode

Site Type: Prospect

ARDF no. LC037

Latitude: 60.28 **Quadrangle:** LC B-4

Longitude: 154.24

Location description and accuracy:
Prospect located near the shore of Lake Clark, near the Kijik River. This is locality 23 of Nelson and others (1985). Locality accurate within 1,600 m.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
The only information on the site is that lode claims were staked in granite porphyry (U.S. Bureau of Mines, 1973). The granite porphyry has phenocrysts of quartz, plagioclase, and potassic feldspar up to 4 mm across in a groundmass of quartz, potassic feldspar, and plagioclase grains up to 1 mm across (Nelson and others, 1983; unit TKi10).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Granite in vicinity is Cretaceous to Tertiary (Nelson and others, 1983; unit TKi10).

Deposit model:
Unknown

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

Production: Undetermined **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
U.S. Bureau of Mines, 1973; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Bertha M.

Site Type: Prospect

ARDF no. LC038

Latitude: 60.28 **Quadrangle:** LC B-4

Longitude: 154.25

Location description and accuracy:
Prospect located on the easternmost distributary of Kijik River, near where the river enters Lake Clark. Locality 22 of Nelson and others (1985) and locality 13 of MacKevett and Holloway (1977). Locality accurate within 1,600 m.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Placer claims along Kijik River near Lake Clark. Rock units in the Kijik River drainage include: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows (Nelson and others, 1983; unit Tv). And Unit TKi10, a granite porphyry with phenocrysts of quartz, plagioclase, and potassic feldspar up to 4 mm across in a groundmass of quartz, potassic feldspar, and plagioclase grains up to 1 mm across. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown

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: Undetermined. **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Upper South Currant Creek

Site Type: Occurrence

ARDF no. LC039

Latitude: 60.274 **Quadrangle:** LC B-2

Longitude: 153.549

Location description and accuracy:
Located about 800 m north of the headwaters of South Currant Creek. Locality 28 of Nelson and others (1985) and locality 30 of MacKevett and Holloway (1977). SW1/4 sec. 12, T. 2 N., R. 25 W., of the Seward Meridian. Locality is accurate to within 750 m.

Commodities:
Main: Cu **Other:** Mo

Ore minerals:

Gangue minerals:

Geologic description:
No detailed description of the mineralization was found in the literature. Weak mineralization (Resource Associates of Alaska, 1976) associated with the contact between Cretaceous granodiorite and Tertiary granites (Nelson and others, 1983; units Ki9 and Ti12). Unit Ki9 as a medium-grained granodiorite with compositional ranges from silicic granodiorite to mafic tonalite and quartz diorite. Rocks near the margin of the pluton contain lesser quartz and fall within the quartz diorite field. Unit Ti12 is described as coarse-grained biotite granite (North of Currant Creek) and medium- to coarse-grained granodiorite (South of Currant Creek).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Tertiary or younger.

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, 1976; MacKevett and Holloway, 1977; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Caribou Creek; Koksetna River

Site Type: Prospect

ARDF no. LC040

Latitude: 60.2 **Quadrangle:** LC

Longitude: 154.5

Location description and accuracy:
Locality narrowed down to the SW1/4 of the Lake Clark 1:250,000 map, along the Chulitna River and possibly Koksetna River. Latitude and longitude given is approximate and not specific.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Martin and Katz (1910; 1912) report fine gold but no pay from the northeasterly tributary to Caribou Creek, from Caribou Creek, and from Koksetna River.
The dominant bedrock in the drainage area is a Jurassic to Cretaceous flysch sequence and Tertiary volcanics (Nelson and others, 1983; unit KJs and unit Tv) . Unit KJs is interbedded lithic graywacke, silty sandstone, black shale , and local conglomerate. Irregular quartz segregations and veinlets are locally present.

Scattered stocks and locally abundant dikes of intermediate to felsic composition including quartz monzonite, diorite, and granite intrude these sedimentary rocks. Adjacent to some of the larger igneous bodies are narrow contact aureoles of pelitic hornfels. Unit Tv includes rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown, probably only hand-methods used for placer mining operations.

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: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:

Martin and Katz, 1910; Martin and Katz, 1912; Smith, 1917; Cobb, 1976, OFR 76-485; Eakins and others, 1978; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1983

Primary reference: Martin and Katz, 1910

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): South Currant Creek

Site Type: Occurrence

ARDF no. LC041

Latitude: 60.24 **Quadrangle:** LC A-2

Longitude: 153.68

Location description and accuracy:
Locality on a slope about 1,200 m north of South Currant Creek, west of Chigmit Mountains. This is locality 27 of Nelson and others (1985) and locality 29 of MacKevett and Holloway (1977). Sec. 30, T. 2 N., R. 25 W., of the Seward Meridian. Location is accurate to within 2.4 km.

Commodities:
Main: Cu, Zn **Other:** Au

Ore minerals: Chalcopyrite, gold

Gangue minerals: Biotite, chlorite, hornblende, magnetite, pyrite, quartz

Geologic description:
Limestone and diorite float boulders contain disseminated pyrite, magnetite, and chalcopyrite. Limestone has been slightly altered to skarn, calc-silicate veins cut diorite and granodiorite. Stream sediment samples yielded up to 220 ppm Cu, 500 ppm Zn, 0.4 ppm Au (Resource Associates of Alaska, 1976). The locality is in the vicinity of a contact between Tertiary medium-grained biotite-hornblende granodiorite unit (with some granite and quartz monzodiorite) and a Cretaceous granodiorite unit which ranges in composition from mafic tonalite to quartz diorite (Nelson and others, 1983; units Ti11 and Ki9).

Alteration:
Limestone partially altered to skarn, chlorite alteration in diorite.

Workings/Exploration:
Stream sediment samples yielded up to 220 ppm Cu, 500 ppm Zn, 0.4 ppm Au (Resource Associates of Alaska, 1976).

Age of mineralization:
Intrusives associated with the skarn are Cretaceous to Tertiary.

Deposit model:
Cu skarn (Cox and Singer, 1986; model 18b)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Resource Associates of Alaska, Inc., 1976

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): West Gladiator

Site Type: Occurrence

ARDF no. LC042

Latitude: 60.19 **Quadrangle:** LC A-3

Longitude: 153.93

Location description and accuracy:
Locality is the top of peak 5,251, south of Copper Mountain, roughly 6 km N-NW of the mouth of Ospook Creek. This is locality 33 of Nelson and others (1985) and locality 32 of MacKevett and Holloway (1977). Sec. 11, T. 1 N., R. 27 W., of the Seward Meridian. Location is accurate within 1.6 km.

Commodities:
Main: Cu **Other:** Ag, Zn

Ore minerals: Chalcopyrite, malachite, pyrite, pyrrhotite,

Gangue minerals: Chlorite, epidote, quartz

Geologic description:
Greenstone, metasediments and volcanic flows (?), are intruded by a Tertiary medium-grained hornblende-biotite granodiorite. The rocks are hornfelsed near intrusive contact. Fractures in the greenstone near intrusive contact contain malachite and chalcopyrite. Quartz veins containing epidote, chalcopyrite, and malachite cut intrusive rocks near contact also. One of five chip samples of greenstone assayed 910 ppm Cu and 4.3 ppm Ag. A sample from a quartz-epidote-chalcopyrite-malachite vein yielded up to 22 ppm Ag, 1.0 percent Cu, and 250 ppm Zn (Resource Associates of Alaska, 1976).

Alteration:
Chlorite and epidote in shear zones

Workings/Exploration:
One of five chip samples of greenstone assayed 910 ppm Cu and 4.3 ppm Ag. A sample from a quartz-epidote-chalcopyrite-malachite vein yielded up to 22 ppm Ag, 1.0 percent Cu, and 250 ppm Zn (Resource Associates of Alaska, 1976).

Age of mineralization:
Tertiary or younger.

Deposit model:
Porphyry Cu ? or Polymetallic vein ? (Cox and Singer, 1986; models 17 ? or 22c ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Nelson and others, 1985

Primary reference: Resource Associates of Alaska, Inc., 1976

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): East Gladiator

Site Type: Occurrence

ARDF no. LC043

Latitude: 60.18 **Quadrangle:** LC A-3

Longitude: 153.83

Location description and accuracy:
Locality is at the top of a 1,829 m (6,000 ft) peak 4.8 km NE of the eastern end of Kontrashibuna Lake. The anomaly extends at least 1.6 km around the location. This is locality 34 of Nelson and others (1985) and locality 31 of MacKevett and Holloway (1977). Sec. 17, T. 1 N., R. 26 W., of the Seward Meridian. Accurate within 1,500 meters.

Commodities:
Main: Ag, Cu, Mo, Pb, Zn **Other:** Sn

Ore minerals: Chalcopyrite, molybdenite, pyrite, pyrrhotite

Gangue minerals: Quartz, sericite

Geologic description:
Widespread, mostly low-grade mineralization associated with metamorphic rocks (roof pendant) and volcanic rocks in vicinity of Tertiary granite. Chalcopyrite occurs as thin fracture coatings or within quartz veins in shear zones (Nelson and others, 1985). Sulfide mineralization best developed in the meta-siltstone and argillite near andesite or diorite contact. Maximum values from rock chip samples yielded: 27.7 ppm Ag, 0.32 percent Cu, 0.09 percent Pb, 75 ppm Sn, and 0.1 percent Zn (Nelson and others, 1985).

Three close-spaced southwest flowing streams, about 3.2 km SW of this location is sample 'Area D' of Eakins (1970). These streams flow through basalt into the eastern end of Kontrashibuna Lake. Stream sediment samples reported by Eakins (1970) yielded up to 95 ppm Pb and 225 ppm Zn. Copper values were below 50 ppm.

Nelson and others (1983, units Ti8 and Tv) describe the rocks in this area as Tertiary medium-grained biotite-hornblende granodiorite which also includes granite and quartz monzodiorite; and Tertiary volcanic rocks that include rhyolitic breccia, ash-flow tuff, flows, and felsic intrusive rocks, and subordinate mafic to intermediate flows.

Alteration:
Sericitic, argillic, and chloritic alteration.

Workings/Exploration:

Age of mineralization:
Tertiary or younger

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

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, Inc., 1976; Eakins, 1970; MacKevett and Holloway, 1977; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Kasna Creek; Barnes; Gilt Edge

Site Type: Prospect

ARDF no. LC044

Latitude: 60.161 **Quadrangle:** LC A-3

Longitude: 154.051

Location description and accuracy:
About 2.4 km upstream from mouth of Kasna Creek, on the southern edge of Kontrashibuna Lake. Locality 31 of Nelson and others (1985), locality 4 of MacKevett and Holloway (1977), locality 5 of Cobb (1972), and samples 169-184 of Eakins (1970). NE1/4SE1/4 sec. 24, T. 1 N., R. 28 W., of the Seward Meridian. Locality accurate within 300 m.

Commodities:
Main: Cu, Fe **Other:** Au, Ag, Pb, Zn

Ore minerals: Chalcopyrite, pyrite, specular hematite, sphalerite

Gangue minerals: Calcite, chlorite, fibrous amphibole, garnet, quartz

Geologic description:
The prospect occurs in lenticular contact-metamorphosed Upper Triassic limestone and dolomite. It consists of bedding parallel bands of skarn containing specular hematite, chalcopyrite, and lesser magnetite veinlets in amphibole-chlorite-calcite-quartz gangue. Tuffs, mafic volcanic rocks, and agglomerate occur within the limestone. Capps (1935) reported stringers of solid chalcopyrite several inches thick. The prospect consists of two ore bodies: Gilt Edge, 320 m x 76 m, to the north; and Barnes, 408 m X 12 m, to the south. The limestone and included lodes strike NE and dip NW (Berg and Cobb, 1967). Numerous trenches were dug and sampled by USBM in both ore bodies for assay analysis. Ore bodies average 0.95 precent Cu, 27.5 percent Fe, and 30.1 percent SiO2 (Warfield and Rutledge, 1951).

A Tertiary, medium- to fine-grained hornblende-biotite quartz monzodiorite is nearby (Nelson and others, 1983; unit Ti2). The pluton yields concordant potassium-argon ages for hornblende and biotite of about 61 m.y. (Reed and Lanphere, 1972; 1973)

Alteration:
Unknown

Workings/Exploration:
One adit each in Gilt Edge and Barnes deposits.
Numerous trenches were dug and sampled by USBM in both ore bodies for assay analysis. Ore bodies average 0.95 precent Cu, 27.5 percent Fe, and 30.1 percent SiO2 (Warfield and Rutledge, 1951). Eakins (1970) reports stream sediments samples that yield up to 2,810 ppm Cu, 150 ppm Pb, and 1,200 ppm Zn.

Age of mineralization:
Paleocene or younger. A quartz monzodiorite which is probably related to the deposit yields concordant potassium-argon ages for hornblende and biotite of about 61 m.y. (Reed and Lanphere, 1972; 1973).

Deposit model:
Fe skarn; Cu skarn (Cox and Singer, 1986; models 18d and 18b)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
Swainbank and others (1997) report reserves of over 9,070,000 tonnes of ore that grade more than 1 percent Cu.

Additional comments:
Claims currently inactive, but diamond drilling between 1965 and 1970 has proved the presence of copper and iron in significant quantities (Detterman and Reed, 1980). Site is in Lake Clark National Park and Preserve.

References:
Martin and Katz, 1910; Martin and Katz, 1912; Brooks, 1913; Brooks, 1914; Smith, 1917; Capps, 1935; Bain, 1946; Warfield and Rutledge, 1951; Moxham and Nelson, 1952; Wedow and others, 1952; Berg and Cobb, 1967; Reed, 1967; Eakins, 1970; Reed and Lanphere, 1972; Cobb, 1972, MF-378; Reed and Lanphere, 1973; Cobb, 1976, OFR 76-485; MacKevett and Holloway, 1977; Detterman and Reed, 1980; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985; Nokleberg and others, 1987; Swainbank and others, 1997; Nokleberg and others, 1997

Primary reference: Warfield and Rutledge, 1951

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Kontrashibuna (Lake)

Site Type: Occurrence

ARDF no. LC045

Latitude: 60.16 **Quadrangle:** LC A-3

Longitude: 154

Location description and accuracy:
About 2.8 km west of the Kasna Creek prospect near northward flowing Takoka Creek which drains into Kontrashibuna Lake. Locality 30 of Nelson and others (1985). Sec. 23, T. 1 N., R. 28 W., of the Seward Meridian. Locality accurate within 1.2 km.

Commodities:
Main: Mo **Other:** Cu, Zn

Ore minerals: Molybdenite, pyrite

Gangue minerals: Quartz

Geologic description:
The occurrence consists of quartz-pyrite veins containing coarse molybdenite and other sulfide minerals, near the contact of Tertiary mafic volcanic rocks with an intruding Tertiary granitic body. The veins cut the volcanic rocks, but mineralization dies out when veins enter the nearby granite. Also, much iron-staining, gouge, and mylonite along a NE-trending fault. Eakins (1970, Area H) reports that sediment samples in the vicinity yielded values of up to 240 ppm Cu, 50 ppm Mo, 290 ppm Pb, and 980 ppm Zn. Area I of Eakins, 1.2 km NW of this location, produced stream sediment samples with values of up to 240 ppm Cu, 50 ppm Mo, and 440 ppm Pb. Eakins also reports a sample of molybdenite-bearing granite float. A rock sample from the NE-trending fault yielded 8.5 ppm Ag and 2,000 ppm Pb. Resource Associates of Alaska (1976) proposed that the geology may indicate a copper-molybdenum stockwork porphyry.

Alteration:
Unknown

Workings/Exploration:
Eakins (1970, Area H) reports that sediment samples in the vicinity yielded values of up to 240 ppm Cu, 50 ppm Mo, 290 ppm Pb, and 980 ppm Zn. Area I of Eakins (1970), 1.2 km NW of this location, produced stream sediment samples with values of up to 240 ppm Cu, 50 ppm Mo, and 440 ppm Pb. Eakins also reports a sample of molybdenite-bearing granite float. A rock sample from the NE-trending fault yielded 8.5 ppm Ag and 2,000 ppm Pb.

Age of mineralization:
Tertiary or younger.

Deposit model:
Porphyry Cu-Mo? or Porphyry Mo, Low F ? (Cox and Singer, 1986; models 21a ? or 21b ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:
Eakins, 1970; Cobb, 1972; Resource Associates of Alaska, Inc., 1976; Cobb, 1976, OFR 76-485; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): East Takoka Creek

Site Type: Occurrence

ARDF no. LC046

Latitude: 60.16 **Quadrangle:** LC A-3

Longitude: 154.1

Location description and accuracy:
About 2.8 km west of the Kasna Creek prospect near northward flowing Takoka Creek which drains into Kontrashibuna Lake. Locality 30 of Nelson and others (1985). Sec. 23, T. 1 N., R. 28 W., of the Seward Meridian. Locality accurate within 1.2 km.

Commodities:
Main: Cu **Other:** Au

Ore minerals: Chalcopyrite, pyrite

Gangue minerals: Calcite, chlorite, epidote, quartz

Geologic description:
Local zones of fracturing and epidote or quartz-carbonate veins in greenstone contain chalcopyrite and pyrite. Some copper anomalies here may result from high initial copper in basic volcanic rocks (Nelson and others, 1985).
The Tertiary volcanic rocks of this unit includes: rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows (Nelson and others, 1983; unit Tv). Potassium-argon ages for Unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Abundant chlorite, epidote, and sparse quartz-carbonate alteration.

Workings/Exploration:
Some copper anomalies in the area may result from high background copper in basic volcanic rocks (Nelson and others, 1985). Resource Associates of Alaska (1976) reported one soil sample which yielded 0.8 ppm Au. Area J of Eakins (1970) located approximately 2.6 km downstream contained stream sediment samples which yielded 130 ppm Cu; lead and zinc were not anomalous.

Age of mineralization:
Probably Tertiary. Volcanic host for mineralization has potassium-argon ages that range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Deposit model:
Unknown

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Gold anomaly in soil sample is only gold detected in the Kontrashibuna Lake area. Site is in Lake Clark National Park and Preserve.

References:

Eakins, 1970; Resource Associates of Alaska, 1976; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): West Ospook

Site Type: Occurrence

ARDF no. LC047

Latitude: 60.14 **Quadrangle:** LC A-3

Longitude: 153.92

Location description and accuracy:
Locality is approximately 2.4 km west of the mouth of Ospook Creek, along an unnamed northward flowing stream which drains into Kontrashibuna Lake. This is locality 35 of Nelson and others (1985) and locality 34 of MacKevett and Holloway (1977). Sec. 35, T. 1 N., R. 27 W., of the Seward Meridian. Location is accurate to about 1.6 km.

Commodities:
Main: Cu **Other:** Mo, Pb

Ore minerals: Chalcopyrite, magnetite, pyrite

Gangue minerals:

Geologic description:
Occurrence is associated with sulfide mineralization near contact between Tertiary granodiorite and Tertiary andesite porphyry. Sulfide mineralization is disseminated but mineralization is strongest along fracture zones at the contact of the granodiorite and andesite. Undefined Mo and Pb sulfide minerals occur at this locality. Andesite locally contains 2 to 4 percent disseminated pyrite, magnetite, and trace chalcopyrite. In the vicinity of the site andesite porphyry, tuffs, agglomerates, and other intermediate volcanic rocks are intruded by small gabbro and granodiorite bodies. Soil and stream sediment samples yielded values of up to 1,800 ppm Cu, 183 ppm Mo, and 230 ppm Pb (Resource Associates of Alaska, 1976).

Alteration:

Workings/Exploration:
Soil and stream sediment samples yielded values of up to 1,800 ppm Cu, 183 ppm Mo, and 230 ppm Pb (Resource Associates of Alaska, 1976).

Age of mineralization:
Tertiary or younger.

Deposit model:
Porphyry Cu -Mo ? (Cox and Singer, 1986; model 21a ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Possibility for hydrothermal vein or replacement deposit in the andesite near the granodiorite or along strongly fractured fault zones. Site is in Lake Clark National Park and Preserve.

References:

Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Resource Associates of Alaska, Inc., 1976

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Unnamed

Site Type: Prospect

ARDF no. LC048

Latitude: 60.136 **Quadrangle:** LC A-6

Longitude: 155.136

Location description and accuracy:
Located along an unnamed stream about 1,100 m west of the Long Lake. This is locality 29 of Nelson and others (1985) and locality 11 of MacKevett and Holloway (1977). SE1/4NW1/4 sec. 35, T. 1 N., R. 34 W., of the Seward Meridian. Locality is accurate to within 400 m.

Commodities:
Main: Au **Other:**

Ore minerals: Gold

Gangue minerals:

Geologic description:
Only information is that placer claims were staked along an unnamed stream west of Long Lake (U.S. Bureau of Mines, 1973). The bedrock consists of Tertiary volcanics and Cretaceous to Tertiary medium-grained granite (Nelson and others, 1983; unit Tv and unit TKi11). Unit Tv includes rhyolitic breccia, ash-flow tuff, flows, and intrusive rocks and subordinate mafic to intermediate flows. Potassium-argon ages for unit Tv range from 56.2 to 62.7 m.y. indicating a Tertiary age for these rocks (Eakins and others, 1978).

Alteration:
Not applicable

Workings/Exploration:
Unknown

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: Undetermined **Status:** Undetermined

Production notes:
No production

Reserves:
No reserves

Additional comments:
None.

References:
U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Tak II

Site Type: Occurrences

ARDF no. LC049

Latitude: 60.13 **Quadrangle:** LC A-4

Longitude: 154.15

Location description and accuracy:
About 5.6 km south of the western end of Kontrashibuna Lake, near the headwaters of Takoka Creek on peak 4,367. This is locality 10 of MacKevett and Holloway (1977). Sec. 33, T. 1 N., R. 28 W., of the Seward Meridian. Location accurate within 1.6 km.

Commodities:
Main: Cu, Fe **Other:**

Ore minerals:

Gangue minerals:

Geologic description:
Occurrence identified by 58 lode iron claims (U.S. Bureau of Mines, 1973). MacKevett and Holloway (1977) reported that the occurrence may be in mineralized zones of contact-metamorphosed Upper Triassic limestone and dolomite that has been intruded by Tertiary, medium- to fine-grained hornblende-biotite quartz monzodiorite (Nelson and others, 1983; unit Ti2). The pluton yields concordant potassium-argon ages for hornblende and biotite of about 61 m.y. (Reed and Lanphere, 1972; 1973). Other nearby rocks include Tertiary volcanic rocks, which include rhyolitic breccia, ash-flow tuff, flows, felsic intrusive rocks, and subordinate mafic to intermediate flows (Nelson and others, 1983; unit Tv). Potassium-argon ages for Unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Mineralization is Tertiary or younger. The quartz monzodiorite which is probably the source of the skarn yields concordant potassium-argon ages for hornblende and biotite of about 61 m.y. (Reed and Lanphere, 1972; 1973). Potassium-argon ages for the volcanic rocks range from 56.2 to 62.7 m.y. (Eakins and others, 1978).

Deposit model:
Fe skarn ? or Cu skarn ? (Cox and Singer, 1986; model 18d ? or 18b ?)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Site is in Lake Clark National Park and Preserve.

References:

Reed and Lanphere, 1972; Reed and Lanphere, 1973; U.S. Bureau of Mines, 1973; MacKevett and Holloway, 1977; Eakins and others, 1978; Nelson and others, 1983

Primary reference: U.S. Bureau of Mines, 1973

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Finnbear

Site Type: Occurrence

ARDF no. LC050

Latitude: 60.12 **Quadrangle:** LC A-6

Longitude: 155.09

Location description and accuracy:
Midway between the western end of Long Lake and Chulitna River, in Sec. 3, T. 1 S., R. 34 W., of the Seward Meridian. Accurate within 500 meters.

Commodities:
Main: Au **Other:**

Ore minerals:

Gangue minerals:

Geologic description:
Only information as a reported by the U.S. Bureau of Mines (1995) of a lode gold deposit.

The geologic map (Nelson and others, 1983) indicates undivided Quaternary deposits in the area of the occurrence.Bedrock is about 2.8 km north and south of the occurrence. To the north, the bedrock consists of Tertiary volcanic rocks (Tv) and Cretaceous to Tertiary medium-grained granite (TKi11). The volcanic rocks include rhyolitic breccia, ash-flow tuff, flows, felsic intrusive rocks, and subordinate mafic to intermediate flows. Potassium-argon ages for Unit Tv range from 56.2 to 62.7 m.y. (Eakins and others, 1978). To the south, the bedrock is Tertiary mafic to intermediate volcanic flows (Nelson and others, 1983; unit Tvf).

Alteration:
Unknown

Workings/Exploration:
Unknown

Age of mineralization:
Unknown.

Deposit model:
Unknown

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

Production: None **Status:** Probably inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
MAS/MILS sequence number 0020930008 (Bureau of Mines, 1995).

References:
Eakins and others, 1978; Nelson and others, 1983; Bureau of Mines, 1995

Primary reference: Bureau of Mines, 1995

Reporter: D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Upper Tazimina

Site Type: Occurrence

ARDF no. LC051

Latitude: 60.11 **Quadrangle:** LC A-3

Longitude: 153.914

Location description and accuracy:
Locality is approximately 4 km S-SW of the mouth of Ospook Creek. This is locality 36 of Nelson and others (1985) and locality 35 of MacKevett and Holloway (1977). NE1/4 sec. 9, T. 1 S., R. 27 W., of the Seward Meridian. Location is accurate within 800 m.

Commodities:
Main: Cu **Other:** Ag, Pb, Zn

Ore minerals: Chalcopyrite, magnetite

Gangue minerals: Epidote, quartz

Geologic description:
Occurrence is a very small area of strong epidote - quartz - magnetite - chalcopyrite veining within 0.9 m of the contact of Tertiary andesite porphyry breccia with fine-grained metasedimentary rocks. Resource Associates of Alaska (1976) report two rock samples taken near the metasediment-volcanic contact yielded values as high as 11.2 ppm Ag, 1,100 ppm Cu, 180 ppm Pb, and 680 ppm Zn.One nearby stream sediment sample showed slight anomaly (109 ppm Cu). However, these results could not be reproduced by Nelson and others (1985).

Alteration:
Unknown

Workings/Exploration:
Resource Associates of Alaska (1976) report two rock samples taken near the metasediment-volcanic contact yielded values as high as 11.2 ppm Ag, 1,100 ppm Cu, 180 ppm Pb, and 680 ppm Zn. One nearby stream sediment sample showed slight anomaly (109 ppm Cu). However, these results could not be reproduced by Nelson and others (1985).

Age of mineralization:
Tertiary or younger, based on geologic relationships.

Deposit model:
Cu skarn (Cox and Singer, 1986; model 18b)

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Mineralization very sparse. Site is in Lake Clark National Park and Preserve.

References:

Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Nelson and others, 1985

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Tazimina

Site Type: Prospect

ARDF no. LC052

Latitude: 60.08 **Quadrangle:** LC A-3

Longitude: 153.91

Location description and accuracy:
Locality is 4.8 km up an unnamed southward flowing tributary of Tazimina River or 5.6 km NE of the eastern end of Upper Tazimina Lake. This is locality 38 of Nelson and others (1985) and locality 37 of MacKevett and Holloway (1977). Sec. 22, T. 1 S., R. 27 W., of the Seward Meridian. Accurate within 1,600 meters.

Commodities:
Main: Cu, Pb, Zn **Other:** Ag

Ore minerals: Bornite, chalcopyrite, native copper, pyrite

Gangue minerals: Chlorite, quartz, sericite

Geologic description:
Mineralization is confined to older schistose rocks; the Lake Clark quartz-sericite-chlorite schist contains 1 percent to 10 percent disseminated pyrite and local massive-sulfide pods having as much as 50 percent pyrite. Chalcopyrite and native copper disseminated as small grains in trace amounts. Some six-inch sulfide veins or beds parallel to the foliation of schist contain 60 percent pyrite, 20 percent quartz, 10 percent magnetite, 5 percent chalcopyrite, 1 percent bornite, and trace of native copper. Massive sulfide float boulders up to six feet in diameter contain 17 ppm Ag, 5,000 ppm Cu, 5,000 ppm Pb, and 30,000 ppm Zn. These boulders could be glacial erratics but the source is believed to be within 90 meters of their current location (Resource Associates of Alaska, 1976).

Alteration:
Unknown

Workings/Exploration:
Massive sulfide boulders up to six feet in diameter contain 17 ppm Ag, 5,000 ppm Cu, 5,000 ppm Pb, and 30,000 ppm Zn (Resource Associates of Alaska, 1976).

Age of mineralization:
Late Paleozoic or younger.

Deposit model:
Kuroko massive sulfide (metamorphosed) ? (Cox and Singer, 1986; model 28a ?)

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
28a ?

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:

Resource Associates of Alaska, Inc. (1976), reported the schists do not contain enough economically viable mineralization to warrant further work. The massive sulfide boulders, though containing ore grade material, probably come from relatively small lenses or pods. Site is in Lake Clark National Park and Preserve.

References:

Resource Associates of Alaska, Inc., 1976; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Resource Associates of Alaska, Inc., 1976

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

Site name(s): Little Tazimina

Site Type: Occurrence

ARDF no. LC053

Latitude: 60.071 **Quadrangle:** LC A-3

Longitude: 153.952

Location description and accuracy:
Locality is about 4 km NE of mouth of Tazimina Creek on the western flank of a 1,495 m (~4,900 ft) high ridgeline. This is locality 37 of Nelson and others (1985) and locality 36 of MacKevett and Holloway (1977). SE1/4 sec. 20, T. 1 S., R. 27 W., of the Seward Meridian. Location is accurate within 800 m.

Commodities:
Main: Cu **Other:** Ag, Mn, Mo, Pb, Zn

Ore minerals: Azurite, chalcopyrite, malachite

Gangue minerals:

Geologic description:
Disseminated chalcopyrite, azurite, malachite, manganese mineralization, and undefined Mo, Pb, and Zn minerals associated with the contact area between Tertiary basalt-andesite breccia and a Tertiary sequence of hypabyssal granites and granodiorites. Resource Associates of Alaska (1976) reported a one-foot-long channel sample assayed 103 ppm Ag, 20,000 ppm Cu, 107 ppm Mo, 17,000 ppm Pb, and 2,000 ppm Zn.

Alteration:
Unknown

Workings/Exploration:
Resource Associates of Alaska (1976) reports a one-foot-long channel sample assayed 103 ppm Ag, 20,000 ppm Cu, 107 ppm Mo, 17,000 ppm Pb, and 2,000 ppm Zn.

Age of mineralization:
Tertiary or younger.

Deposit model:
Unknown

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

Production: None **Status:** Inactive

Production notes:
No production

Reserves:
No reserves

Additional comments:
Best chance for significant deposits in this area is along the contact of basalt-andesite with granite (Resource Associates of Alaska, 1976). Site is in Lake Clark National Park and Preserve.

References:
Resource Associates of Alaska, Inc., 1976; MacKevett and Holloway, 1977; Cobb and Reed, 1981, OFR 81-1343A; Cobb and Reed, 1981, OFR 81-1343B; Nelson and others, 1985

Primary reference: Resource Associates of Alaska, Inc., 1976

Reporter: M.L. Miller (USGS); D.P. Bickerstaff (USGS)

Reporter affiliation:

Last report date: 6/15/98

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