

Location/Identification

MINFILE Number:	092INW044	National Mineral Inventory Number:	092I11 Mgs1
Name(s):	BASQUE NO. 2 BASQUE RANCH		
Status:	Prospect	Mining Division:	Kamloops
Regions:	British Columbia	Electoral District:	Fraser-Nicola
BCGS Map:	092I054	Resource District:	Thompson Rivers Natural Resource District
NTS Map:	092I11W	UTM Zone:	10 (NAD 83)
Latitude:	50 35 38 N	Northing:	5605964
Longitude:	121 21 01 W	Easting:	616765
Elevation:	701 metres		
Location Accuracy:	Within 500M		
Comments:	Ponds between Venables Valley and Highway 1, about 15 kilometres south of the community of Ashcroft (Bulletin 4).		

Mineral Occurrence

Commodities:	Magnesium Sulphate, Sodium Sulphate, Hydromagnesite		
Minerals	Significant:	Epsomite, Bloedite, Mirabilite	
	Associated:	Hydromagnesite	
	Mineralization Age:	Unknown	
Deposit	Character:	Massive	
	Classification:	Residual, Evaporite, Industrial Min.	
	Type:	F09: Playa and Alkaline Lake Evaporites	
	Dimension:	137x84x0 metres	
	Comments:	Pond.	

Host Rock

Dominant Host Rock:	Metasedimentary		
Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Paleozoic-Mesozoic	Cache Creek	Undefined Formation	-----
Isotopic Age	Dating Method	Material Dated	
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Lithology:	Argillite, Greenstone, Argillaceous Limestone		

Geological Setting

Tectonic Belt:	Intermontane	Physiographic Area:	Thompson Plateau
Terrane:	Quesnel, Cache Creek		
Metamorphic Type:	Regional		
Grade:	Greenschist		

Inventory

Ore Zone:	NO. 2	Year:	1924
Category:	Indicated	Report On:	Y

Quantity: 7,710 tonnes

NI 43-101: N

Commodity	Grade
Magnesium Sulphate	100.0000 per cent

Comments: Combined magnesium and sodium salts assuming an average minimum depth of 1.2 metres; grades not given.

Reference: Goudge, M.F. (1924): Magnesium Sulphate in British Columbia.

Capsule Geology

The Basque salt deposits occur in four small basins or mud-filled ponds 2 kilometres west of Highway 1 and 15 kilometres south of the community of Ashcroft. The deposits are the Basque No. 1 (092INW043), Basque No. 2, Basque No. 3 (092INW045) and Basque No. 4 (092INW046). The distance between the Basque No. 1 deposit in the north to the Basque No. 4 deposit in the south is about 1524 metres. The salts have accumulated in four small ponds that lie along a dry valley and are concentrated mainly in the two upper ponds (Basque Nos. 1, 2). Overburden is light or lacking, and in many places bare rock walls form part of the border of the ponds. These ponds are caused by dams of boulder clay and drift that cross the narrow valley.

A sequence of highly folded, metamorphosed, interbedded and nearly vertical dipping greenstone, argillite and argillaceous limestone of the Carboniferous to Jurassic Cache Creek Complex are exposed in the vicinity of the deposits. The Cache Creek rocks strike about 170 degrees.

The Basque deposits are hydrous salts of magnesium, sodium and calcium and consist primarily of mixed hydrous magnesium sulphate (epsomite or Epsom salt) and hydrous sodium magnesium sulphate (bloedite), as well as hydrous sodium sulphate (mirabilite or Glauber's salt). The top one metre in all of the deposits is principally epsomite. Mirabilite generally occurs near the surface and the bloedite at depth. There are also small amounts of calcium sulphate, sodium bicarbonate and sodium chloride present. Potassium in small amounts has been determined in the brines.

The ponds vary in length from 137 to 183 metres and in width from 61 to 137 metres. The sodium and magnesium crystal in each of these ponds occurs as bowl-shaped masses of relatively clean crystal separated from each other by mud. This mud is raised up from 5 to 20 centimetres above the level surface of the crystal and forms a border or ring around the crystal bowl. The mud between the crystal bowls contains 45 to 60 per cent salts plus a little organic matter, the remainder being silt. In wet weather and during the spring and early summer there is brine on top of the crystal.

The Basque No. 2 deposit is about 853 metres down the valley from the Basque No. 1 and is about 23 metres lower elevation. This pond is roughly oval in shape, about 137 metres long and 84 metres wide. The lateral banks are very steep and the bank at the southwest is a solid rock cliff. At each end of the pond the slope is very gradual. The top crystal in this deposit is about 30 centimetres thick and covers practically the whole pond. Beneath this top crystal, however, there is the same bowl-like formation of crystal that characterizes the other Basque deposits. The top crystal was brought to this deposit, in solution, from Basque No. 1. When Basque No. 1 was being worked, the quantity of brine there interfered with the work of obtaining the surface crystal, and in order to facilitate operations the brine was pumped into a launder leading to Basque No. 2. In time, the soluble minerals in the brine crystallized out to form the top layer that exists today on Basque No. 2 (ca. 1924).

The area of this pond is 8361 square metres of which about 4366 square metres is occupied by the crystal bowls with their encircling mud rings. The crystal bowls, separated from each other in many cases by from only a few centimetres to 45 centimetres of mud, are from 18 to 30 metres from the shoreline, except along the northeast shore where the bowls occur to within 6 metres of the margin. The average depth of crystal including mud layers is about 1.6 metres.

Assuming the average minimum depth of crystal in the Basque No. 2 deposit to be 1.2 metres, the total quantity of sodium and magnesium salts available would be about 7710 tonnes (Goudge, 1924).

Some shallow, fresh-water ponds and small deposits of impure hydromagnesite and hydrous sodium sulphate (mirabilite) occur in small converging valleys close to and west of the Basque deposits.

The Basque deposits were staked in December 1917 by Messrs. Hammond of Basque. In 1919, the Basque Chemical Production Co. Ltd. was formed in Vancouver to develop the property and work was begun the same year. Crude surface crystal from Basque No. 1 was shipped to Vancouver and there prepared for market. At the deposits, the company erected 15 or 20 wooden buildings including a number of comfortable dwelling houses for their workmen. A large building intended as a mill was also erected but very little machinery was installed. Operations ceased in 1923, after some 2086 tonnes of crystal had been removed from the surface of Basque No. 1. The top crystal on Basque No. 1 was very pure when operations were first begun, but has since been contaminated. It was dug out of the various bowls by means of picks, crowbars and shovels and taken ashore in carts. As the market warranted, shipments of the crude crystal were made to the company's refining plant in Vancouver where it was prepared for market; the major part of the material, however, was stored in two sheds and in a large pile on the shore of the deposit. About 1633 tonnes is still in storage there (ca. 1924). In 1926, the deposits were carefully examined by M.F. Goudge of the Bureau of Mines, Ottawa, who published a full report in the

Bureau of Mines Publication No. 632. It was not until 1933 that interest was again taken in the deposits and in 1934 Epsom Refineries, Limited took over the property. From then until 1938 about 2721 tonnes of salts were removed. In 1938, the property was acquired by the Ashcroft Epsom Salts Company of Winnipeg, which carried on operations during the winter of 1938-39. Since then little has been done except that in 1942, 59 tonnes of salts were shipped from the refinery at Ashcroft by Canadian Industries, Limited.

Bibliography

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