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GEOLOGY OF THE PROPERTY OF
CALDER - BOUSQUET GOLD MINES LIMITED,
LAVAL TOWNSHIP, ONTARIO.



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SUMMARY

During the month of June 1951 a geological survey based on a grid of chained picket lines was carried out on the claims of Calder-Bousquet Mines, Laval Township in the District of Kenora, Ontario.

The property was found to be well located with respect to important geological and structural features in the area and also with respect to the Newlund and Windward mining operations to the northeast.

The mapping disclosed a series of volcanic rocks cut by many quartz-feldspar-porphyry dikes which were usually mineralized with quartz and pyrite. One dike in particular carried more than normal mineralization including small amounts of galena and chalcopyrite in a fairly strong quartz vein. Some pyrite mineralization was found in the volcanic flows and tuffs, usually near the acid intrusives or near suspected fault zones.

It has been recommended that a thorough and systematic program of prospecting be carried out with particular attention to certain areas.

INTRODUCTION

During the month of June 1951, a geological survey was made of the Laval township property of Calder-Bousquet Mines Limited. The Calder-Bousquet claims lie on the southwestern extension of the greenstone belt in which are located the Newlund and Windward Mines and numerous other gold prospects. Geological conditions are similar to those in the Newlund area. The location of the property and geological environment thus suggested the desirability of a systematic and thorough exploration program with geological mapping as a necessary preliminary step.

The property consists of 20 unsurveyed claims numbered K 13624 to K 13632, inclusive, K 13634, K 13636 to K 13643, inclusive, K 13645, and K 13648, located in the East-Central part of Laval township, district of Kenora, Ontario, around the south end of Troutfly Lake.

Camp No. 76 Dryden Paper Company is located at the northeast end of Troutfly Lake and is connected by a good gravel road to the Sioux Lookout - Dinorwic Highway at Mileage 31. Access to the property is by means of these roads to Camp No. 76 and then by canoe to the south end of the lake.

TOPOGRAPHY, DRAINAGE, TIMBER

More than 90% of the area of the group is land, part of claim K 13634 at the NE corner is underlain by Troutfly Lake, and a small lake at the southeast corner of the group, on claim K 13642, underlies a small part of that claim. Of the land surface,

probably 50%, is underlain by rock, usually as low moss and tree-covered ridges, but occasionally as fairly prominent hills up to 100 feet in height. Two large swamp areas occur in the western and east-central parts of the property, and other smaller swamps are numerous.

Drainage is almost entirely northeastward and northward into Troutfly Lake.

The group is heavily wooded. The northwestern and western portions of the block appear to have been burned over possibly 20 years ago and vegetation now comprises poplar and birch and a dense growth of small brush on the higher ground. The remainder of the property is wooded with good stands of spruce and jackpine on the higher ground, some of which is now being cut by the Dryden Paper Company. Swamps contain cedar up to 18 inches in diameter, balsam, Balm of Giliad, some ash and the ubiquitous alder.

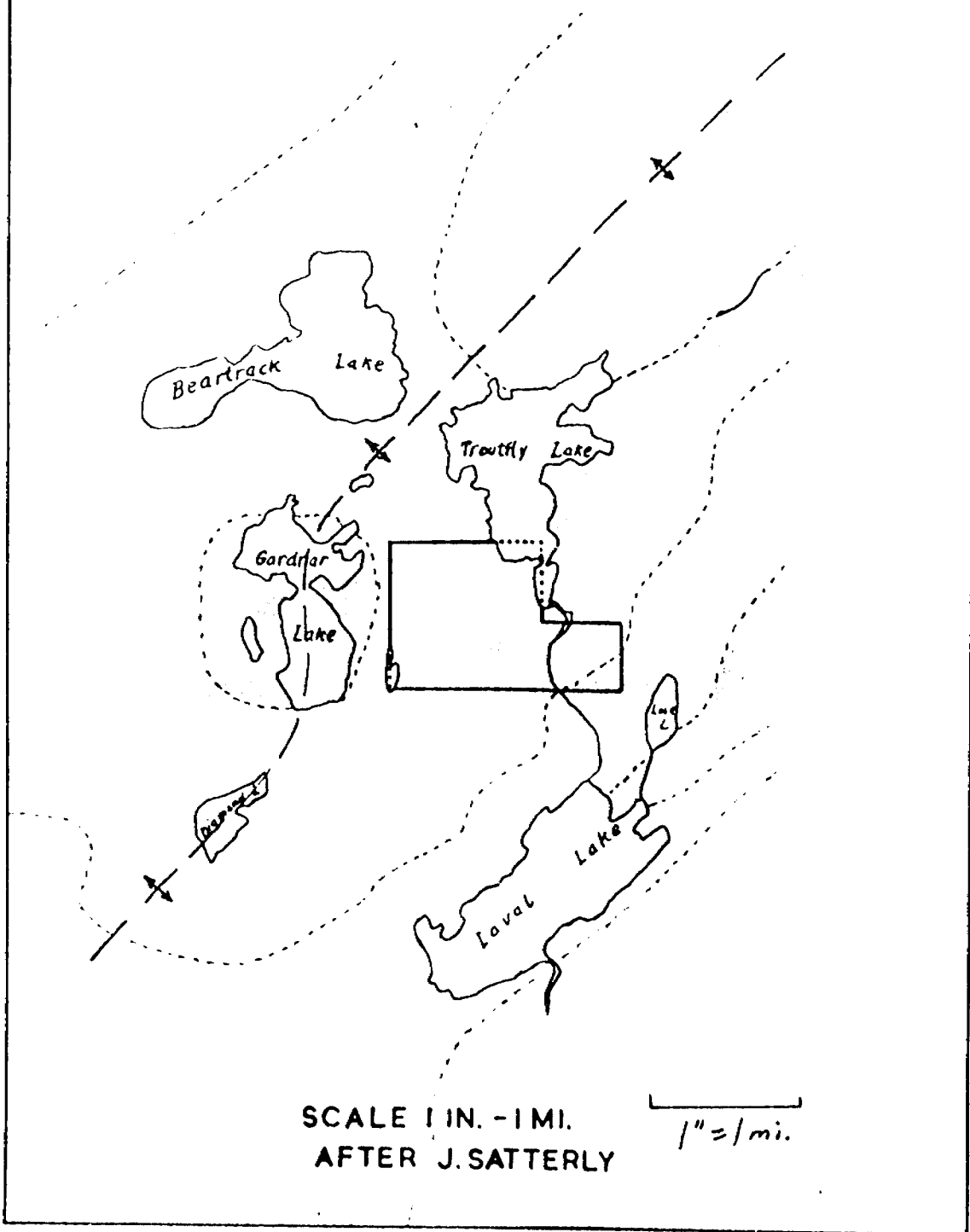
SURVEY PROCEDURE

Due to the shape of the claim group it was necessary to locate the east-west baseline for the survey south of the south bay of Troutfly Lake. An east-west baseline was laid out with a Brunton compass about 400 feet south of Post No. 1, claim K 13638. Magnetic declination in the area is stated¹ to be 5° E and allowance was made for this. The baseline was extended by pickets to the east and west boundaries of the property. The baseline was chained and marked at 100-foot intervals and cross lines, marked by small squared posts, were turned off at 400-foot intervals and extended by picketing to the north and south boundaries of the property.

1. J. Satterly - Map of Dryden - Wabigoon Area.

REGIONAL GEOLOGY and STRUCTURE

CALDER-BOUSQUET PROPERTY AREA



The picket lines were chained and marked at 100-foot intervals by numbered pickets to which topographical and geological features were referred on the accompanying map.

Mapping was done in the field by traversing the picket lines and locating topographical and geological features with reference to the grid system on sketch sheets. Traverses were run between the picket lines where features of geological or topographical interest needed closer attention. The information on the sketch sheet was then compiled on a working base map at the property.

REGIONAL GEOLOGY

The main features of the regional geology, as shown by Dominion and Provincial geological maps of the area, comprise an infolded belt of Keewatin volcanic and sedimentary rocks about 15 miles wide and 50 miles in length trending in direction north of east. Granitic rocks occur over large areas both north and south of the belt and as smaller intrusive masses within the belt itself.

Complete agreement has not yet been reached on the relative age relationship of the different volcanic and sedimentary rocks. This point may be important if one band, or age group, is found to be a more favourable host for economic mineralization than the others.

Intrusive rocks range in composition from granite to gabbro and there is known to be a close relationship between the granodiorite-quartz-feldspar porphyry group of dikes and gold mineralization in the Newlund-Windward area.

GEOLOGY OF THE CALDER-BOUSQUET PROPERTY

All the exposed rocks of the Calder-Bousquet property are of Precambrian age with superficial Pleistocene and Recent deposits of swamp and sand of relatively minor extent. Outcrops are numerous although actual exposures are rather poor, the surfaces in almost all exposures being covered by thick moss or a thin layer of soil. This proved a hindrance in geological work, but large rock areas could be easily exposed by diligent use of no other tool than a grub-hoe.

TABLE OF FORMATIONS

Quaternary

Pleistocene - clay, silt sand, gravel and boulders

Precambrian

Algoman - Quartz-feldspar porphyry dike

Keewatin- Thunder Lake - Sediments

- Brownridge Volcanics - Basic lava, volcanic fragmental and breccia

Basic tuff and agglomerate

Spherulitic lava

Acid tuff and agglomerate

Amphibolite - metamorphosed massive volcanics?

Rocks, usually of basic composition, showing medium to coarse crystallization of amphibole and, more rarely feldspar, are believed to be metamorphosed volcanics. Most of these are grouped under the heading amphibolite in accompanying map.

GEOLOGY OF THE PROPERTY

The Calder-Bouscuet claim group is located at the south end of Troutfly Lake. This location is just off the southwest end of the Cross Echo granite stock and just east of the smaller granite stock in which Gardner Lake is located. The claims are thus located in favourable geological conditions both in the general sense of being near acidic intrusive masses and, also since the gold mineralization encountered at Newlund and Windward Mines may have the Cross Echo stock as its source.

Quartz-Feldspar Porphyry dikes

Numerous dikes ranging in composition from granite to quartz-feldspar porphyry were found. Usually exposures were small and in many cases contacts were not found but dikes over fifty feet in width were exposed in two places and others up to that width may occur. A large proportion of the dikes trend in a northeast direction. In three cases dikes, apparently small, were noted with a northwest trend. It is suggested that these occupy crossfractures.

The rock varies from fine-grained and dense in the narrow dikes to quite coarse-grained in the larger. The freshly broken surface in unweathered rock is often dark grey in colour, particularly in the fine-grained phases. The coarser grained phases are usually a bit lighter in colour and, where weathering or mineralization has taken place, are often creamy to buff coloured. All the dikes normally carry small amounts of pyrite and numerous small quartz stringers and volcanic rocks near and in contact with them are usually mineralized with pyrite in varying amounts.

The most important dike from the viewpoint of visible mineralization crosses the property in a northeast direction. Numerous exposures occur in a straight line and the presence of an unusual amount of quartz and pyrite in these particular exposures in addition to the fact that light galena and chalcopyrite mineralization was found in several exposures, very strongly suggests that these similar exposures are all parts of a single dike. This dike may be an important feature because these factors suggest that it has been one of the main channels of mineralization in the area.

Thunder Bay Sediments

These rocks form a very small proportion of the exposures on the property and may be described as greywacke. They occur as a few outcrops in the southeast corner of the claim group. The contact between the sediments and the volcanic rocks is not exposed and the presence of light shearing along a bluff in nearest volcanic outcrop suggests that it may be a faulted contact. The sediments are fine to medium-grained, light weathering and rather gneissic in texture. Numerous small rusty quartz stringers and veinlets were observed in the few outcrops of sediments seen. No sulphide mineralization was noted.

Brownridge Volcanics

The volcanic rocks form much the largest group exposed on the property and comprise a wide range in composition, texture and physical appearance. Numerous exposures which now look quite massive, and appear to be intrusive, are believed to be recrystallized volcanics.

Basic volcanics ranging from fine-grained pillow lavas and flow top breccias to quite massive medium-grained rocks are fairly widespread and form most of the exposures.

The northwestern part of the property contains exposures of rocks which weather much lighter in colour and this may possibly be due to a difference in primary composition, although the presence of some carbonate suggests that they may simply be carbonated basic volcanics. A zone of basic to intermediate tuff which cannot yet be definitely outlined occurs in the south-central part of the property and other exposures of a similar nature found to the northeast may be part of the same band. The tuff is believed to be primarily basic but it appears to have been locally silicified and in places is now quite dense and brittle. It quite often carries considerable pyrite mineralization. The fact that one of the larger quartz-feldspar porphyry dikes occurs near and parallel to it may account for the sulphide mineralization. One exposure of the tuff just west of 2100 S on line 36 E shows small sharp folds and crenulations. Near this point low values in gold were obtained from a grab sample showing fairly heavy mineralization with pyrite cubes up to 1/8 inch.

Acidic Lava and Pyroclastics

Rocks of a more acid character occur in a few places but form relatively narrow bands and make up only a small percentage of the total exposures. They range from a spherulitic lava with large numbers of spherules up to 1/2 inch in diameter through fine-grained rhyolitic rocks, to a volcanic fragmental in which squeezed out fragments of 2 inches wide and 6 inches in length were noted.

Metamorphic Rocks

The largest group of rocks under this heading are those named amphibolite. This rock occurs in fairly large masses, and the size of the exposed outcrops together with the massive and fairly homogeneous character of the rock suggest at first that the rock is intrusive in origin. However, on this property and at other locations in this general area, it has been noted that where rocks of this character are found acid intrusives are almost invariably found nearby. For this reason it is suggested that the rocks here called amphibolite are, perhaps massive, volcanic flows which have been recrystallized by influence of the nearby acidic intrusives. No attempt is made to make this a definite identification but this appears to be the most likely explanation of the origin of the amphibolites.

In one or two instances rocks which could not be satisfactorily identified were found. In these cases the exposed, or exposable, outcrop was small and there was no means of telling whether the fragment seen represented a small or large amount of material. In one case, 500 N, 7450 E. the rock was called an altered hornblende schist, in another 1450 S, 5600 E, volcanic breccia. These were tentative identifications only.

STRUCTURAL GEOLOGY

The structural geology as deduced by Dr. J. Satterly from his mapping of the geology of the Dryden-Wabigoon Area postulates an anticlinal axis through the narrows of Gardner Lake in an almost north-south direction but swinging northeast between Beartrack and

Troutfly Lakes to the north, and trending southwest from the south end of Gardner Lake. It will be noted that both the Cross Echo and the Gardner Lake granite stocks lie on the axis of this anticlinal structure.

Mapping on the Calder-Bousquet claims disclosed strikes in the volcanic rocks in the western part of the property which were not consistent with the general northeast strike of the remainder of the area. When, however, this difference in strike is viewed in relation to Satterly's postulated anticlinal axis it is seen that mapping on the Calder-Bousquet claims conforms closely with the regional picture outlined by Satterly.

Folding

No major folds were encountered in the mapping but intensive minor folding and crenulation was noted in basic tuffs and fine-grained basic banded flows, and in a few cases the arrangement of differing rock masses suggests that larger drag folds may be present.

Faulting

No direct evidence, such as displacement, to indicate faulting was observed on the property but again, there is some evidence to suggest that some large faults may be present.

From a stereoscopic study of aerial photographs two strong lineaments were noted having a northeast trend, and one having an almost eastwest trend. Mapping on the ground showed that these lineaments were characterized by steep hills or vertical cliffs, thus supporting the evidence of the photograph. Quite often minor amounts of rust and pyrite were found along these

depressions.

One other fault is suggested both on topographic evidence and a comment in Dr. Satterly's Dryden-Wabigoon area report to the effect that a north-south fault may lie under the south bay of Troutfly Lake and continue southward to a pronounced irregularity in the volcanic-sedimentary contact south of the Calder-Bousquet property.

ECONOMIC GEOLOGY

It has been pointed out that the claim group is well located in relation to the important features of the regional geology both with regard to structure and intrusive masses. On the basis of these considerations alone the group is worthy of investigation. The geological survey of the claims has eliminated some portions of the group as unsuitable for surface exploration (swamp and drift covered areas) and has disclosed some features which are worthy of more intense surface exploration than can be carried on by a geological party.

The quartz-feldspar-porphyry dike noted at 1800 S, 2400 E; 1600 S, 2800E; 700 S, 4000 E; 450S, 4400 E. and on the north boundary between lines 5200 E. and 5600 E. is believed to be continuous all the way across the property. This dike contains much more than the normal amount of quartz and between lines 2400 E. and 2800 E. contains a quartz vein observed to be from 15 inches to 36 inches in width. Pyrite mineralization was seen in all exposures of this dike, pyrite, galena and chalcopyrite were seen in several exposures between lines 2400E. and 2800E. and pyrite and galena were noted just west of line 4000E in the dike. In no instance were
economic

amounts of galena and chalcopyrite observed but the evidence of sulphide mineralization along such a great length of the dike is certainly worthy of investigation.

It was noted also that the volcanic rocks, both flows, and more particularly the basic tuffs, in contact with the dike often carried varying amounts of pyrite. A grab sample showing numerous cubes of pyrite up to 1/8 inch taken at 25 ft. east of 2950 S. on line 36 E. returned a gold assay of 0.12 oz. The fact that gold values accompany this type of pyrite mineralization is encouraging and may be of importance.

Apart from the vicinity of the dike mentioned above, certain other points at which rust and pyrite mineralization were observed, should be investigated by stripping and sampling. These include (1) Northwest corner of property (2) east of small southwest Lake, (3) Volcanic-sedimentary contact (4) 1700 S. 6000 E. (5) 1200 S. 2000 E.

CONCLUSIONS AND RECOMMENDATIONS

The claims of the Calder-Bousquet Mines are well located with respect to the important geological feature in the area and favourable acidic intrusives accompanied by sulphide mineralization have been noted and mapped in the course of the geological survey.

Low values in gold were obtained from a grab sample mineralized with pyrite and these facts indicate that systematic and thorough prospecting should be carried out on the claims with particular attention to the areas listed as follows:

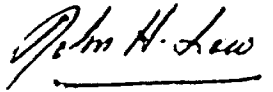
- (1) 500 ft. each side of dike between 1800 S. 2400 E.

and 500 N, 5000 E.

- (2) Tuffs exposed at 2000 S. 3600 E.
- (3) Volcanic Sedimentary contact
- (4) Along suggested fault depressions.

Respectfully submitted,

M. C. Gardiner and John H. Low,



John H. Low.

JHL/M.

Haileybury, Ontario,

June 28th. 1951

APPENDIX

Property Owner - Calder-Bousquet Gold Mines Ltd.
100 Adelaide Street West,
TORONTO, Ontario.

Claim Numbers - K 13624 to 13632 inclusive
K 13634, K 13636 to 13643 inclusive
K 13645 and K 13648
Laval Township, Ontario.

Survey by - M. C. Gardiner and John H. Low
98 Rivercrest Road,
TORONTO, Ontario.

Persons engaged in survey -

R. A. Watt, De Havilland, Ontario.
E. Anglehart, Rouyn, Quebec.
Neil Tremells, Sioux Lookout, Ont.
C. M. Bartley, Noranda, Quebec.
John H. Low, Toronto, Ontario.

Covering dates - May 31 to June 25

Man-days	-	Line-Cutting and chaining	58
		Traversing, outcrop mapping, geology	62
		Draughting, interpretation, report	80
		Total	<hr/> 200



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Com Calder - Bonsquet Gold Mines Ltd.

Loc. Laval Tp.

Claims 13624-632 13634, ~~633-643~~
13636-18643 13645 13648

Min./Metal Au, Cu, Pb

D. D. Logs

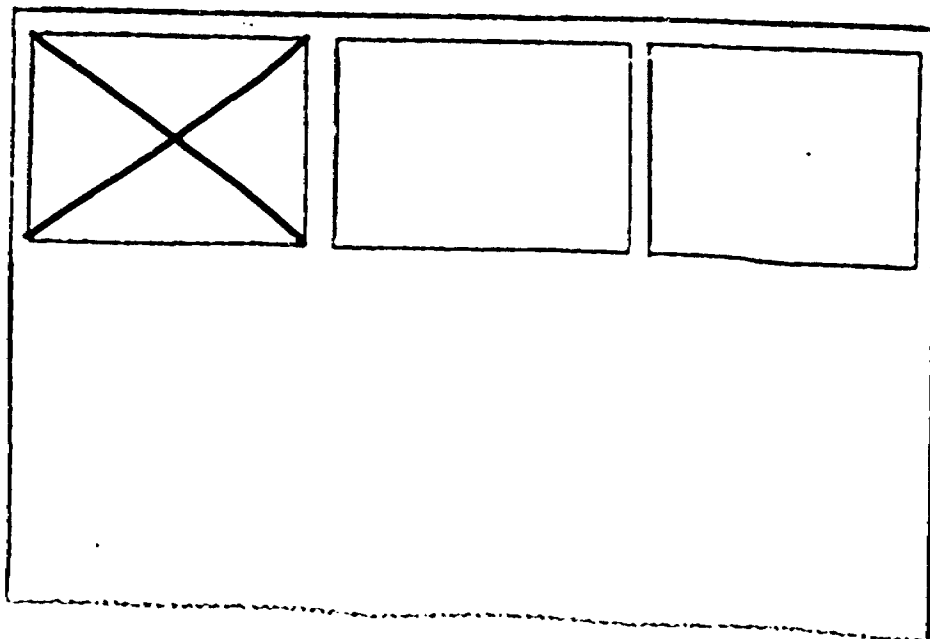
Reports 1 geological 51

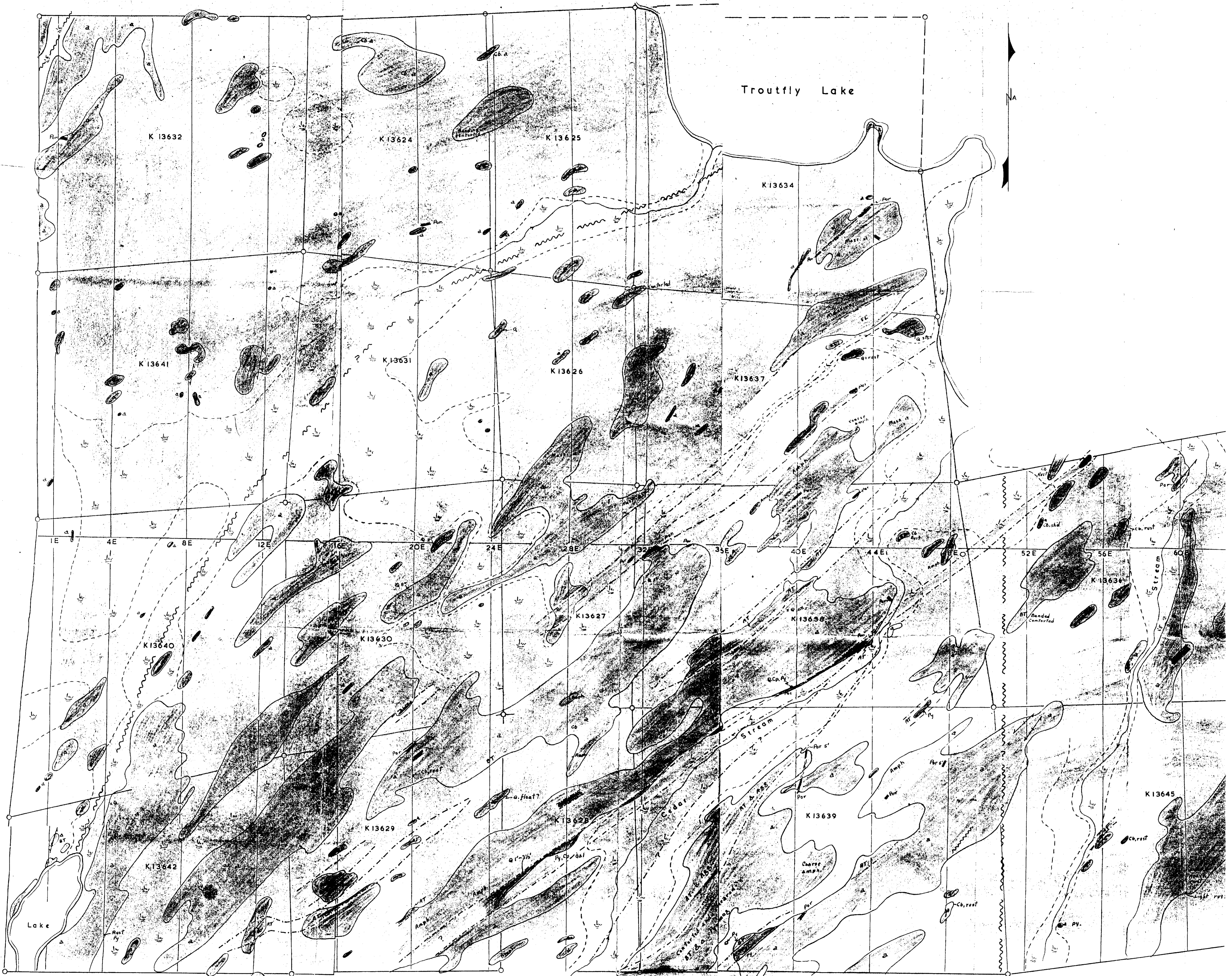
Maps 1 geol. (4" - 20")
1 claim

M 3370

SEE ACCOMPANYING
MAP(S) IDENTIFIED AS
52 F/16 SW-0018, #1

LOCATED IN THE MAP
CHANNEL IN THE FOLLOWING
SEQUENCE (X)





Troutfly Lake

K 13632

K 13624

K 13625

K 13634

K 13641

K 13631

K 13626

K 13637

K 13640

K 13630

K 13627

K 13658

K 13636

K 13642

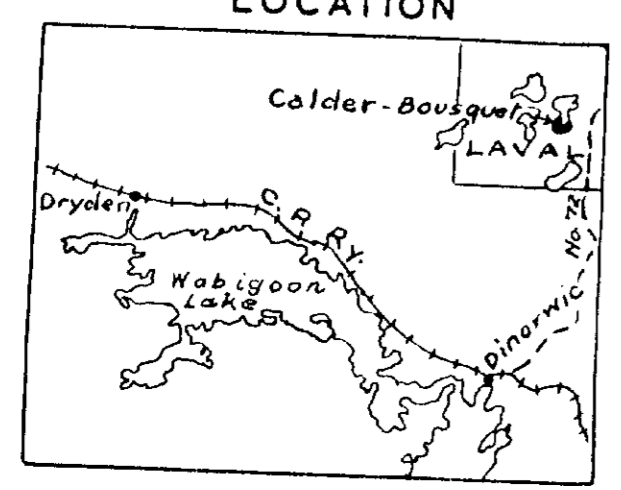
K 13629

K 13628

K 13639

K 13645

LOCATION



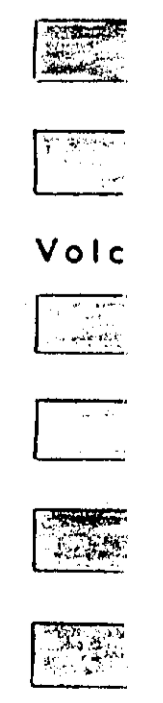
Scale: 1 in. = 8 mi.

Geological Outcrop Map

CALDER - BOUSQUET MINES LIMITED

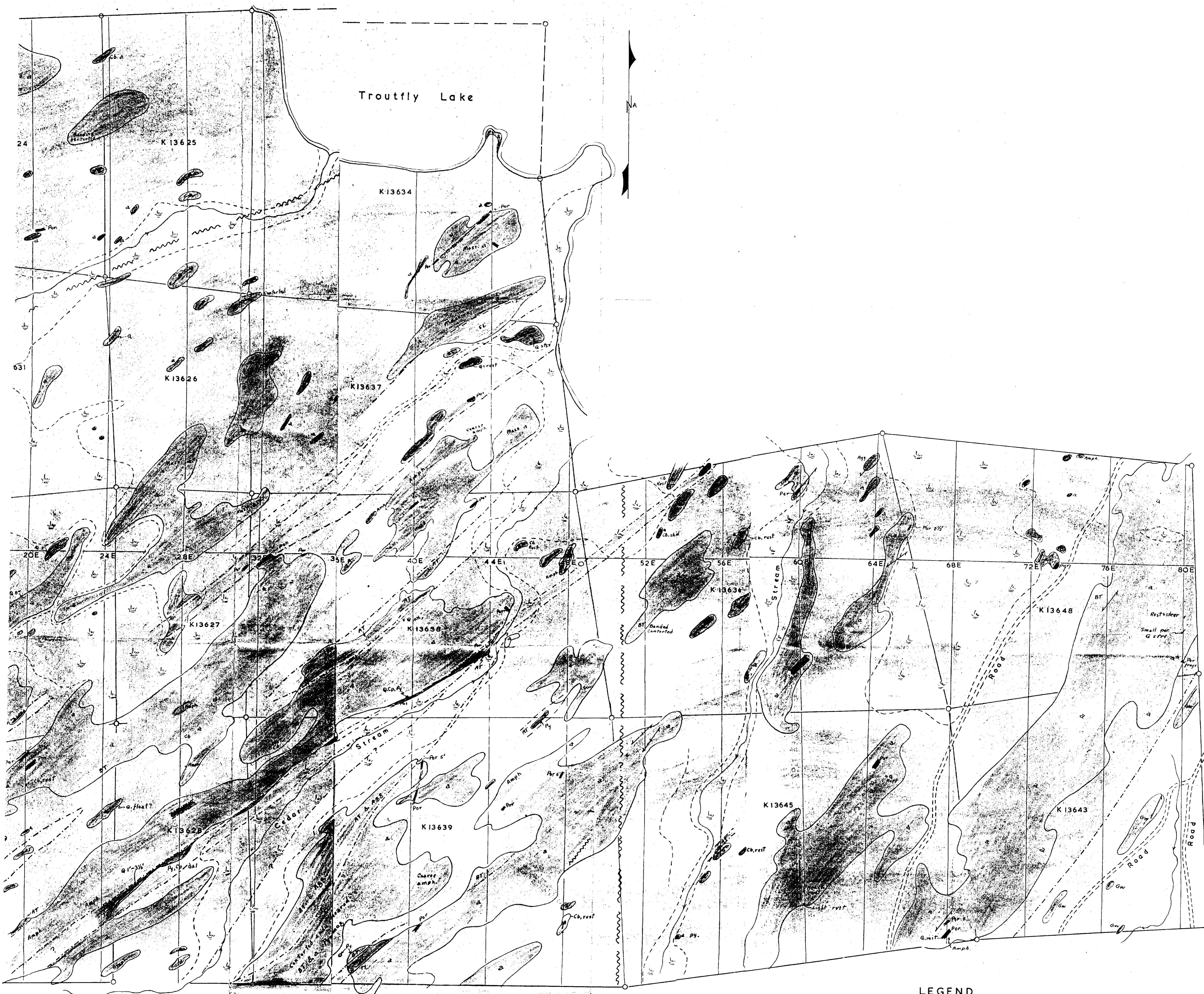
LAVAL TOWNSHIP

ONTARIO



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Geological Outcrop Map

CALDER - BOUSQUET MINES LIMITED

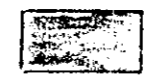
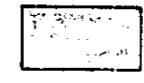
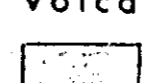

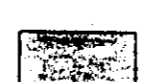
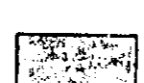
LAVAL TOWNSHIP

ONTARIO

Scale: 1 in = 200 ft.

52F/16 SW-0018,
#1

LEGEND

-  Quartz - feldspar porphyry (Par)
-  Greywacke (Gw)
- Volcanic rocks
 -  Acid tuff and agglomerate (AT)
 -  Spherulitic lava (SL)
 -  Basic tuff and agglomerate (BT), andesite (a)
 -  Amphibolite (Amph)
- Quartz Q
- Pyrite, chalcopyrite, galena Py, Cp, Gal
- Carbonate Cb
- Geological boundary: defined, approximate