MINERAL OCCURRENCE DATABASE

OCCURENCE NUMBER:	K03-035
OCCURENCE NAME:	Lake Ainslie Barite-Fluorite Deposits
COMMODITIES:	Ba, F
MINERALS:	barite, fluorite, ankerite, chalcopyrite
STATUS:	Deposit
COUNTY:	Inverness

CLAIM INFORMATION
(Coordinates in UTM NAD83)

Claim Map	Tract	Claim	Easting	Northing	Zone
11K/03A	0		644532	5106492	20
11K/03D	0		644752	5112777	20
11K/03D	0		642597	5116527	20
11K/03D	0		645572	5119667	20
11K/03D	0		640872	5117527	20
11K/03A	102	D	644936	5108179	20

HOST ROCK INFORMATION

Stratigraphic Unit	**Age**	**Host Rock(s)**
Fisset Brook Formation	Devono-Carboniferous	volcanic tuffs

LOCATION DIRECTIONS

The East Lake Ainslie Property is located in Inverness County of Cape Breton, Nova Scotia. Access to Johnson Hill is readily achieved by travelling 2 km down an unnamed woods road off Route NS-395. Access point from NS-395 can be made at UTM: 20T 643842 mE 5108718 mN.

From Halifax to access point (approximately 330km):

Follow NS-102 to Trans-Canada Hwy/NS-104 (Truro); then follow Trans-Canada Hwy/NS-104 to NS-252 (Whycocomagh); head north 19 km along NS-252 and NS-395 to unnamed woods road on the right (East Lake Ainslie).

From Sydney to access point (approximately 135km):

Take Trans-Canada Hwy/NS-105 W to NS-252 (Whycocomagh); head north 19 km along NS-252 and NS-395 to unnamed woods road on the right (East Lake Ainslie).

The Lake Ainslie barite-fluorite occurrence consists of a number of deposits and showings spread over a region roughly 8.5 miles long and 3 miles wide. This region is situated in the uplands on the east and northeast side of Lake Ainslie. Exploration and mining activities have historically focused on the following localized areas: (A) Trout Brook, (B) Twin Rock Valley, (C) Scotsville, (D) Mount Pleasant Brook, and (E) Gillis Brook.

MODE OF OCCURRENCE

Breccia matrix

vein

MINERAL OCCURRENCE DATABASE

SURVEYS

adit driven
diamond drilling
geological mapping
induced-polarization
milling tests
Open Cut
prospecting
Self-potential
shafts sunk
soil geochemical
trenching
VLF-EM

GEOLOGICAL DESCRIPTION

Geology

The barite-fluorite veins occur in fault bounded, horst block inliers exposed along the east side of Lake Ainslie. These blocks are comprised of a mixture of basement rocks of probable Ordovician-Silurian age, and an interbedded sequence of sedimentary and volcanic rocks which have been correlated with the Middle to Late Devonian age Fiset Brook Formation. Siliclastic and carbonate sedimentary rocks of the Mississippian Horton and Windsor Groups surround and locally cap the fault blocks.

The basement rocks are composed of a mixture of psammitic gneisses, diorite and granite. These rocks are nonconformably overlain by the Fiset Brook Formation lithologies. In the Lake Ainslie area, this formation includes rhyolite, basalt, conglomerate and sandstone.

MacDonald (1999) reported that evidence of brittle faulting is pervasive throughout the area and that many fracture surfaces are slickensided and slip-lineated. He also suggested that the rhombic fault blocks were formed within a dextral transpresssive regime of post-Visean to Westphalian age.

The barite-fluorite veins occupy zones of similar orientations as the map-scale faults, and are characterized by a wide variety of brittle deformation structures and textures that indicate that mineralization was essentially syn-deformational. Fluid inclusion and stable isotope data (Kontak and MacDonald, 1994) from the veins show that they were formed from saline, relatively low temperature fluids which are typical of formation waters derived from sedimentary basins. The data are similar to those obtained from other barite and related lead-zinc occurrences found in Mississippian age rocks throughout Nova Scotia.

The Trout Brook and East Lake Ainslie veins occur at or adjacent to the Horton Group-Fiset Brook Formation contact, but the Scotsville veins are hosted by the basement rocks described above. The Scotsville veins also differ from the other veins, because they follow a N-S trending fault structure, whereas the other veins follow E-W trending faults.

Vein Mineralogy

The veins are composed of white to orange barite, colourless to green fluorite and grey calcite. A generalized inward zoning pattern of the veins was described in Macdonald (1999) as follows: 1) purple fluorite is found in wallrock fractures, 2) green fluorite ± calcite are concentrated at vein margins, 3) barite ± pale green fluorite ± calcite occur as colloform growths and 4) coarse grained and vuggy barite forms the central part of the vein. This zoning pattern is commonly modified by post-depositional structural deformation which produced shear banding, single- and two stage breccias and cataclastic mortar textures in some portions of the veins.

Trace amounts of fine grained sulphides, most commonly chalcopyrite and pyrite occur locally. Black manganese oxide/hydroxide occurs both as vug fillings and to a lesser extent, as fracture coatings. Hydrocarbons have also been reported to occur in some vugs, but this was not confirmed in Macdonald's (1999) studies.

MINERAL OCCURRENCE DATABASE

PREVIOUS WORK

MINERAL OCCURRENCE DATABASE

The early mining history of the Lake Ainslie Barite Deposit is well documented in Poole's 1907 report. Barite was first identified in this area in 1890, but residents recognized a peculiar white rock on their farms several years prior to its identification.

The mining activities were described in Poole's report as follows: "When it was recognized that the heavy, white boulders strewn about the fields were not quartz but barites which possessed a market value, operations were begun on the holding of Norman Johnston. There the white rock stood boldly out above the surface of the hill beside the Gairloch Mountain road as it enters the ravine to wind up the rising ground to the level of the plateau.

Three veins have been partly exploited. The strike of the veins is N. 80° E. to S. 75° E. and is across the axis of the felsite hill and the north fork of the ravine.

Operations on the main vein, which is about eight feet wide, consisted of an upper and lower drift for some 200 feet westward, at which distance a vertical cross vein or branch came in from the northward and yielded barites from nine to twenty feet in width for a length of 125 feet. The extent of these north and south leaders and the number of them that are workable have not been determined. From the openings made an opinion has been formed that they do not carry their great width continuously in depth.

Towards the top of Johnson Hill, a trench has been dug along an outcrop east and west across the hill and has exposed between eighteen inches to three feet of barite veins dipping 80° northward; float of barites 125 paces north of this trench indicates another vein which would extend across the vein to the eastward.

No mining was completed in 1904, due to excess supply from the previous years' operations. The mineral ore was carted by way of Ainslie Glen twelve miles to Whycocomagh for shipment, at a cost of two dollars per ton. Messrs. Henderson and Potts, the mine operators, report having extracted in all some 3,574 tons to the end of 1904 since they began work in 1890.

West of Gairloch Mountain road the only openings made were at 180 paces from the road, where four feet of barite outcropped on the hill side. A drift some twenty feet lower found the vein pinched to what extent was not proved. The exposure looks like an outcrop and is not less than eight feet wide, but it has not been fully uncovered. Other boulders of large size lie nearby and, in the soil sloping northward, are many smaller ones.

Operations have been pursued at three points, viz.: To the east (on lands of Lauchlin McMillan) by and open cut near the crest of the hill. In the center, at the somewhat lower level and parallel, 200 feet northward (on the John McDougall property); and to the west on the steep face of the hill on the Campbell vein. No openings have been made of the south slope of the hill to the brook. Eastward, prospecting stopped short at a point 900 feet along the series of veins, where the water courses attain high ground and lose their rapid flow, but seemingly, the barites -bearing rocks, felsites, extends much farther in that direction and probably carries mineral with it.

The McMillan open cut extends some 170 feet and, where worked, shows a width of from eight to sixteen feet of ore. The hanging wall is well defined; the foot wall is somewhat shattered, and the disturbed blocks of rock are cemented with barites.

On the McDougall vein, openings have been made 125 feet east and forty feet west of a drift to it from the north slope of the hill, and several parallel stringers of irregular width were cut. At a depth of thirty feet the vein opened out below a pinch and there shows a width increasing to eight feet at one location.

The Campbell vein has been worked by five drifts on the western face of the hill; the lowest, at the base of the hill near the engine house, is driven in on the vein 175 feet, the second sixty feet, the third forty feet, the fourth thirty feet and the highest (250 feet above the lowest) fifteen feet. They all show over seven feet and even up to fourteen feet of vein, with grey clay gouge on the foot wall.

Shaw (1916): This report includes a brief description of both the Scotsville Barite Properties and he manufacturing process used to produce lithopone using barite ore.

McCallum (1916): A. L McCallum described the workings on the Peter Campbell, Tom Campbell and McKinnon Properties. He collected ore samples from each of these properties

and includes an analysis of each sample in his report.

Mugford (1917): This report provides a brief description of the East Lake Ainslie mine workings and some barite reserves estimates. The reserves were estimated to be 62 000 tons developed, 16 000 tons partially developed and 402,000 tons prospective ore.

Messervey (1938) (in Miscellaneous Reports (1914-1955): Mr. W. M. Evans sank a test pit on the Campbell Vein, at the base of the hill, in front of the adit. At this point the vein, which strikes S65°E and dips 70°, has a width of 6 feet.

Messervey (1938): The Lake Ainslie deposits were inspected by J. P. Messervey for Nova Scotia Department of Mines. The report includes descriptions of the mine workings on the Campbell-McMillan-MacDougall veins at East Lake Ainslie, and the Peter Campbell Mine at Scotsville. Analyses of samples collected from both vein outcrops and the mine dumps are included in this report.

Messervey (1939)(in Miscellaneous Reports (1914-1955): Mr. Ian MacKay cleaned the MacMillan Shaft and installed a new ladder, cleaned the Howard Johnston Mine on Trout River, and sank a shaft to gain entry to the Tom Campbell adit.

Flynn (1939): The Lake Ainslie Barite Deposits were examined by Dr. A. E. Flynn, a Professor of Mining Engineering. Flynn stated that by 1905, 18 000 tons of barite had been produced from the Lake Ainslie Deposits. The mining leases for this area were staked in 1939 by the North American Mining and Chemical Corporation Limited. This company had reopened some of the old workings for resampling. Flynn described the old workings as follows:

East Lake Ainslie: Campbell, McDougall and McMillan Mines

The Campbell mine remains inaccessible. The McDougall mine, which was partially accessible, showed evidence of workings about 100 feet long, 5 feet wide and 30 feet high. The McMillan mine was entered by an 83-foot-deep inclined shaft. A 100-foot-long level driven off the bottom of the shaft, and the vein was opened on surface, by some 200 feet of open cuts. Widths of the vein ranged from 5 to 16 feet, but Flynn suggested that most of it was below grade barite for use as a paint filler. Fluorite was the main contaminating ingredient.

Messervey (1940)(in Miscellaneous Reports (1914-1955): The Gilman Mining Company made an attempt to clean out the Campbell Mine adit.

Trout Brook: Johnston Mine

The adit was some 200 feet long, with stoping in places up to 50 feet high. The barite vein varied in width from 5 to 12 feet. The open cuts located above the adit were inaccessible.

Miscellaneous Reports (1941-1945): Mr. H. B. Gillis (1941) reported that Dominion Steel and Coal Corporation drilled 7 holes totalling 44.9 m to test the MacKay fluorite vein. The property had been optioned from the North American Mining and Chemical Corporation, but the option was allowed to expire, because the drilling survey did not identify a mineable width fluorite ore body.

Messervey (1943; 1944; 1945a and 1945b): Nova Scotia Department of Mines conducted a diamond-drilling program on the Evans (MacKay) mine. They drilled two holes (records 958 and 959) in 1943, one hole (record 963) in 1944 and 3 holes (records 1064-1066), for a total of 334 m.

Douglas et al. (1944) and Douglas (1945): Dr. G. V. Douglas of Dalhousie University was contracted by Nova Scotia Department of Mines to produce detailed geological maps of the East-Side Lake Ainslie area. Douglas was assisted by J. R. MacQuarrie and F. R. MacKay.

Douglas's (1945): This report includes a chronological work history of the Lake Ainslie Deposits.

Messervey (1946): Nova Scotia Department of Mines: The Department drove a new adit on the Campbell Vein and diamond-drill tested some of the Lake Ainslie Barite veins.

Goudge (1954) (in Miscellaneous Reports (1914-1955): Fluor Bar Mines Limited entered the Campbell Mine adit and mucked it out for a length of 125 feet. The company drilled several diamond-drillholes. Drillhole 2, located 400 feet west of the same adit, along the edge of the mine road, was drilled south at 40° for 347 feet. This hole intersected a 2.5-foot-wide barite vein at a depth of 193 feet, and barite veinlets between 201 and 207 feet, all of which were hosted by rhyolite. Drillhole 3, a north bearing horizontal hole drilled at the same site as number 2, was stopped at a depth 613 feet. This hole intersected three barite veins; 1.8 feet at a depth of 254 feet, 2.8 feet at a depth of 419 feet and 11.6 feet at a depth of 561 feet.

Fluor-Bar Mines Limited (1954): This mineral prospectus includes photographs of some of the old mine workings and veins.

Cole (1955)(in Miscellaneous Reports (1914-1955): Fluor Bar Mines mucked out the Campbell adit to a depth of 365 feet. A portion of the tunnel had been stoped up to a height of 25 feet. The face of the tunnel shows a vein width of 6.5 feet, being made up of 2 feet of brecciated rhyolite on the hanging wall side and about 4.5 feet of barite-fluorite- calcite between that and the footwall. At the face, the vein carries considerable fluorite. The footwall in the last 65 feet of the
tunnel is a much sheared and slickensided shale which apparently slakes to a clay in the presence of air and water. This clay-like material is quite incompetent, and tends to flow into the tunnel opening, leaving the vein with little support. This condition necessitates the use of closely spaced support timbers.

Drillhole 17 (government drillhole 13) was drilled 300 feet south of the MacMillan shaft to a depth of 451 feet, and intersected barite vein material from 368 to 374 feet down hole length.

Goudge (1955)(in Miscellaneous Reports (1914-1955): Fluor Bar Mines Limited completed a drilling program consisting of 11 drill holes approximately 150 feet south of a small stream, and midway between holes 5 and 6. It was projected to intersect the Campbell vein at a depth of 300 feet. Diamond drilling completed to date has shown that the Campbell vein extends eastward to just beyond the top of Bald hill where it peters out. It also proved that the Campbell, McDougall and McMillan veins are one and the same.

Keating and Cameron (1956): This report includes several drillhole sections of the Campbell-MacMillan vein produced by Fluor-Bar Mines Limited.

Shea (1959): Mr. Frank Shea, a Nova Scotia Department of Mines geologist conducted a field examination of the Lake Ainslie barite-fluorite deposits. His report includes the following information:

1) Fluor Bar Mines estimated the tonnage and grade of the Campbell-MacMillan vein to be 1 000 000 tons at 44.54% $BaSO_4$, and 16.61% CaF_2. These tonnage grades were estimated using a vertical depth of 350 feet and a length of 1150 feet.

2) Some of the veins are relatively high in barite, but others, particularly the larger ones, also contain a high percentage of fluorite. Flotation must be used to separate the fluorite from the barite, a factor which could influence the economic viability of mining this deposit.

Sogemines Development Company Limited (1961): This company conducted soil and stream silt geochemical, geological mapping and self-potential surveys along the east side of Lake Ainslie. They drilled 9 diamond-drillholes totalling 417 m to test base-metal geochemical anomalies defined in their survey work. The intersected significant amounts of base metal mineralization in Carboniferous age rocks of the Windsor and Horton Groups, but a genetic link between this mineralization and the barite-fluorite veins is not apparent.

MacLean (1964) and Nicholson (1964): Mount Costigan Mines conducted soil geochemical, geological mapping, induced polarization, self-potential and electromagnetic surveys along the east side of Lake Ainslie. This exploration program focused on base metals, but the surveys did cover the sites of some of the barite-fluorite deposits. They also drilled two diamond-drillholes totalling 792 feet.

Sadlier-Brown (1965): Mount Costigan Mines Limited drilled 8 diamond-drillholes totalling approximately 3000 feet to test the base metal potential along the east side of Lake Ainslie. This drilling intersected base metal mineralization in the Carboniferous Windsor and Horton Groups, but this mineralization shows no direct relationship to the barite-fluorite deposits

described in this mineral occurrence record.

Johnston (1965): Consolidated Mogul Mines Limited conducted geological mapping, and surface sampling on the East Lake Ainslie and Trout Brook veins. They also trenched the Upper Johnson (Trout Brook) vein and diamond-drill tested the Upper Johnson and A. J. MacLean veins. Geological descriptions of the various veins and mine workings are provided in this report. The company drilled 7 diamond-drill holes (J-1 to J-7) totalling 866 m on the Upper Johnson vein.

Johnston (1966): Yale Lead Zinc Mines took over exploration at this site from Consolidated Mogul Mines Limited. Yale conducted geological mapping surveys over the East Lake Ainslie area and completed a 26 hole diamond drilling program totaling 3,704 m. Seven holes (J-8 to J-14) were drilled on the Johnston vein, four holes (MD-1 to MD-4) were drilled on the J. A. MacDougall vein, two holes (Ml-1 and Ml-2) were drilled on the Maclean vein, and thirteen holes were drilled on the Campbell vein.

Kilborn Engineering Limited (1968): Yale Lead and Zinc Mines Limited contracted Kilborn Engineering Limited to prepare a report on the capital and operating costs for a 1,000 tons per day barite and fluorite concentrator at Lake Ainslie.

Knight (1968): This report prepared for Yale Lead and Zinc Mines Limited describes the companies surface rights, both at the Lake Ainslie Mine site and at the site of the proposed shipping facility. It also includes a mill flow chart, some concentrator test results, and some estimated annual production figures.

Zurowski (1972): M. E. M. Consultants Limited conducted geological mapping, soil geochemical and electromagnetic surveys along the east side of Lake Ainslie to evaluate the barite-fluorite deposits found in this area. They also completed 353 m of trenching, drilled 8 diamond-drillholes totalling 2170 m., and contracted Atlantic Industrial Research Institute to conduct metallurgical tests on two 25-ton bulk samples collected from the MacMillan vein system.

In 1972, Conwest undertook an exploration program in the vicinity of the Upper Johnson. They drilled two holes and extended DDH J13 for a total of 1951 feet (594.8 m). In addition to the drilling, Conwest did extensive trenching about 600 feet north of the Upper Johnson. This trenching resulted in the discovery of the “Conwest Vein”.

Sauer (1981): The author conducted a barite market study to determine the existing and future market potential of the Lake Ainslie barite deposit.

Hiller (1981): Armco Incorporated conducted a fluorite market study to determine the existing and future market potential of the Lake Ainslie fluorite deposit.

McAlpine (1982): Madawaska Mines Limited conducted a study to determine the best method of mining the Johnston Barite-Fluorite Deposit. The report made the following conclusions:

The orebody, in general, consists of a vein about 600 feet long which dips at nearly 90°. The vein contains both barite and fluorite in varying percentages. The total of well established and probable ore in the Upper Johnson Vein orebody is 1,402,630 short tons at 43.6% barite and 17.54% fluorite. This would amount to 612,209 short tons of barite and 245,984 short tons of fluorite. It is planned to develop the ore zone by driving a ramp on the south side of the Johnson Vein. The production from the property would be 500 short tons per day."

Wyslouzil (1982): Lakefied Research of Canada Limited conducted milling tests on the Lake Ainslies barite ore for Kilborn Limited.

Collins and Lewis (1982): Warren Spring Laboratory conducted milling tests on the Lake Ainslie barite-fluorite ore for Conwest Exploration Company Limited.

Baughman et al. (1983): Colorado School of Mines Research Institute was contracted by Kilborn Limited to conduct an investigation of fine barite beneficiation using gravity concentration techniques. The testing determined that the barite ore is amenable to gravity concentration using spiral concentrators.

In 2003, Atlantic Industrial Minerals conducted an extensive exploration program on the Upper Johnson Vein and the area near the Conwest trenches. This program included 5 drill

holes (J15 ï J19) for a total of 525 metres.

Four trenches for a total length of 362 metres were excavated on or near the Conwest Vein. The trenches were excavated just south of drill hole 72-5 and uncovered numerous discontinuous stringers and discontinuous veins of barite and fluorite. One barite vein, thought to be the Conwest Vein, was exposed for about 70 metres. It varied width from 2.7 metres to just a stringer, with an average width of 0.75 metres. The attitude of this vein was quite variable. At the eastern end it was 0.30 metres, striking about 070 and dipping 80 north. On the western end of the trench, the vein was 1.0 metres wide, striking approximately 095 and dipping 50 north. The area of these trenches corresponds with the area designated a ñstringer zoneò on the section drill hole 72-5.

In late 2007 and early 2008 a program to re-evaluate the existing data from previous exploration of the area of the Upper Johnson Vein was undertaken. This included locating old drill holes on the ground and completing a compilation of all known data on the area. This compilation revealed that there were in fact two parallel veins on Johnson Hill.

In the fall of 2012, Annapolis staff collected a 8,700 kg bulk sample of barite from the Upper Johnson Vein system. Part of the sample was used for spiral and shaking table testing to evaluate the ability to produce a drilling mud grade barite. In addition, a petrographic study of the ore was completed to complement the mineral separation tests. The results of separation testing indicate that drilling-grade barite mud can be produced from Johnson Hill barite. It was found, however, that barite recovery rates are reduced by fine-grained fluorite contamination in
the Upper Johnson Vein system. It is thought that the effects of fluorite contamination can be mitigated by using feed stock that is more finely crushed.

In 2013, Acadian Mining Corporation conducted an exploration program consisting of trenching and prospecting between the Upper Johnson and Conwest vein systems. A 160 m long trench was dug approximately northward. A total of six rock samples were collected and and described by Acadian staff but not sent for analysis. In addition, a small bulk sample was collected from the Conwest Vein zone.

In 2018, 21Alpha Resources Inc. (Alpha) collected a 45 kg sample of vein material from the Upper Johnson vein that returned 65% BaO.

Later that year, a second 45 kg sample was collected, this time, from the East Lake Ainslie showing. This sample returned concentrations of 53% BaO and 9.4% F.

In 2019, Per Auricletech Resources (PerAur) completed a prospecting and sampling program on the East Lake Ainslie project. Five bulk samples of approximately 100 kg were collected from three waste dumps and sent for analysis. The samples returned an average grade of 28% Ba and 19% F. All samples contained dark minerals identified as gilsonite.

SITE DESCRIPTION

Coordinate 6 is located at the East Lake Ainslie barite/Fluorite showing where a 45 kg bulk sample was taken in 2018 and returned 53.5% BaO and 9.4% F.

COMMENTS

The following UTM Coordinates correspond to specific mineralized sites:

#1 - Trout River
#2 - Twin Rock Valley
#3 - Scotsville Inlier
#4 - Mount Pleasant Brook
#5 - Gillis Brook.

BIBLIOGRAPHY

MINERAL OCCURRENCE DATABASE

Adorjan, L. A. 1988: Final report on the beneficiation study of Conwest barite ore; Minerals Engineering Centre, Technical University of Nova Scotia for Conwest Exploration Company Limited; Nova Scotia Department of Natural Resources, Assessment Report 90-021.

Barrett, A. M. 2019: Assessment Report on the Lake Ainslie Claim Group Exploration License # 51491. Per Auricletech Resources. ISN: 24852.

Baughman, G. W., Spiller, D. E. and Merritt, R. C. 1983: Barite processing tests; Colorado School of Mines Research Institute; Nova Scotia Department of Mines and Energy, Assessment Report 83-019.

Cameron, L. E. 1945: The concentration of barite-fluorite ores from the Lake Ainslie District, Nova Scotia; Transactions of the Mining Society of Nova Scotia, V. XLVIII, p. 567-587.

Collins, D. N. and Lewis, W. 1982: Dense medium separation of the Lake Ainslie Barite-Fluorite ore; Warren Spring Laboratory; Nova Scotia Department of Mines and Energy, Assessment Report 82-032.

Compton, T. R., Covey, G., Melanson, T. 2017: Assessment Report: Report on the 2013 Trenching Program, Johnson Hill Area, East Lake Ainslie, Inverness County, Nova Scotia, Exploration Licence: 07099. ISN: 23983.

Conwest Exploration Company Limited 1987: Study of barium chemicals from the conwest barite deposit at Lake Ainslie, Cape Breton, Nova Scotia; proposal to Supply and Services Canada; Nova Scotia Department of Natural Resources, Assessment Report 90-020.

Conwest Exploration Company Limited 1988: Study of the production of barium chemicals from the conwest barite deposit at Lake Ainslie, Cape Breton, Nova Scotia, revised scope of work- phase IIA; Nova Scotia Department of Natural Resources, Assessment Report 90-023.

Creed, R. 1968: Barite-fluorite mineralization at Lake Ainslie, Inverness County, Nova Scotia; M.Sc. thesis, Dalhousie University, Halifax, Nova Scotia.

Douglas, G. V., MacQuarrie, J. R. and MacKay, F. R. 1944: Barytes and Fluorspar Deposits, East Side Lake Ainslie, Inverness County, Nova Scotia; Nova Scotia Department of Mines, Assessment Report 11K/03A 06J-31(16).

Douglas, G. V. 1945: Barytes and fluorspar deposits at Lake Ainslie; Nova Scotia Department of Mines, Annual Report on Mines 1944, p. 132-151.

Farquharson, G. 1985: Lake Ainslie project order-of-magnitude cost estimates for Conwest Exploration Company Limited; Nova Scotia Department of Mines and Energy, Assessment Report 86-032.

Felderhof, G. W. 1978: Barite, celestite and fluorite in Nova Scotia; Nova Scotia Department of Mines, Bulletin No. 4, p. 294.

Fluor-Bar Mines Limited 1954: Mining prospectus; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(07).

Flynn, A. E. 1939: Report on Barite Deposits at Lake Ainslie, Nova Scotia; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(04).

Giles, P. S., Hein, F. J. and Allen, T. L. 1997: Bedrock geology of Port Hood- Lake Ainslie (11K04, 11K03, 11F13), Cape Breton Island, Nova Scotia; Geological Survey of Canada, Open File 3253, scale 1:50 000.

Hiller, G. S. 1981: Fluorite market study; Armco Incorporated; Nova Scotia Department of Mines and Energy, Assessment Report 81-012.

Johnston, D. 1965: Report on the Lake Ainslie barite-fluorite property of Consolidated Mogul Mines Ltd.; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(08).

Johnston, D. 1966: Report on work performed in Lake Ainslie Area by Yale Lead and Zinc Mines Ltd.; Nova Scotia Department of Mines and Energy, Assessment Report 11K/03A 06-J-31(09).

Jones, B. 1969: Report on Southwest Margaree Valley Project; Nova Scotia Department of Mines, Open File Report 029, p. 30.

Kavanaugh, D. 1974: Barite-fluorite in the Lake Ainslie Area; unpublished intra-departmental report, Nova Scotia Department of Mines.

Keating, B. J. and Campbell, E. H. 1956: Fluor-Bar Mines Limited, Campbell- MacMillan vein, plan and sections; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(

Kelley, D. G. 1961: Prospecting for metallic minerals in Mississippian rocks of Cape Breton Island, Nova Scotia; Canadian Mining Journal, v. 82, no. 5, p. 69-71.

Kilborn Engineering Limited 1968: Yale Lead and Zinc Mines Limited, preliminary capital and operating cost estimate for 1000 tons per day barite and fluorite concentrator at Lake Ainslie, Cape Breton Island with storage and ship loading facilities at Bras d'Or Lake, Cape Breton Island; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(10).

Knight, F. C. 1968: Yale Lead and Zinc Mines Limited; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(11).

Kontak, D. J. and Macdonald, A. S. 1995: Initial results of a fluid inclusion study of fluorite from the Lake Ainslie Barite-Fluorite Deposits, Inverness County, Nova Scotia; in Minerals and Energy Branch Report of Activities 1994, Nova Scotia Department of Natural Resources Report 95-1, p. 99-106.

Lutwick, G. D. 1989: Study of the production of barium chemicals from the Conwest barite deposit at Lake Ainslie, Cape Breton, Nova Scotia, phase IIb- Laboratory investigation, interim progress report; Nova Scotia Research Foundation Corporation; Nova Scotia Department of Natural Resources, Assessment Report 90-025.

Lutwick, G. D. 1990: Study of the production of barium chemicals from the Conwest Barite Deposit at Lake Ainslie, Cape Breton, Nova Scotia for Conwest Exploration Company Limited; Nova Scotia Research Foundation Corporation; Nova Scotia Department Department of Natural Resources, Assessment Report 90-163.

Macdonald, A. S. 1994: Structural environment of the Lake Ainslie Baryte-Fluorite veins, Cape Breton Island; in Program and Summaries, Eighteenth Annual Review of Activities, Nova Scotia Department of Natural Resources, Mines and Energy Branches Report 94-2, p. 61.

Macdonald, A. S., Barr, S. M., Arnott, A. M. and Dunning, G. R. 1995: The Fisset Brook Formation in the Lake Ainslie- Gillanders Mountain area, Central Cape Breton Island, Nova Scotia: age, geochemistry, structure and mineralization; in Program and Summaries, Ninteenth Annual review of Activities, Nova Scotia Department of Natural Resources, Report 95-2, p. 59.

Macdonald, A. S. 1999: Lake Ainslie Barite-Fluorite Veins, Cape Breton Island, Nova Scotia; Geological Survey of Canada, Open File 3742.

MacLean, W. H. 1964: A geological report on the Mount Costigan property on the east shore of Lake Ainslie; Nova Scotia Department of Mines and Energy, Assessment Report 64-002.

McAlpine, S. 1982: Preliminary evaluation of a mining method for the Johnston Barite-Fluorite Deposit; Madawaska Mines Limited; Nova Scotia Department of Mines and Energy, Assessment Report 82-034.

McCallum, A. L. 1916: Report of A. L. McCallum, B. S. on Scotsville Barytes Properties; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(01).

Messervey, J. P. 1938: Barytes, Lake Ainslie; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(05).

Messervey, J. P. 1939: Barytes deposits of Lake Ainslie; Nova Scotia Department of Mines, Annual Report on Mines 1939.

Messervey, J. P. 1944: Report on government core drills; Nova Scotia Department of Mines, Annual Report 1943, p. 53.

Messervey, J. P. 1945a: Report on government core drills; Nova Scotia Department of Mines, Annual Report 1944, p. 48.

Messervey, J. P. 1945b: Report diamond drilling-Trout River; Nova Scotia Department of Mines, Assessment Report 11K/03A 18-J-31(01).

Messervey, J. P. 1946: Report on government core drills; Nova Scotia Department of Mines, Annual Report 1945, p. 109.

Messervey, J. P. 1946: Fluorspar, Trout River; Nova Scotia Department of Mines, Annual Report 1945, p. 196-203.

Miscellaneous Reports 1914-1955: A collection of reports and memos describing the Lake Ainslie Barite Deposits; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(00).

Miscellaneous Reports 1941-1945: A collection of reports describing the work conducted on the Mackay fluorite vein; Nova Scotia Department of Mines, Assessment Report 11K/03A 18-J-31(00).

Mugford, A. H. 1917: Report of baryte mines, Lake Ainslie, Cape Breton, Canada, known as the Scotsville Deposits and East Lake Ainslie Mines; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(03).

Nicholson, D. 1964: A report on the Lake Ainslie property, Nova Scotia; Mount Costigan Mines Limited; Nova Scotia Department of Mines, Assessment Report 11K/03A 07-J-31(01).

Nova Scotia Department of Mines 1946: Plans and sections for the Lake Ainslie Barite Deposits; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(15).

Poole, H. S. 1907: The barytes deposits of Lake Ainslie and North Cheticamp, Nova Scotia; Geological Survey of Canada, Publication No. 953, 43 p.

Roberts, R. L. 1988: Study of the production of barium chemicals from the Conwest barite deposit at Lake Ainslie, Cape Breton Nova Scotia- Phase 1 market analysis final report; Nova Scotia Department of Natural Resources, Assessment Report 90-022.

Sadlier-Brown, T. L. 1965: A report on the field work undertaken on the Lake Ainslie property of Mount Costigan Mines Limited during the summer of 1965; Nova Scotia Department of Mines, Assessment Report 11K/03A 07-J-31(02).

Sauer, F. 1981: Canadian and United States barite market study; Nova Scotia Department of Mines and Energy, Assessment Report 81-011.

Shaw, J. W. 1917: Barytes properties, Inverness County, Cape Breton, Nova Scotia; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(02).

Shea, F. S. 1959: Report on the Lake Ainslie Barite-Fluorite Prospects, Inverness County, Cape Breton; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(06).

Shurko, J. 2019: East Lake Ainslie, Nova Scotia. Assessment Report 2019. ISN: 24885.

Sogemines Development Company Limited 1961: Diamond drill-core logs, and soil and self-potential surveys maps; Nova Scotia Department of Mines, Assessment Report 11K/03D 27-J -31(01).

Spence, H. S. 1922: Barium and strontium in Canada; Canadian Department of Mines Publication No. 570, p. 23-30.

Zurowski, M. 1971: Report on the exploration and development activities conducted on the holdings of International Mogul Mines Ltd. and New Mount Costigan Mines Ltd. for 1971 in the Ainslie Lake Area, Inverness County, Nova Scotia; parts 1 and 2; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(12).

Zurowski, M. 1972: Report on the exploration and development activities conducted on the holdings of International Mogul Mines Ltd. and New Mount Costigan Mines Ltd. for 1972 in the Ainslie Lake Area, Inverness County, Nova Scotia, parts 1-3; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(13).

Zurowski, M. 1972: Reports on metallurgy of Lake Ainslie barite-fluorite, by Lakefield Research Canada Ltd. for International Mogul Mines Ltd.; parts 1-12; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(14).

Wyslouzil, D. M. and McCarthy, J. 1972: Reports on metallurgy of Lake Ainslie barite-fluorite, by Lakefield Research Canada Ltd. for International Mogul Mines Ltd.; parts1-12; Nova Scotia Department of Mines, Assessment Report 11K/03A 06-J-31(14).

Wyslouzil, D. M. 1982: An investigation of the recovery of barite from Lake Ainslie samples submitted by Conwest Exploration Company Limited (per Kilborn Limited), progress report no.1, project no. L. R. 2623; Lakefield Research of Canada Limited; Nova Scotia Department of Mines and Energy, Assessment Report 82-033.

POSSIBLE RESTRICTIONS

UPDATED

Compiled by: K. MacLeod, November 1995
Updated by: G. J. DeMont, April 1998; K. MacRae, October 2023.