Location/Identification

MINFILE Number: 082FSW151

Name(s): **COLUMBIA-KOOTENAY**

COLUMBIA (L.694), KOOTENAY (L.697), NORTH STAR (L.797), COPPER JACK (L.1185)

Status:	Past Producer	**Mining Division:**	Nelson, Trail Creek
Mining Method	Underground, Open Pit	**Electoral District:**	Kootenay West
Regions:	British Columbia	**Resource District:**	Selkirk Natural Resource District
BCGS Map:	082F002		
NTS Map:	082F04W	**UTM Zone:**	11 (NAD 83)
Latitude:	49 05 19 N	**Northing:**	5437601
Longitude:	117 46 57 W	**Easting:**	442868
Elevation:	1188 metres		
Location Accuracy:	Within 500M		

Comments: See location map of Columbia-Kootenay workings and dump sample 83172 in Assessment Report 14236.

Mineral Occurrence

Commodities: Gold, Copper, Nickel, Bismuth, Silver

Minerals

Significant:	Pyrrhotite, Arsenopyrite, Chalcopyrite, Pyrite, Gersdorffite, Bismuthinite, Bismuth
Associated:	Calcite, Quartz
Alteration:	Pyroxene, Garnet, Silica
Alteration Type:	Skarn, Silicific'n
Mineralization Age:	Unknown

Deposit

Character:	Vein, Massive, Disseminated		
Classification:	Hydrothermal, Epigenetic, Skarn		
Type:	L01: Subvolcanic Cu-Ag-Au (As-Sb), I: VEIN, BRECCIA AND STOCKWORK		
Dimension:	10x0x0 metres	**Strike/Dip:**	060/75
Comments:	Main mineralized vein.		

Host Rock

Dominant Host Rock: Volcanic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Lower Jurassic	Rossland	Elise	------
Lower Jurassic	------	------	Rossland Monzonite
Jurassic	------	------	Trail Pluton

Isotopic Age	Dating Method	Material Dated
------	------	------
190 Ma	Uranium/Lead	Zircon
------	------	------

Lithology: Augite Porphyry, Monzonite, Volcanic Breccia, Volcanic Conglomerate, Sandstone, Hornfels, Biotite Hornblende Augite Monzonite, Dioritic Dike, Granodiorite

Comments: The monzonite was dated in March 1991 for the B.C. Geological Survey Branch (Andrew, K.P.E., personal communication, March 1991).

Geological Setting

Tectonic Belt:	Omineca	**Physiographic Area:**	Selkirk Mountains
Terrane:	Quesnel, Kootenay, Plutonic Rocks		

Metamorphic Type: Contact

Grade: Hornfels

Inventory

Ore Zone: DUMP
Year: 1986
Category: Assay/analysis
Report On: N
NI 43-101: N

Sample Type: Grab

Commodity	Grade
Gold	10.4 grams per tonne

Comments: 11 dump samples yielded from 0.5 to 52.1 grams per tonne gold with an average of 10.4 grams per tonne gold

Reference: Assessment Report 15432

Ore Zone: FLOAT
Year: 1986
Category: Assay/analysis
Report On: N
NI 43-101: N

Sample Type: Grab

Commodity	Grade
Gold	38.3 grams per tonne

Comments: Sample 980E

Reference: Assessment Report 15432

Ore Zone: SAMPLE
Year: 1986
Category: Assay/analysis
Report On: N
NI 43-101: N

Sample Type: Chip

Commodity	Grade
Gold	5.0 grams per tonne

Comments: chip sample (951E), taken a short distance east, over a 1.3 metre wide massive arsenopyrite veinlet with lesser pyrrhotite and trace chalcopyrite along the north east contact of a 'conglomerate' (breccia?) dike

Reference: Assessment Report 15432

Ore Zone: SAMPLE
Year: 1986
Category: Assay/analysis
Report On: N
NI 43-101: N

Sample Type: Chip

Commodity	Grade
Gold	60.9 grams per tonne

Comments: a chip sample (83138C) of massive pyrrhotite in augite porphyry over 0.25 metre

Reference: Assessment Report 15432

Ore Zone: SAMPLE
Category: Assay/analysis
Year: 1986
Report On: N
NI 43-101: N

Sample Type: Chip

Commodity	Grade
Gold	9.4 grams per tonne

Comments: a 2.0 metre chip sample (83141C) of massive pyrite-pyrrhotite with quartz in a granodiorite
Reference: Assessment Report 15432

Ore Zone: DUMP
Category: Assay/analysis
Year: 1984
Report On: N
NI 43-101: N

Sample Type: Grab

Commodity	Grade
Silver	4.1 grams per tonne
Gold	6.1 grams per tonne
Copper	0.44 per cent

Comments: a dump sample (83172) of massive sulphides in a siliceous matrix
Reference: Assessment Report 14236

Ore Zone: MAIN
Category: Unclassified
Quantity: 9,072 tonnes
Year: 1940
Report On: N
NI 43-101: N

Commodity	Grade
Gold	5.1 grams per tonne

Comments: estimate of reserves
Reference: Assessment Report 15432

Summary Production

		Metric		Imperial	
Mined:		144	tonnes	158	tons
Milled:		0	tonnes	0	tons
Recovery	Gold	68,520	grams	2,203	ounces

Capsule Geology

The Columbia-Kootenay occurrence is located at an elevation of approximately 1188 metres on the eastern slope Columbia Kootenay Mountain, northeast of the community of Rossland.

Regionally, the area is underlain by the Lower Jurassic Elise Formation (Rossland Group) volcanic breccia, conglomerate and sandstone sequence, which dips uniformly at moderate angles to the west. Primary sedimentary structures indicate the beds face west and only small north-trending faults cause minor offsets. The Rossland sill of the Elise Formation forms an irregular mass of augite porphyry in the thin-bedded sedimentary and massive volcanic breccias and conglomerates. The sill is difficult to distinguish from the thermally metamorphosed Rossland Group rocks.

The Rossland Group rocks are intruded to the north by granodiorite of the Middle Jurassic Trail Pluton and to the south by quartz monzonite of the Early Jurassic Rossland Plutonic Suite, which is composed of a biotite-hornblende-augite monzonite stock. The contact with the monzonite is gradational and grades northward into the volcanic conglomerate over a distance of 300 metres. A zone of thermal metamorphism has bleached the well-indurated hornfels of the Rossland Group, which contains pyroxene and garnet. A swarm of diorite dikes crosscut both the monzonite and

Rossland Group rocks. Also, the Middle Eocene Coryell syenite intrudes the Rossland Group rocks to the south.

The Columbia-Kootenay vein system is part of the 'Main vein' system, which forms a continuous, well-defined fracture system on a regional scale. The Main vein system trends 070 degrees for a strike length in excess of 1.0 kilometres and consists of mineralized fracture fillings that dip steeply north. Refer to the Le Roi deposit (MINFILE 082FSW093) for further details on the Rossland mining camp and the Main vein system.

The mineralized zone trends northeast and dips between 45 to 75 degrees northwest, passing through both the Columbia and Kootenay Crown grants. The mineralized zone follows a contact between biotite-bearing monzonite, which forms the hangingwall, and augite porphyry (Rossland sill), which forms the footwall and appears to have been replaced by the ore. The ore consists of both massive and disseminated pyrrhotite in a hard, fine-grained gangue with minor chalcopyrite. Arsenopyrite occurs in places with the auriferous pyrrhotite. Much of the ore, that is made up of sulphides in calcite and altered rock gangue, appears to be laminated. The vein is fairly continuous and varies in width from a few centimetres up to 10 metres of nearly solid pyrrhotite. A nickel arsenic sulphur, gersdorffite, is reported to occur in small octahedral crystals in the sulphide ore and is associated with the massive pyrrhotite and chalcopyrite from the Columbia-Kootenay vein. Also, native bismuth and bismuthinite are associated with minor chalcopyrite. The ore shoots end abruptly against cross structures.

In 1984, a dump sample (83172) of massive sulphides in a siliceous matrix assayed 6.1 grams per tonne gold, 4.1 grams per tonne silver and 0.44 per cent copper (Assessment Report 14236).

In 1986, a chip sample (83138C) of massive pyrrhotite in augite porphyry assayed 60.9 grams per tonne gold over 0.25 metre, whereas a 2.0-metre chip sample (83141C) of massive pyrite-pyrrhotite with quartz in a granodiorite assayed 9.4 grams per tonne gold (Assessment Report 15432). Also at this time, 11 dump samples yielded from 0.5 to 52.1 grams per tonne gold with an average of 10.4 grams per tonne gold (Assessment Report 15432).

Another chip sample (951E), taken a short distance east over a 1.3-metre wide massive arsenopyrite veinlet with lesser pyrrhotite and trace chalcopyrite along the northeast contact of a 'conglomerate' (breccia?) dike, yielded 5.0 grams per tonne gold, whereas nearby float samples yielded up to 38.3 grams per tonne gold (Sample 980E; Assessment Report 15432).

The area has been explored since the late 1800s, with the Crown-granted mineral claims being staked in 1890. Prior to 1898, approximately 4000 metres of underground development work had been completed with unverified reports indicating a total of approximately 11 617 tonnes averaging 13.0 grams per tonne gold being produced (Assessment Report 15432).

Between 1896 to 1904, it is reported that 144 tonnes of ore were mined yielding 68 520 grams of gold.

In 1940, reserves were estimated at approximately 9072 tonnes grading 5.1 grams per tonne gold (Assessment Report 15432).

During 1982 through 1986, Gallant Gold Mines Ltd. completed programs of rock and silt sampling, geological mapping, ground geophysical surveys and seven diamond drill holes, totalling 694.0 metres, on the area as the Georgia property.

In 2011, a 2.4 line-kilometre ground electromagnetic (VLF-EM) survey was completed on the Copper Jack (L.1185) Crown grant to the northeast as apart of the Crown of Eleanor property. In 2012, a further 4.0 line-kilometre ground electromagnetic (VLF-EM) survey was conducted. In 2017, a program of prospecting was completed on the former Crown grants to the northeast. In 2018, Currie Rose Resources Inc. completed a 164.8 line-kilometre airborne magnetic survey on the area.

Bibliography

EMPR AR 1896-559; 1897-537; 1898-1053,1157; 1899-600,715,843;
1900-859; 1901-1046; 1902-166; 1903-161; 1904-207; 1933-241;
1935-G51; 1936-E49; 1937-E48; 1938-E41; 1939-90; 1940-75; 1941-72
EMPR ASS RPT *14236, *15432, 15743, 15865, 32425, 33304, 37169, 37909
EMPR BC METAL MM00676
EMPR BULL 74
EMPR BULL 109
EMPR FIELDWORK 1987, pp. 19-30; 1988, pp. 33-43; 1989, pp. 11-27;
1990, pp. 9-31
EMPR GEM 1973-61
EMPR OF 1988-1; 1989-11; 1990-8; 1990-9; 1991-2; 1991-16
EMPR PF (*Gilbert, G. and Malcolm, D.C. (1958): Rossland Properties -
Geology Report No. 2 (in Le Roi file - 082FSW093))
GSC MAP 1004; 1518; 1090A; 1504A
GSC *MEM 77, pp. 7,31,128,135; 308, pp. 150,155,157,158,176
GSC P 79-26

PERS COMM Andrew, K., March 1991
Hodges, L.K. (editor), (1897): Mining in the Pacific Northwest, page 1
*Thorpe, R.I. (1967): Controls of Hypogene Sulphide Zoning, Rossland,
British Columbia, Ph.D. Thesis, University of Wisconsin
EMPR PFD 750540, 750543, 680131

Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2020/02/15	**Revised By:**	Karl A. Flower (KAF)	**Field Check:**	N