BUFFALO ANKERITE GOLD MINES, LIMITED

GEOLOGICAL REPORT

of

SOTHMAN TOWNSHIP CLAIMS

by

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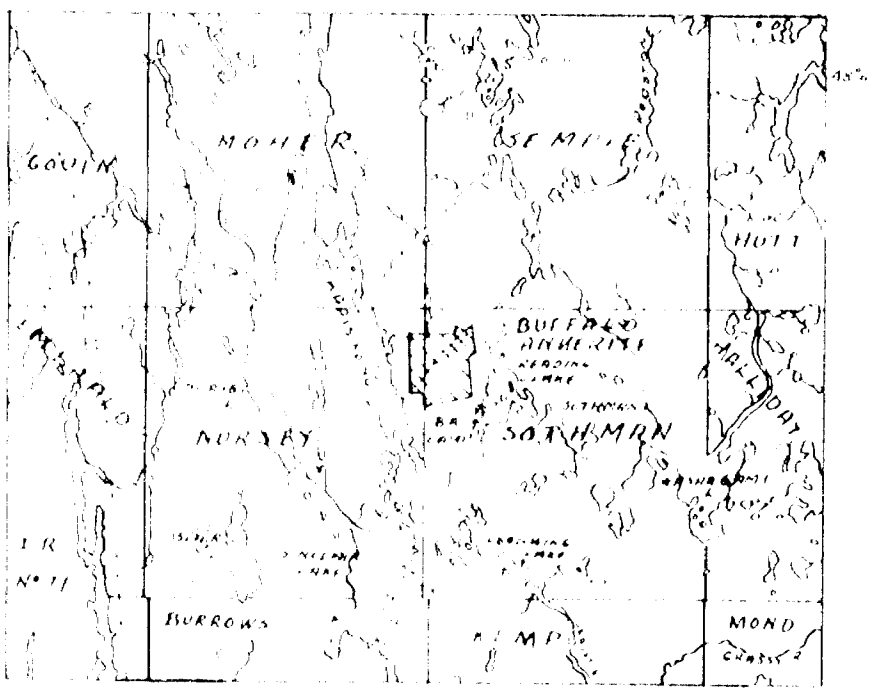

Key Map showing location of Buffalo Annexe

Scale [illegible]

GEOLOGICAL REPORT OF SOTHMAN TOWNSHIP CLAIMS

Introduction:

The widespread activity in the townships to the east of this area, and the occurrence of minor showings of visible gold and favourable rock formations, mainly carbonates in this area, first prompted the staking of eight claims in about the centre of the present Buffalo Ankerite group. Further favourable prospecting, the discovery of low gold values, and the hope of straddling the westward extension of the Kirkland Lake break caused the total group of thirty-seven claims to be staked. While no ore bearing veins of commercial grade have as yet been uncovered, further work may change the picture considerably. Due to relatively thick sand and gravel overburden and the widespread occurrence of flat-lying Cobalt conglomerate, prospecting by surface methods is very difficult.

The property comprising thirty-seven claims in Sothman and Nursey Townships is owned by the Buffalo Ankerite Gold Mines Limited, Box 533, South Porcupine, Ontario, and the claims included are as follows:

TRS-8525, 8526, 8527, 8528, 8529, 8530, 8531, 8532,
TRS-8842, 8843, 8844, 8845, 8846, 8847, 8848, 8849,
TRS-8850, 8851,
S-38381, 38382, 38383, 38384, 38385, 38386, 38387,
38388, 38389, 38391, 38392, 38393, 38394, 38395,
38396, 38397, 38398, 38390,
S-49353.

General Description of the Area:

The group of claims lies in the north-west corner of Sothman Township, with four claims in Nursey Township constituting part of the west boundary. It lies twenty-four miles north-east of Gogama, forty miles due south of South Porcupine and thirty miles south-west of Matachewan. The Grassy River (Kapiskong Lake) lies two to three miles to the west.

Means of Access:

The most common method of transportation is by aeroplane from South Porcupine, although a little better than one day's canoe trip from Gogama with only one two mile portage has been used. From South Porcupine or Timmins, truck and boat transportation may be obtained from one of the local lumber companies to the south end of Lake Muskesenda in English Township. From this point, travel by canoe to the claims can be made in a day by portaging from Lake Muskesenda into Telluride Lake and then portaging again into Peter Long Lake (part of the Grassy River), and then south about fourteen miles. The usual landing place for aeroplanes is Reading Lake which lies about one mile east of the Ankerite Claims, and for this reason, a number of camps for prospects in the surrounding district are situated on this lake. The Ankerite camp is situated on the west shore of Reading Lake and a diamond drill road runs from the camp to the claims about half a mile to the west. A trail, which the writer has never used, runs from Kapiskong Lake, opposite the old fire ranger's cabin, east onto the

Claims, but the best method of travel from the Grassy River is into the east arm of Sinclair Lake which lies in Sothman Township, and across the quarter mile portage at its east end and so into Reading Lake.

Previous Work:

In 1925, T. L. Gledhill conducted a geological survey of the Grassy River Area and general information in rock types was obtained from his report in the 35th Annual Report of the Ontario Department of Mines, Vol. XXXV, Part VI, 1926. Detailed geology of the area included in the Ankerite Claims was not available from this report and topography was also of a sketchy nature.

Topography:

The country is generally lightly rolling sand and gravel with small pot hole glacial lakes, with the exception of the north-easterly trending cobalt conglomerate ridges which in many cases assume cliff-like proportions. Staveley Lake, which almost parallels the line of the conglomerate ridges and lies in the north central section of the property, is not of the usual pot hole glacial character and appears to be the expression of a strong structural feature. That this might be the case is further indicated by the fact that the high conglomerate ridges are not found to the west of Staveley Lake, and the resultant topography is considerably flatter with broad expanses of muskeg.

In the sand and gravel covered areas, extensive stands of red and white pine, balsam, spruce, jack pine and birch are found, and as this area has not been burnt over in many years, most of the timber is of good size and would be excellent for mining purposes. On the conglomerate ridges, birch and poplar predominate.

In summary, the principal features of the topography are: (1) the general north-east - south-west trend of the cobalt conglomerate ridges, (2) the fact that with the probable exception of Staveley Lake, none of the topographic features indicate the attitide of the underlying rocks or structures.

Summary of Exploration and Development:

The work to date has taken the form of surface prospecting, trenching and stripping, compass-pace geological survey, diamond drilling and Ontario Land Survey of twelve of the thirty-seven claims.

The stripping and trenching etc., was done from 1944-1947 inclusive, and the findings of this work was what prompted further work in the form of a geological survey and diamond drilling.

The greatest part of the geological survey was done during the summer of 1946. The main topographical features of this area were plotted from aerial photographs and subsequent compass-pace surveying tied in with known features such as lakes, streams, etc. Each claim line was surveyed by compass pace and the geology mapped for a short distance on either side of each line. In addition, a little more de-

tailed geological mapping was done within certain claims where conditions were interesting and in the areas around diamond drilling. All stripping and trenching was mapped. This mapping was continued during the summer of 1947.

Diamond drilling was carried out during the summer of 1946 and twelve holes (including one hole which was abandoned at 60 feet before bedrock was reached) were drilled with a total footage of 3,050 feet.

During the summer of 1947, twelve claims of the group were surveyed by an Ontario Land Surveyor. The claims included are as follows:-

TRS-8849, 8850,
S-38385, 38386, 38391, 38392, 38393, 38394, 38395, 38396, 38397,
S-49353.

General Geology:

All the consolidated rocks are Pre-Cambrian, which are overlain by sands and gravels of glacial origin. The Pre-Cambrian rocks include carbonate rocks, hornblende chlorite and biotite schists, andesites and finer grained lavas, all predominantly basic flows; rhyolitic agglomerate and slate-like sediments, all of which are grouped as Keewatin; granite, granite porphyry, quartz and feldspar porphyries, all younger than the Keewatin; diabase dykes and gabbro bosses, again younger than the Keewatin, but no definite age relation determined with the acid intrusives; Cobalt conglomerate and greywacke; and diabase dykes which in one instance were found cutting the Cobalt conglomerate and so were classed as Keweenawan.

Table of Formations:

Pre-Cambrian

Keweenawan - Diabase dykes.
Intrusive contact

Cobalt series - Conglomerate and greywackes.
Unconformity

Matachewan - Diabase dykes and gabbro bosses.
Intrusive contact

Algoman (?)- Granites, granite porphyries, quartz and feldspar porphyries.
Intrusive contact

Keewatin - Ryholitic agglomerate, slates, basic flows of andesites, fine grained lavas, chloritic, hornblende and biotite schists and carbonate rocks.

Keewatin Series:

The Keewatin series of rocks are well represented and as in most areas of the Pre-Cambrian are very complex. The basic lavas have been highly altered and vary from very chloritic talcose schists, sheared and faulted as found in diamond drilling east of Staveley Lake, through hornblende schists, fine grained chloritic amygdaloidal lavas to andesites. No thin section work has been done and hence a detailed differentiation of these rocks has not been possible. No veins or zones of mineralization carrying gold values has been found in these basic lavas and most of the mineralization found is probably due to metamorphic processes rather than vein solutions.

One large outcrop of green carbonate in the form of a 15 foot cliff along the claim line separating claims TRS-8526 and 8529 is the only occurrence found of this type of rock. It is a grey green carbonate with probably some mariposite, networked with quartz carbonate veins and is mineralized with fine grained disseminated pyrite. This rock is not the same as the heavily carbonated rhyolitic agglomerate described below. Low gold values were obtained from surface pits and trenches and a few scattered low values were obtained from diamond drilling.

The rhyolitic agglomerate has been given the most attention in present exploration work as it was in the carbonated and sheared areas of this rock that gold values were first discovered. It is also the most common rock outcropping on the property and can be traced from the centre of the property in claim TRS-8848 to the east boundary in claim S-38386 and as far north as claim S-38384. The rock is of semi-sedimentary origin, made up of poorly sorted rhyolitic fragments, giving agglomerate and greywacke, all interbedded with black graphitic slates. This aggregate is sometimes confused with Temiskaming sediments, but the lack of porphyry and chert pebbles is distinctive. It is almost always more or less mineralized with fine grained disseminated pyrite, pyrrhotite and sometimes chalcopyrite. Usually, the mineralization is particularly heavy in and adjacent to the graphitic slate bands. A considerable footage of diamond drill core was sampled throughout this type of mineralization and in no case were gold values obtained. The rock is, however, capable of being a host rock for gold and in sheared areas, accompanied with heavy carbonate alteration, quartz carbonate veins occur with coarser pyrite mineralization and in such zones gold values have been obtained, but no values over reasonable widths were obtained to class it as commercial ore. In addition to these zones, and not associated with them, sections of the agglomerate contain narrow quartz carbonate vein stringers mineralized with chalcopyrite, sphalerite, galena, pyrite and minor pyrrhotite. Gold values while usually present, are low, but silver assays up to 3.16 ounces per ton have been obtained.

Algoman:

Acid intrusives have fairly widespread occurrence throughout the property, and from surface exploration, it is indicated that these take on major proportions west of Staveley Lake where the most common rock is a medium grained granite. Some work was done on a granite porphyry-greenstone contact on the east shore of Staveley Lake in claim

TRS-8525. Here the medium grained porphyry was mineralized with disseminated pyrite and was drilled at depth with two diamond drill holes, but no gold values were obtained, although low assays were reported from surface trenching. To the south of the green carbonate cliff in claim TRS-8529, a pink feldspar porphyry was trenched and drilled at depth. This rock was almost entirely composed of feldspar and very closely approached a syenite composition. Two separate outcrops of grey quartz porphyry were found, one in claim S-38384 and the other in claim TRS-8847. Both were medium grained and mineralized with disseminated pyrite that gave low gold values.

Matachewan:

The basic intrusives of this series are almost as widespread as the acid intrusives. The gabbro is the most common and is usually very coarse grained with individual mineral crystals ranging up to half an inch (½") in size. As with the acid intrusives, more numerous outcrops are found west of Staveley Lake.

Cobalt Series:

The conglomerate and greywacke of this series are all flat lying, and very little altered. They occur in long sometimes fairly wide high ridges running in a general north-east - south-west direction on the east side of Staveley Lake. These rocks were not studied due to their lack of significance to gold occurrence and are only important in a negative sort of way in that they serve as a mask over the more interesting rocks below.

Keweenawan:

Only one occurrence of diabase dykes of this age was noted and while from megascopic study, it was almost identical to the basic intrusives of the Matachewan, its age relation with respect to the Cobalt series classed it as being younger. This one outcrop was found on the claim line between TRS-8845 and TRS-8842. Further study of the age relations of all the basic intrusives is necessary before accurate classification can be made.

Pleistocene:

Almost all the rock surface is covered with glacial sands and gravels and any structural features or irregularities in the bed rock are obliterated.

Structural Geology:

From the limited outcrops and geological work done to date, very little of the structure is known and that only in isolated localities. A strong shear or fault zone is indicated along a north-south line slightly east of the claim line between claims TRS-8851 and TRS-8848. It has been traced for about a half a mile and the surface expression of this movement is evident in the strong shearing, heavy carbonate alteration and widespread mineralization of this zone. The change of strike of the shearing in this same zone from east-west in the

North-west corner of claim TRS-8850 to north-south in claim TRS-8848 indicates the presence of folding, the complete picture of which is not yet clear.

A major structure is indicated in the probable fault assumed to lie under Staveley Lake and under the general line of the creek running south-west from the south end of the lake. This fault is indicated by scarp faces along both sides of the lake and also by the lack of cobalt conglomerate west of Staveley Lake which would indicate that the east side had gone down relative to the west. That movement has taken place in this zone is further indicated by the drag folded and faulted chlorite talc schists encountered in diamond drilling east of Staveley Lake in TRS-8525 and also in TRS-8529.

Economic Geology:

Gold was the chief economic mineral searched for, but in certain localities, silver in minor quantities was found dissociated from gold. Anomalies indicated by dip needle and magnetometer in the surrounding areas should not preclude the possibility of base metals and the rather widespread occurrence of of pyrrhotite, chalcopyrite, galena and sphaleritehelp to substantiate this view.

Two separate areas proved the most interesting on the property, the chief of which was the heavily carbonated and sheared rhyolitic agglomerate zone running north south along the claim line between claims TRS-8848 and TRS-8851. In this zone, visible gold has been panned from an open cut in the north-east corner of claim TRS-8849, but subsequent diamond drilling under this area gave discouraging results. However to the south of this open cut and at a depth of approximately 200 feet, 8½ feet averaged .20 ounces per ton. Diamond drilling in the south-west corner of claim TRS-8847 intersected a vein zone made up of narrow (up to 2 ft.) quartz veins and carbonated rhyolitic agglomerate that gave isolated values up to .116 ounces per ton.

A series of trenches in the north-west corner of claim TRS-8848 were dug on narrow east-west striking quartz veins that showed heavy galena, sphalerite, chalcopyrite and pyrite mineralization. Gold values here were low, but silver values up to 3.16 ounces per ton were obtained.

This same formation was trenched in claim S-38386 where considerable narrow quartz veining was found together with galena, sphalerite, pyrite and chalcopyrite mineralization, but gold values were low. It is believed that this is the westward continuation of the zone where gold values were obtained on the Sherwood property which adjoins the Buffalo Ankerite to the east.

In all cases to date in this zone, the quartz veining shows up to be very erratic as are the values and considerable work will be required to prove up an ore zone if one exists.

The other important zone is in the neighbourhood of the green carbonate outcrop along the line between claims TRS-8526 and TRS-8529.

Two diamond drill holes explored this zone at depth and considerable surface trenching was done. Pyrite mineralization is more or less abundant throughout, but the best gold values obtained were .02 ounces per ton.

Diamond Drilling:

Diamond Drill Hole #1:

This was collared in the north-east corner of claim TRS-8849 and drilled north 12° west, and down at 50° designed to cut 50 feet below the open cut where visible gold had been panned. The hole was in carbonated sheared rhyolitic agglomerate and greywacke throughout and while mineralization was quite heavy in many sections, no gold values were obtained. Length - 305 feet.

Diamond Drill Hole #2:

This was drilled south 12° east and down at 50° from the same set-up as diamond drill hole #1 to try to determine the extent of the carbonate zone to the south. The formation throughout was variations of carbonated agglomerate and greywacke, in some places slightly silicified and with many well mineralized sections. No values were obtained to 239 feet. From 239 - 247½ feet, a silicified zone with narrow quartz stringers averaged .20 ounces per ton. No further values were obtained. Length - 260 feet.

Diamond Drill Hole #3:

This was collared 200 feet north of diamond drill hole #1 and was drilled north 15° west and down at 60° to determine the extent of the carbonated agglomerate north and to obtain a dip on the contact of the agglomerate and intrusive gabbro. From 0 - 194½ feet, the hole was in carbonated agglomerate and greywacke and numerous sections were mineralized but no gold values were obtained. From 194½ - 261 feet, the hole was in gabbro. Length - 261 feet.

Diamond Drill Hole #4:

This was collared in the north-west corner of claim TRS-8848 and was drilled north 70° west and down at 50° to explore the downward extension of the heavily mineralized sheared gossan where trenching had previously been done. From 0 - 281½ feet, the hole was in carbonated agglomerate and greywacke, with a considerable length of a dark variety with slate between the agglomerate fragments and many bands of black graphitic slate. This section was more or less mineralized with pyrite and pyrrhotite throughout and the mineralization was frequently heavy in the slate bands. No gold values were obtained in any of the samples. The zone is well fractured and sheared and there are numerous narrow quartz carbonate stringers which show only minor mineralization. From 281½ - 343 feet, the hole was in gabbro. Length - 343 feet.

Diamond Drill Hole #5:

This was collared about 175 feet north of diamond drill hole #4 in claim TRS-8847 and was drilled north 70° west and down at 50° to

explore the northward extension of the heavily sheared gossan. From 0 - 138½ feet, the hole was in the same type of formation as described in diamond drill hole #4. Although many mineralized sections of this core were sampled, no gold values were obtained. From 138½ - 166 feet was a highly altered unmineralized chlorite schist, probably an altered andesite. From 166 - 176 feet, the hole was in gabbro. Length - 176 feet.

Diamond Drill Hole #6:

This was collared at diamond drill hole #5 and drilled south 70° east and down at 50° in an effort to locate the eastern contact of the agglomerate zone, which on surface is covered with muskeg. From 0 - 74½ feet, the hole was in fractured slightly rusted carbonated agglomerate, fairly well mineralized with pyrite, with numerous quartz carbonate veins up to 2½ feet in width. From 0 - 14 feet casing, 14 - 15 feet agglomerate and narrow quartz veins assayed .12 ounces per ton, 15 - 74½ feet, as 14 - 15 feet and all the core was sampled but all assays were nil. Sludge samples in this zone were as follows:- 14 - 24 feet at .06 ounces per ton, 24 - 34 feet at .12 ounces per ton, 34 - 54 feet at 0.025 ounces per ton, 54 - 64 feet at .06 ounces per ton. Water was lost at 64 feet. From 74½ - 201 feet, the formation was the usual carbonated agglomerate with bands of black graphitic slate. Many samples were taken, but no gold values were obtained. The eastern contact of the zone was not reached. Length - 201 feet.

Diamond Drill Hole #7:

This was collared about 100 feet south of the porphyry-greenstone contact on the east shore of Staveley Lake in claim TRS-8525. Gold values were reported in both the porphyry and greenstone from previous surface work. The hole was drilled south 77° east and down at 50° to get the southward extension of the mineralized contact zone. From 0 - 50 feet casing. From 50 - 64 feet faulted granite porphyry. The hole was abandoned due to bad fault conditions. The porphyry was mineralized with disseminated pyrite but no gold values were obtained. Length - 64 feet.

Diamond Drill Hole #8:

This was collared about 100 feet east of diamond drill hole #7 and drilled south 77°east and down at 50°. From 0 - 355 feet, the hole was in highly altered, folded and faulted chloritic and carbonated schists, with occasional narrow bands of well bedded graphitic slates. The more heavily carbonated sections of the schists were mineralized with pyrite, with no gold values. The most altered sections were the familiar chlorite talc schist which were frequently strongly drag folded and faulted. Length - 355 feet.

Diamond Drill Hole #9:

This was collared about 20 feet west of the trench on the porphyry-greenstone contact referred to in diamond drill hole #7. The hole was drilled south 77° east and down at 50°. From 0 - 19½ feet, the hole was in granite porphyry, 19½ - 24 feet gabbro dyke, 24 - 55½ feet granite porphyry. The porphyry is pinkish in colour and finely

mineralized with pyrite but no values were obtained from the samples taken. From 55½ - 302 feet, the hole was in greenstones similar to those in diamond drill hole #8. Length - 302 feet.

Diamond Drill Hole #10:

This was collared at the foot of the green carbonate cliff along the south boundary of claim TRS-8526, drilled due south and down at 50°. Surface trenching and stripping on this carbonate zone had previously been done and some low gold values obtained. From 0 - 251 feet, the hole was in green carbonate with numerous narrow quartz carbonate stringers and some sections were more or less mineralized with pyrite. All samples in this zone ran nil with the exception of from 130 - 135 feet and 178½ - 184 feet which assayed .02 ounces per ton. There was no essential difference between these two sections and the other sections that were sampled and no definite vein zone was indicated. From 251 - 266 feet pink feldspar porphyry dyke, 266 - 280½ feet green carbonate and again no values, 280½ - 309 feet, a zone of green carbonate and narrow porphyry dykes, 309 - 359 feet, chloritic carbonate schist, probably an altered greenstone, with many barren quartz calcite veins and a few narrow dykes of porphyry which is probably a contact zone. There was evidence that the hole was paralleling the contact to some extent. Length - 359 feet.

Diamond Drill Hole #11:

This was collared about 200 feet south of diamond drill hole #10 in claim TRS-8529 and drilled south 10° east and down at 50° to explore the contact zone of the carbonate and pink feldspar porphyry to the south. From 0 - 169½ feet, the hole was in green carbonate as in diamond drill hole #10. Numerous samples were taken, but no values were obtained. From 169½ - 324 feet, pink feldspar porphyry. In places, this porphyry had numerous quartz carbonate stringers and was more or less mineralized with pyrite, but none of the samples gave gold values. From 324 - 364 feet, was a badly faulted contact zone of quartz calcite, chlorite and fragments of porphyry. Length - 364 feet.

Conclusion:

Due to the limited number of outcrops on the property and the small amount of widely dispersed diamond drilling done to date, a far from complete geological picture can only be given. From present work, the indications are that gold is present, at least in minor quantities in the carbonated agglomerate shear zone and in the green carbonate zone. Some further surface exploration is essential, but due to heavy overburden conditions, the best results will undoubtedly be obtained from further diamond drilling preferably combined with geophysical surveys in the more favourable areas. In addition to the limited known presence of gold, many geological structures and conditions favourable to ore deposition, such as folding, faulting, intrusion by both acidic and basic rocks, shearing and alteration including carbonatization and silicification are found on the property, to warrant further exploration.

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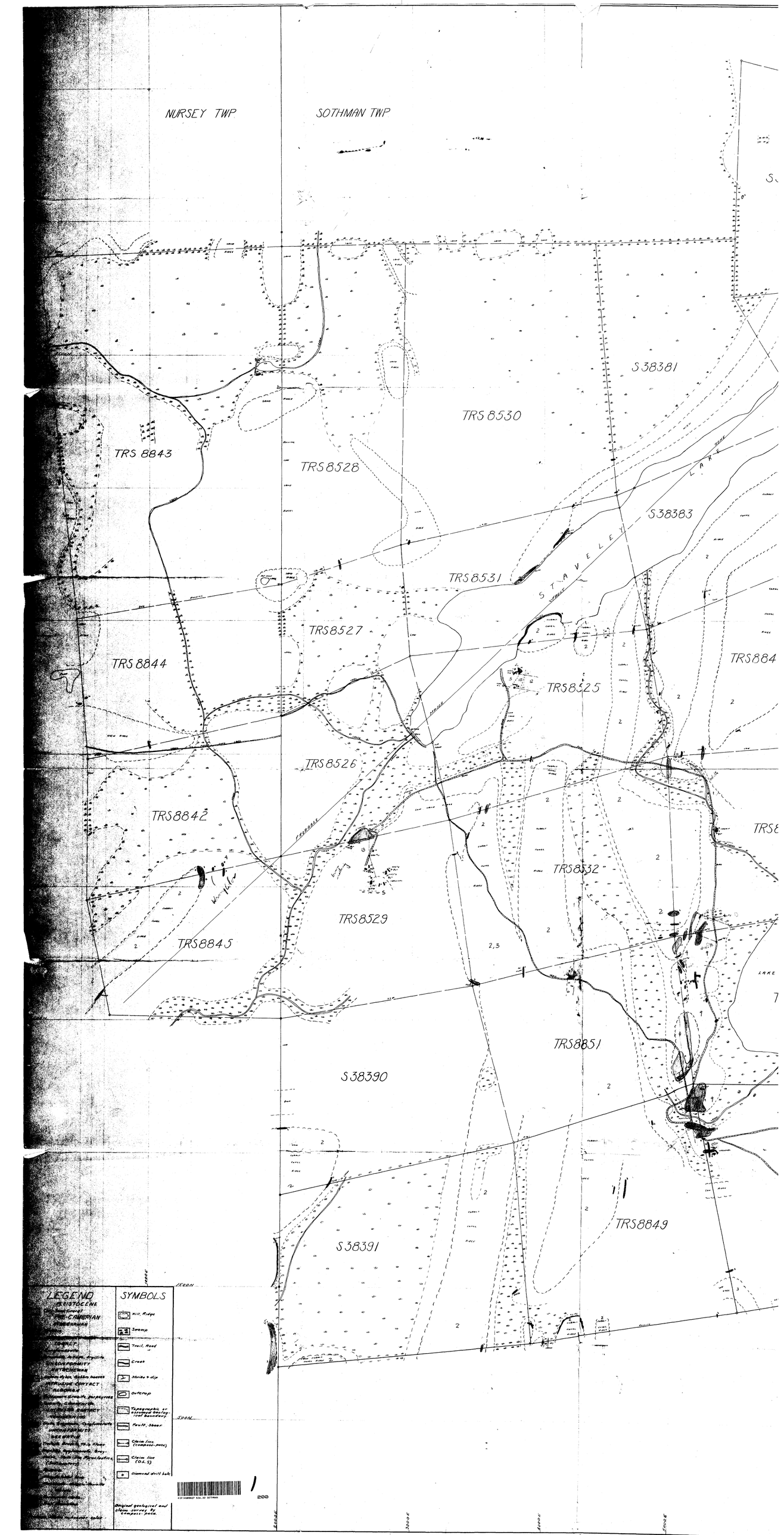
WEC/gmj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STAVELEY
LAKE
CREEK
LEGEND
PLEISTOCENE
SYMBOLS
Hill, Ridge
Swamp
Trail, Road
Creek
Strike & dip
Outcrop
Topographic or Assumed Geological Boundary
Fault, Shear
Claim line (Compass-picc)
Claim line (O.L.S)
Diamond drill hole
Original geological and claim survey by Compass-picc.
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BUFFALO ANKERITE GOLD MINES

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