

### Location/Identification

<b>MINFILE Number:</b>	092B 010	<b>National Mineral Inventory Number:</b>	092B5 Cu1
<b>Name(s):</b>	<b><u>WILLOW GROUSE (L.135)</u></b> COOKE, BLUE BIRD (L.136)		
<b>Status:</b>	Past Producer	<b>Mining Division:</b>	Victoria
<b>Mining Method</b>	Underground	<b>Electoral District:</b>	Malahat-Juan de Fuca
<b>Regions:</b>	British Columbia, Vancouver Island	<b>Resource District:</b>	South Island Forest District
<b>BCGS Map:</b>	092B032		
<b>NTS Map:</b>	092B05E	<b>UTM Zone:</b>	10 (NAD 83)
<b>Latitude:</b>	48 21 46 N	<b>Northing:</b>	5356852
<b>Longitude:</b>	123 41 19 W	<b>Easting:</b>	448994
<b>Elevation:</b>	120 metres		
<b>Location Accuracy:</b>	Within 500M		
<b>Comments:</b>	Located on the north-northwest slopes of Mount Maguire, just over 1 kilometre east of Sooke Inlet. The main workings are on the Willow Grouse Crown grant (Lot 135), (Minister of Mines Annual Report 1948, page 164).		

### Mineral Occurrence

**Commodities:** Copper, Nickel, Cobalt, Palladium, Molybdenum, Silver, Gold, Zinc

<b>Minerals</b>	<b>Significant:</b>	Chalcopyrite, Copper, Pyrite, Pyrrhotite, Magnetite, Molybdenite
	<b>Associated:</b>	Hornblende
	<b>Mineralization Age:</b>	Unknown

<b>Deposit</b>	<b>Character:</b>	Shear, Disseminated, Massive
	<b>Classification:</b>	Hydrothermal, Epigenetic
	<b>Type:</b>	M02: Tholeiitic intrusion-hosted Ni-Cu
	<b>Strike/Dip:</b>	040/70W

### Host Rock

<b>Dominant Host Rock:</b>	Plutonic		
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<b>Stratigraphic Age</b>	<b>Group</b>	<b>Formation</b>	<b>Igneous/Metamorphic/Other</b>
Eocene	-----	-----	Sooke Gabbro

<b>Isotopic Age</b>	<b>Dating Method</b>	<b>Material Dated</b>
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**Lithology:** Gabbro, Hornblende

### Geological Setting

<b>Tectonic Belt:</b>	Insular	<b>Physiographic Area:</b>	Vancouver Island Ranges
<b>Terrane:</b>	Crescent		

### Inventory

<b>Ore Zone:</b>	SAMPLE	<b>Year:</b>	1948
<b>Category:</b>	Assay/analysis	<b>Report On:</b>	N

Sample Type: Grab

Commodity	Grade
Cobalt	0.3000 per cent
Copper	11.0000 per cent
Molybdenum	0.2000 per cent
Nickel	0.3000 per cent
Zinc	0.2000 per cent

**Comments:****Reference:** Huestis, H.H. (1948): Rpt. on Sooke Copper-Nickel Gp. (in Prop. File).**Summary Production**

		Metric	Imperial
	<b>Mined:</b>	1,282 tonnes	1,413 tons
	<b>Milled:</b>	0 tonnes	0 tons
<b>Recovery</b>	Silver	8,740 grams	281 ounces
	Gold	280 grams	9 ounces
	Copper	61,402 kilograms	135,368 pounds

**Capsule Geology**

The Willow Grouse past-producer is located on the north western slope of Mount Maguire, approximately 3 kilometres south east of Sooke.

The area is underlain by the Eocene Sooke Gabbro, which forms the basement of the Metchosin Volcanics and is composed of coarse-grained gabbro with about equal parts of bytownite and diopside and about 5 per cent olivine. dikes of leucogabbro contain up to 80 per cent bytownite. Local agmatization, amphibolitization and mineralization of the gabbro occurred later along shear zones.

Chalcopyrite with minor amounts of pyrite, pyrrhotite, magnetite and molybdenite are disseminated in a major shear zone that strikes from 040 to 050 degrees and is about 18 metres wide. It can be traced for more than 600 metres and shows on the surface as subparallel cliffs or scarps. Veins of coarse hornblende are abundant in the main workings, and hornblende occurs at other places along the shear zone.

In the main zone there are several fissures and subsidiary shear zones, within which occur zones of enrichment varying from 1.5 to 6 metres in width. Copper values average about 8 per cent with a maximum as high as 18 per cent. The most important of these zones occurs on the Willow Grouse Crown grant where the mine workings are located. The length of this zone is about 45 metres and the width of the high-grade orebodies, of which there are three, are 1.8 metres, 4.6 metres and 6 metres, respectively. The general strike of these fissures is 040 degrees and the dip is about 70 degrees; but there is one fissure which strikes 177 degrees and dips 80 degrees that forms a junction with the others near the southern end of the mine workings and carries the richer portion of the orebodies.

The zone has been explored over a length of about 300 metres by an adit, a shaft and several opencuts and trenches. From 1915 to 1918, 1,282 tonnes of ore were mined, from which was produced 61,402 kilograms of copper, 8,740 grams of silver and 280 grams of gold (Mineral Policy data). The high-grade lenses have apparently been completely mined out.

A sample of massive chalcopyrite in altered mafic rock assayed 11 per cent copper, 0.30 per cent nickel, 0.30 per cent cobalt, 0.20 molybdenum and 0.2 per cent zinc (Huestis, 1948). Palladium ranges from trace up to 1.37 grams per tonne and gold and silver values run up to 0.34 and 8.57 grams per tonne respectively (Page, 1950).

In 1951, programs of geological mapping and ground geophysical surveys were completed on the area as the June, Lorna, Moffat and Pac claims.

**Bibliography**

EM GEOFILE 2000-2, 2000-5  
 EMPR AR 1904-254; 1907-154; 1908-252; 1915-447; 1916-309; \*1917-261;  
 \*1918-303; 1925-450; 1928-362; 1929-368; 1931-161; \*1948-165;  
 1951-200  
 EMPR ASS RPT \*61, 2267, 3409, 3594, 3584  
 EMPR GEM 1969-225; 1971-224

EMPR PF (Huestis, H.H. (1948): Report on Sooke Copper Nickel Group; Letter regarding Merryth and Griffith zones (unsigned), 1948; Gray, W.A. (1950): Supplementary Report on the East Sooke Copper Showings; Page, T.W. (1950): A Report on the Willow Grouse and the Margaret Copper Properties; Report on Electromagnetic Survey Performed on some Copper Prospects in East Sooke, B.C., by Geoelectric Exploration Company Inc., 1951; Chubb, P.A. (1951): Diamond-drill Logs and Assays; Letter regarding Willow Grouse, by P.A. Chubb, 1951; Report on East Sooke Drill Program, by P.A. Chubb, 1951; Report on Supplementary Sampling, by Huestis, Kenneco and Cooke (undated); A Report on the Willow Grouse and the Margeret Group of Mining Claims; Mascan Explorations Ltd. Prospectus, May 13, 1966)

EMR MIN BR RPT 47, p. 9

EMR MP CORPFILE (Norlex Mines Limited)

GSC MAP 42A; 1386A; 1553A

GSC MEM 13, p. 179; \*96, p. 327

GSC OF 463; 701

GSC P 1972-44; 1975-1A, p. 23; 1979-30

Carson, D.J.T. (1968): Metallogenic Study of Vancouver Island with Emphasis on the Relationship of Plutonic Rocks and Mineral Deposits, Ph.D. Thesis, Carleton University

EMPR PFD 5361, 5477, 5479, 5502, 802185, 674521

<b>Date Coded:</b>	1985/07/24	<b>Coded By:</b>	BC Geological Survey (BCGS)	<b>Field Check:</b>	N
<b>Date Revised:</b>	2013/07/08	<b>Revised By:</b>	Karl A. Flower (KAF)	<b>Field Check:</b>	N