Location/Identification

MINFILE Number: 103I 045
National Mineral Inventory Number: 103I9 Cu3
Name(s): **GROTTO**

Status: Past Producer
Mining Method Underground
Regions: British Columbia
BCGS Map: 103I079
NTS Map: 103I09W
Latitude: 54 42 27 N
Longitude: 128 21 12 W
Elevation: 200 metres
Location Accuracy: Within 100M
Comments: See location in Assessment Report 33429.

Mining Division: Omineca
Electoral District: Skeena
Resource District: Kalum Forest District

UTM Zone: 09 (NAD 83)
Northing: 6062435
Easting: 541666

Mineral Occurrence

Commodities: Copper, Gold, Silver, Tungsten, Tellurium

Minerals
Significant: Pyrite, Chalcopyrite, Specularite, Sphalerite, Petzite, Hessite, Cosalite, Rickardite, Empressite
Associated: Quartz
Alteration: Limonite
Mineralization Age: Unknown

Deposit
Character: Vein, Disseminated
Classification: Epigenetic, Hydrothermal
Type: I02: Intrusion-related Au pyrrhotite veins, L01: Subvolcanic Cu-Ag-Au (As-Sb)
Shape: Irregular
Modifier: Sheared
Strike/Dip: 045/60N
Comments: No. 1 vein.

Host Rock

Dominant Host Rock: Volcanic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic	Hazelton	Undefined Formation	------
Cretaceous-Tertiary	------	------	Coast Plutonic Complex

Isotopic Age	Dating Method	Material Dated
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Lithology: Andesite, Granodiorite

Geological Setting

Tectonic Belt: Intermontane
Physiographic Area: Hazelton Ranges
Terrane: Stikine

Inventory

Ore Zone: NO. 1 **Year:** 2012

Category: Assay/analysis **Report On:** N

NI 43-101: N

Sample Type: Grab

Commodity	Grade
Silver	182 grams per tonne
Gold	1.285 grams per tonne
Copper	1.59 per cent
Tellurium	0.023 per cent

Comments: Sample 3024 taken from near the No.1 adit portal

Reference: Assessment Report 33429

Summary Production

		Metric		Imperial	
Mined:		63	tonnes	69	tons
Milled:		0	tonnes	0	tons
Recovery	Silver	43,109	grams	1,386	ounces
	Gold	1,244	grams	40	ounces
	Copper	2,302	kilograms	5,075	pounds

Capsule Geology

The Grotto occurrences are located on either side of Hardscrabble Creek, approximately 1.8 kilometres northwest of the creek mouth on the Skeena River.

The area is underlain by andesites of the Jurassic Hazelton Group, which have been intruded by porphyritic granodiorite dikes and stocks of the Cretaceous to Tertiary Coast Plutonic Complex.

Narrow quartz veins and stringers occur adjacent to contacts of the dikes and stocks and along shears and faults in the andesites. Mineralization consists of pyrite, chalcopyrite and specularite, with minor amounts of sphalerite, petzite, hessite, cosalite, empressite, rickardite, chalcocite and possibly native tellurium.

The No. 1 vein, along the contact of a 4 metre wide dike, is 30 centimetres wide along a northeast strike for 30 metres. It dips 60 degrees to 90 degrees northwest. A 106 centimetre sample assayed 6.9 grams per tonne gold, 1,070 grams per tonne silver and 1.4 per cent copper (Minister of Mines Annual Report 1937).

Approximately 90 metres to the west, a northeast- trending vein in andesite is 12 metres long and approximately 20 centimetres wide. A 23 centimetre channel sample assayed 24 grams per tonne gold, 493.7 grams per tonne silver and 3.76 per cent copper (Geological Survey of Canada Memoir 212).

A further 90 metres to the west, several parallel east-northeast trending quartz veins in andesite, are up to 15 metres long and 30 centimetres wide. A 48 centimetre channel sample assayed 10.3 grams per tonne gold, 85.7 grams per tonne silver and 3.08 per cent copper (Geological Survey of Canada Memoir 212).

Thirty metres to the southwest of the above quartz veins is a shear zone containing a quartz vein striking 120 degrees and dipping 65 degrees southwest. A 61 centimetre channel sample across the vein assayed 0.7 gram per tonne gold, 54.2 grams per tonne silver and 0.32 per cent copper (Geological Survey of Canada Memoir 212).

Approximately 170 metres southeast of No. 1 vein, silicified tuffs contain disseminated chalcopyrite. A chip sample over a 1.5 metre by 3.0 metre area assayed trace gold, 13.7 grams per tonne silver and 0.4 per cent copper (Minister of Mines Annual Report 1937). Tungsten is also reported to occur in the area.

Ore shipments in 1938, 1939 and 1953 totalled 63 tonnes. From this ore, 1244 grams of gold, 43,109 grams of silver, and 2303 kilograms of copper were recovered.

In 2012, a sample (3024) taken from near the No.1 adit portal assayed 1.285 grams per tonne gold, 182 grams per tonne silver, 1.59 per cent copper

and 0.023 per cent tellurium (Assessment Report 33429).

In 2002, the Carlson group of mineral claims was staked by G.W. Kurz. During 2003 through 2014, various programs of bedrock prospecting, rock chip sampling, geological mapping, a ground self-potential geophysical survey and geochemical soil and silt sampling were completed.

Bibliography

EMPR AR 1929-152,153; 1930-137; 1931-71; *1937-C4-C7; *1938-B27; 1939-55,58,69; 1940-55; 1941-55; 1952-85; 1953-92; 1954-85; 1959-17
EMPR ASS RPT 27233, 27499, 27817, 28109, 30257, 32186, *33429, 34602
EMPR BULL 1, 1932, p. 56; 10 (Rev), p. 59
EMPR MAP 69-1; 8
EMPR OF 1991-17
EMPR PF (*Maps & Rpt by J.T. Mandy, 1938; *Rpt by J.T. Mandy & D. Lay, 1937; Plan Map J.T. Mandy, 1939)
EMR MP CORPFILE (Huestis Mining Corporation Ltd.)
GSC EC GEOL No. 17, p. 45
GSC MAP 11-1956; 278A; 1136A; 1385A
GSC *MEM 212, pp. 38-40; 329, pp. 88-90
GSC P 36-20, pp. 34,35; 36-17
N MINER Jun.25, 1942, p. 26
EMPR PFD 18021, 18023, 18026, 18030, 18031, 820068, 820069, 600393

Date Coded:	1986/12/22	**Coded By:**	Larry Jones (LDJ)	**Field Check:**	N
Date Revised:	2015/05/21	**Revised By:**	Karl A. Flower (KAF)	**Field Check:**	N