Location/Identification

MINFILE Number: 092INW045
National Mineral Inventory Number: 092I11 Mgs1
Name(s): **BASQUE NO. 3**
BASQUE RANCH
Status: Prospect
Mining Division: Kamloops
Electoral District: Cariboo South
Regions: British Columbia
Resource District: Kamloops Forest District
BCGS Map: 092I054
NTS Map: 092I11W
UTM Zone: 10 (NAD 83)
Latitude: 50 35 30 N
Northing: 5605726
Longitude: 121 20 42 W
Easting: 617144
Elevation: 640 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: 167x61x0 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: Cache Creek
Metamorphic Type: Regional
Grade: Greenschist

Inventory

Ore Zone: NO. 3
Year: 1924

Category: Indicated

Report On: Y

Quantity: 1,814 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 0.76 metre; 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 (092INW044), Basque No. 3 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. 3 deposit is about 305 metres down the valley from the Basque No. 2 and is about 25 metres lower elevation. The pond has steep banks with rock outcropping along the eastern shore and contains considerably less salts than Basque Nos. 1 and 2. This pond is about 167 metres long and 61 metres wide and has an area of 8361 square metres. The greater part of the pond is filled with mud and no crystal occurs within 12 metres of the shore. The crystal bowls, about 30 in number, are present only in the southern half of the pond, where they extend over an area of about 2508 square metres (ca. 1924). The bowls average about 9 metres in diameter with an average depth of about 0.9 metre.

Assuming an average depth of crystal of 0.76 metre, the quantity of hydrous salts would be about 1814 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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EMPR PFD 811627

Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2007/08/31	**Revised By:**	Sarah Meredith-Jones (SMJ)	**Field Check:**	N