SUMMARY REPORT
PROJECT 785 - FRIPP OPTION
PRICE, FRIPP AND MCARTHUR TOWNSHIPS
ONTARIO

PORCUPINE MINING DISTRICT
TIMMINS AREA, ONTARIO.
N.T.S. 42 A-6

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Reconnaissance Surveys

Claim Staking		100%
Linecutting	94.58 Miles	100%
VLF-EM		100%
Magnetometer		100%
Camp Installation	1- 40'x10' Trailer	100%

Detailed Grids

Ave Grid

Linecutting (Flagged Lines)	6,200 Feet	100%
Geological Mapping	Scale 1" to 100'	100%
VLF-EM (50' Station Interval)	188 Readings	100%
Magnetometer (50' Station Interval)	188 Readings	100%
Soil Sampling (50' Station Inverval)	188 Samples	100%
Deep Overburden Sampling	4 Samples	100%
Rock Trenching	3 Trenches	100%
Chip Samples	31 Samples	100%
Bulldozing		

Deb Grid

Linecutting (Flagged Lines)	1,800 Feet	100%
Geological Mapping	Scale 1" to 100'	100%
VLF-EM (50' Station Interval)	56 Readings	100%
Magnetometer(50' Station Invertal)	56 Readings	100%
Soil Sampling(50' Station Interval)	56 Samples	100%

Pas Grid

Linecutting (Flagged Lines)	3,600 Feet	100%
Geological Mapping	Scale 1" to 100'	100%
VLF-EM (50' Station Interval)	125 Readings	100%
Magnetometer(50' Station Inverval)	125 Readings	100%
Soil Sampling (50' Station Inverval)	119 Samples	100%
Rock Trenching	1 Trench	100%
Chip Samples	5 Samples	100%
Bulldozing		100%

1.0 SUMMARY

The Fripp Option Property was brought to the attention of Northgate Exploration Limited in August 1981 by Dennis Bordin. At that time a property visit was made where upon numerous sulphide showings were investigated over a strike length of several miles. The mineralization was encouraging with one trench assaying 2.35% Cu over 13.5 feet.

An option agreement was then finalized between both parties for a contiguous group of 74 mining claims. To this Northgate Exploration staked an additional 34 claims on the north boundary to protect a geological contact as well as to form one continuous claim block with Westfield Minerals' property in McArthur Township.

Other claims were added to the south to partially surround a small base metal prospect belonging to Hollinger Argus. This second phase of claim staking increased the property to its present size of 149 claims.

Soon after the signing of the agreement, exploration began on the property with the cutting of 94.59 miles of line for control. This in turn was followed by detailed geological, geophysical and geochemical surveys over sub-grids (AVE, PAS and DEB) centered on each of the known showings. One such grid (WES) was flagged over Westfield's showing.

The exploration programme was designed not only to locate mineralized zones but also to investigate their source, the factors relating to host rock, environment of formation, dimensions of individual lenses and to determine which technique(s) could be used successfully to find other similar zones.

In general the mineralized zones are within a sequence of lapilli tuffs, chert and sulphide iron formation. Hornblende schists underlie this unit and are derived from basic volcanic flows. The possibility of granitic intrustions being the heat source for the metamorphic processes is the most logical hypothesis due to their proximity on the east and west of the entire volcano-sedimentary belt in which the property lies. Granitic dykes support this theory and have been found throughout the area.

Results from the detailed surveys have shown that the lapilli tuff-chert-iron formation unit can be traced quite well with both magnetic and electromagnetic methods. However, trenching and mapping have indicated that the massive sulphide horizons are generally narrow, discontinuous lenses consisting primarily of pyrrhotite and pyrite. Chalcopyrite found in a trench on the "PAS" grid, although abundant, could not be traced along strike.

The soil geochemical analyses of the "B" horizon however, have defined anomalies on each of the grids, but not necessarily having any obvious relationship to the mineralized zones. In fact on both the "AVE" and "PAS" grids the linear anomalies coincide with possible fault zones.

At this time it should not be recommended whether or not the property as a whole has any further potential. It is true however, that the survey results did not indicate any major sulphide accumulations but they did define the fact that mineralization does occur over a strike length of several miles and that the host rock can be detected by geological and geophysical techniques.

It is recommended, therefore, that work should definitely be continued with the conducting and interpretation of regional geophysical surveys being the first phase. These results should clearly define the zone(s) of interest which would then be followed by the second phase, a detailed exploration programme utilizing small sub-grids and various exploration tools.

It is envisaged that the combination of phases one and two should outline several zones worthy of further investigation, possibly requiring diamond drilling.

2.0 INTRODUCTION

Over the past few months the mineral policy of Northgate Exploration Limited has been re-oriented temporarily from that of precious metals to base metals particularly copper, lead and zinc.

As part of this programme, research assessments were completed initially for an area stretching from Timmins to Wawa. These were supported by several property investigations one of which resulted in the optioning of the Fripp Township property.

With the formalizing of the agreement, exploration work began immediately with the cutting of about 95 miles of line. In conjunction with this, small sub-grids were established (AVE, PAS and DEB) over each of the known showings. Geological, geophysical and geochemical surveys followed in an attempt not only to expand, if possible, the dimensions of the mineralized zones but also to discover a relationship between these zones and possible exploration techniques capable of detecting them.

Results have indicated a satisfactory correlation between the host rocks and geological and geophysical methods. However, the soil geochemistry could not be directly related to the showings. Although this at first seemed disconcerting, this method was capable of detecting what are thought to be fault zones, possibly directly related to the mineralization or perhaps new zones not previously known.

It has been recommended that the regional geophysical studies be continued and that an individual, totally familiar with each system be contracted to do an interpretation.

This should constitute phase one and upon completion should outline the favourable host rocks which should be further investigated under phase two, a detailed exploration programme. Results from this could formulate the basis of a diamond drill programme.

3.0 LOCATION

The Fripp Option property, consisting of a narrow group of mining claims, stretches from Price Township in the north southeastwards to McArthur Township. The mid-point of the group lies in the northeastern quadrant of Fripp Township and is 17 miles S.SW. of Timmins and approximately 260 air miles north of Toronto (Figure 1).

4.0 ACCESS

Major forest access routes, extending due south from Timmins (Pine Street) into the general area of the property are excellent and although gravel, are well maintained and plowed during the winter months.

Within the claim block itself there are numerous connecting dirt and logging roads, however, they are not maintained and may become impassable during the winter and early spring.

Access to the northernmost claims is poor with the possibility of an old lumber road existing three quarters of a mile to the west. This route has still to be investigated.

The lack of sufficiently large lakes or rivers prohibits the use of fixed wing aircraft as an alternate source of transportation.

Water transport is also prohibitive, since most of the lakes and streams are not suitable for continuous navigation.

5.0 PHYSICAL FEATURES

5.1 TOPOGRAPHY

Price, Fripp and McArthur Townships are characterized by low rocky hills, unconsolidated glacial deposits and poorly drained swamps. Rarely does the local topography exceed one hundred feet in elevation which is typical of the Precambrian Peneplain.

Lakes in the general area are shallow, small and are usually the result of beaver dams. Many are intermittent and tend to evaporate during the summer months.

5.2 TIMBER

Forest cover in this area is relatively good with mature stands of poplar, birch, spruce and pine, being common on the higher ground. The lower swampy areas are covered with alder, saplings and moose maple.

Large scale harvesting does occur within the area however, only small cleared areas exist on the property due to selective cutting.

5.3 WATER RESOURCES

The Split Rock river system which transects the property at its mid-point is of sufficient size and flow to provide an adequate water source for both pre-production and production needs.

Katoshaskepeko Lake as well as numerous other small lakes could service the northern claims, while ponds and swamps could service the southern claims for diamond drilling or other pre-production activities.

5.4 CLIMATE

The Timmins area has a continental climatic pattern which is characterized by dry, cold winters and hot, humid summers.

Winter, which can begin as early as mid-October and continue until mid-May, experiences temperatures as low as -40°C over extended periods and snow cover to 5 feet in forested areas.

The summer months on the other hand, have warm to hot temperatures which are sometimes accompanied by uncomfortable humidity.

Both spring and fall months have pleasant sunny days, but cool nights. These seasons however, can be marred by freezing temperatures, frost and snow.

6.0 AUXILIARY SERVICES

6.1 POWER FACILITIES

With no major industries in the area an immediate source of electrical power is not available. However, with the installation of a substation an adequate supply can be obtained from the power line located four miles to the east.

This line runs south from Abitibi Canyon to Sudbury and supplies Timmins with most of its electrical needs. The capacity of the line is now 500,000 volts.

6.2 MINING EQUIPMENT AND SUPPLIES, LABOUR

Timmins is a well established mining centre with many suppliers maintaining warehouses in the district.

Likewise mining contractors and experienced miners are available in the district.

7.0 PROPERTY AND OWNERSHIP (Table 1)

The Fripp Option property as originally presented, consisted of a block of 74 unpatented mining claims, distributed in Price, Fripp and McArthur Townships. All claims were staked by Dennis Bordin of Timmins in the spring of 1981 and were in good standing.

Northgate Exploration Limited expanded this group in two phases, by staking an additional 75 claims. The first phase protected the blocks' eastern boundary and to form one contiguous group with Westfield's claims in McArthur Township. The second phase extended part of the boundary southwards in Fripp Township to adjoin and partially surround five leased claims currently held by Hollinger-Argus, and containing a mineral deposit of approximately 165,000 tons averaging 3% copper.

The Fripp Option property now consists of 149 mining claims or about 6,000 acres (Figure 2).

8.0 PROPERTY HISTORY

The entire area including the Bordin Property was prospected for gold pre-

World War II and numerous showings were discovered.

Post-World War II further attempts were made in the search for base and precious metals within the belt and again with the exception of the Texmont Discovery (1951) no economic deposits were found.

The following is a brief outline of recorded work over the Bordin claims as found in the assessment files (M.N.R.);

1952 McCoshen-Sandrelli Geophysical Report. Assays and pits. Assays were discouraging.

1961 to 1965 Hollinger Gold Mines Ltd. Geophysical Report, EM and Magnetometer Surveys

1966 Acme Oil and Gas, Conducted airborne geophysical surveys EM and Magnetometer, several weak anomalies.

1970 Hollinger Gold Mines Ltd., 4 Diamond Drill holes totalling 1117 feet.

1971 Texas Gulf Sulphur; Ground based magnetometer and EM surveys, outlined two iron formations and a diabase dyke, no further work.

1975 Lionel Beaulieu, Five small pits, no sampling.

9.0 GEOLOGY

9.1 REGIONAL (Figure 3)

All of the rocks which underlie this area are of early Precambrian Age (Archean) and have been capped by a mantle of Pleistocene and Recent unconsolidated deposits.

The Archean rocks consist of two cycles of volcanism in which each cycle contains a basal ultramafic sequence of flows. Mafic metavolcanics overlie this unit and generally contain massive, as well as, pillowed flows. These in turn are overlain by an upper unit of intermediate to felsic metavolcanics consisting of massive flows but more commonly tuffs, lapilli tuffs and breccia. It is within this upper unit that intercalated sedimentary beds occur including siltstones, greywackes and iron formation.

The lower metavolcanic unit has been intruded by both felsic and mafic magmas which have formed small domes of quartz-feldspar porphyry in the felsic volcanics and gabbroic sills in the mafic volcanics respectively.

A pre-tectonic age has been affixed to the gabbro while the porphyry is syntectonic and may be part of a feeder system for the felsic rocks.

Large emplacements of granitic magma late in the tectonic cycle formed the Adams Batholith and the ploy-phase Peterlong Lake complex.

Numerous diabase dykes transect the area and are middle to late Precambrian in age.

Table 2 is a geologic time scale and a stratigraphic column for this area.

The Archean volcano-sedimentary series has been compressed and warped about the granitic domes in Adam and Giekie Townships. The Bordin - N.G.X. property lies on the western flank of this structure.

Numerous north to northwesterly faults traverse or follow the trend of the disturbed and enfolded volcanic inliers.

9.2 LOCAL

A large proportion of the Bordin Property has been previously mapped by Hollinger Gold Mines Limited in 1961 and further in 1965. Unfortunately there are no published geologic maps for Fripp Township so this description is based on Hollinger's work.

The rocks that underlie this claim group are entirely Archean in age and are overlain by a thin mantle of Pleistocene and Recent sediments.

9.2.1 ARCHEAN (Figure 4)

Andesites and fine grained hornblendite and hornblende schists constitute the major rock types on the claims. These rocks are characteristically fine grained, massive and schistose and constitute the mafic volcanic sequence of the first volcanic cycle as described under the regional geology section.

Coarse grained hornblende schists and feldspathic hornblende schists are metamorphic equivalents and are found as distinguishable units. These rocks are mineralogically similar to the andesites, but lack such features as relict pillows.

Tuffs, tuffaceous sediments, greywackes, chert and iron formation constitute the sedimentary rocks on a local scale. In general beds are quite thin and are intercalated with the andesite and hornblende schists.

Paragneisses, being the metamorphosed equivalents of the above rock types were found to be more common towards the south end of the claim group. These rocks are difficult to distinguish due to partial granitization. Quartz rich sediments suffer the greater change with the grade of metamorphism in the meso-range.

Serpentinized ultramafic rocks outcrop on the shore of Katoshaskepeko Lake and are the northern extension of similar rocks to the south which form the base of the second volcanic cycle.

9.2.2 ALGOMA GRANITES

Aplitic and medium grained granites are exposed on the property with the medium grained varieties being most common in the southern claims. These occur as dykes and as irregular masses which cross-cut all other rock types.

9.2.3 LATE PRECAMBRIAN

Diabase dykes occur throughout the property and generally have northerly trends; however, an easterly dyke underlies the Split Rock River.

9.2.4 STRUCTURE

From previous mapping the volcanic and sedimentary rocks strike in a northwesterly direction and have steep northeasterly dips. Pillow top determinations have confirmed this while northeast of Katoshaskepeko Lake tops indicate southwesterly dips suggesting that a synclinal fold axis trends southeasterly beneath the lake.

Very few faults have been recognized in outcrop and these have had small displacements. Lineaments from the aerial photos suggest major displacements masked in the warping evident in the margins of the granitic masses.

9.3 MINERALIZATION

Base metal mineralization has been reported from this area for numerous years, but as yet, no major accumulations of economic significance have been outlined.

Mineralization consists of chalcopyrite, bornite, sphalerite, pyrite and pyrrhotite as disseminations, veinlets or as massive concentrations within the iron formation and adjacent pyroclastic rocks.

The source of the minerals is volcanogenic; however some remobilization has occurred due to the intrusion of the granites. The full extent of this remobilization has not been fully determined.

Assays have been quite spectacular from some pits, while from others, assays have shown low metal values.

Table 3 lists those assays received from Mr. Bordin from several pits on the property.

10.0 GEOLOGICAL MODEL

The volcano-sedimentary sequence that underlies Price, Fripp and McArthur Townships forms a portion of an Archean volcanic pile within the Abitibi greenstone belt.

This type of rock succession is the host of numerous mineral deposits that vary from gold bearing quartz veins, to accumulations of massive sulphides commonly containing copper, lead, zinc and precious metals.

These deposits, although occurring at any stratigraphic level within the pile, are commonly associated with coarse felsic pyroclastics adjacent to a volcanic vent. A variation on this is the reworking or transport of these sulphide rich muds prior to solidification.

In the case of the Bordin Property the sulphide mineralization had a volcanogenic origin, however, the sulphide ions were transported from the vent in solution and were deposited as a constituent of a chemical sediment in a reducing environment.

Unlike the more proximal massive sulphide, deposits there is not a thermal alteration halo; however the increase of the metal content either laterally or vertically can be used as an indicator.

This deposit type would be the kind most likely to occur on the Bordin Property. It appears that the claims overlie a more distal section of the volcanic stratigraphy which is evidenced by larger proportions of intercalated sediments, the thinning of the felsic volcanics and yet still a larger accumulated of basic volcanics.

This geological setting has been further modified in this area by the intrusion of the Adams Batholith to the northeast and the Peterlong Lake complex to the southwest.

Such intrusions have elevated the metamorphic grade regionally while on a local scale small dykes and masses have invaded the rocks (Figure 4).

In regards to these thermal events it would seem that the mono-mineralic mineralization in pit number one is a direct result of the remobilization of sulphides by heating. If this is the case, then these intrusions have produced at least one high grade pocket within rocks which perhaps originally had a relatively low overall metal content.

11.0 EXPLORATION PROGRAMME: 1981

11.1 GENERAL

The exploration programme mounted in 1981 consisted of the detailed evaluation of the original mineralized showings and the conducting of reconnaissance geophysical surveys over the bulk of the property. These latter surveys used a newly cut grid system (94.58 miles) for control.

Detailed work over the showings utilized in part the cut grid but also required the installation of numerous intermediate flagged lines. Each showing had a sub-grid designation such that from south to north the grids were "AVE, DEB, and PAS".

Geophysical surveys, soil sampling and mapping were conducted over each grid with the exception of the DEB grid. Small rock trenches were blasted and sampled on the AVE and PAS grids.

11.2 AVE GRID

This sub-grid was located between lines 64E and 73E.

11.2.1 GEOLOGY (Figure 6)

Mapping has revealed a volcanic and volcano-sedimentary succession having northwesterly strikes and steep northeasterly dips. The majority of the grid was found to be underlain by fine to medium grained hornblende schists of volcanic origin. Two outcrops of andesitic composition were located in close proximity to these schists and probably were the parent rock type.

Lapilli tuffs with chert bands and zones of massive sulphide comprise the volcano-sedimentary unit which was exposed on the western half of the grid. This unit was quite distinctive and could be traced for over 800 feet.

Gabbro, which appeared to be intrusive into this unit, occuppied the central part of the grid with a diabase dyke (probably related to the gabbro) and a basic

lamprophyre.

Sulphide mineralization was massive and of the stringer type but was restricted to the tuff-chert (iron formation) sequence. No mineralization was observed to be associated with either the hornblende schists or the basic intrusives.

Pyrrhotite constituted the largest proportion of the mineralization and generally contained splashes of chalcopyrite.

Garnets were quite common in the iron formation and were the direct result of the metamorphism of the same by possible granitic intrusives known to exist in the area. The only evidence of these were numerous granitic dykes (0.5 feet in width) cross-cutting this sequence.

Episodes of shearing and faulting were not evident.

11.2.2 GEOPHYSICS

Both magnetometer and VLF-EM surveys were conducted over the grid in an effort to determine whether or not a distinctive geophysical signature would be produced from the mineralized zone.

11.2.2.1 MAGNETICS (Figure 6)

Northwest to southeast trends were evident upon plotting the magnetic data. In general there were two anomalous zones with magnetic relief greater than 4000 gammas.

The first of these, and the most northerly corresponds exactly with the sulphide bearing iron formation and can be traced over a length of 600 feet. Its width is considerably less and is approximately 25 feet.

Adjacent to this linear anomaly is a spot high which marks a gabbroic intrusive associated with diorite and diabase dykes.

The second linear anomaly occurs south of the baseline and although having a large magnetic relief (probably at least 45,000 gammas) its trend is more westerly. Its cause has not been determined, even though bulldozer trenching was attempted.

With its offset trend and high magnetic reading it probably is not a sulphide rich iron formation, similar to the main showing.

Investigation of the adjoining ground indicated very little outcrop exposure with those being found being lapilli tuffs and chert beds. However, one substantial boulder was located of poylsutured ultramafic. An intrusive of this composition could account for the anomaly. Large erratics of gabbro were located north of the grid and an intrusive of this kind could also account for the magnetic high.

11.2.2.2 VLF-EM (Figure 7)

The filtered VLF-EM data had several similarities with the magnetics. It defined two linear zones one of which coincides with the known showing, while

the other matches the southern anomaly. However, one feature was different and that was that both trends were parallel and that they were more westerly. That is, neither anomalous zone traces the presumed trace of the iron formation as revealed by the magnetics.

This can be explained by the interference of the diabase dyke in the immediate area of the showing.

The geology supports the VLF-EM data and indicates a broad zone marking the easterly extension of this unit.

The sharpest conductor lies atop the mineralized zone and indicates that it forms a curvilinear body of limited extent.

Structurally the VLF-EM does not show any major faults or discontinuities in this area.

11.2.3 GEOCHEMISTRY (Figures 8,9,10.)

Initially the "B" soil horizon was analyzed for base metals, as well as, for gold and silver.

Upon plotting of the results one major coincident (Cu, Pb, Zn) anomaly was outlined and was located in a valley between the known showing and a magnetic high. Its relationship with the mineralization was not immediately determinable and in fact the anomalous zone being in part, in a wet area could be due to scavenging.

In an attempt to confirm its source a bulldozer was brought to the grid and it trenched this zone, albeit unsuccessfully.

Due to this failure to reach bedrock, four deep overburden samples were taken to see if in fact a bedrock source, other than the showing, could explain the zone. Assay results have confirmed the anomaly.

11.2.4 ROCK TRENCHING AND SAMPLING (Figure 11)

Three new trenches and the breaking of one wall of an old trench provided exposure of the mineralized zone or zones, over a strike length of 800 feet.

Each trench was chip sampled with the assay results being tabulated on Figure 12. As can be seen, no significant accumulation of economic mineralization was encountered.

11.3 DEB GRID

The DEB grid was located between lines 22E and 29E and required the flagging of six intermediate lines for full control.

11.3.1 GEOLOGY (Figure 12)

An interbedded sequence of lapilli tuff, hornblende schist and chert underlies the entire grid, with outcrop exposure being about 80 percent.

The original owners sunk three trenches to investigate several quartz stringers.

Sulphide mineralization was sparse and restricted to the quartz stringers.

The rocks were striking to the southeast with moderate northeasterly dips of about 70 degrees. No other major structural elements were observed and it appeared to be one continuous rock sequence.

11.3.2 GEOPHYSICS

As with the AVE grid, both VLF-EM and magnetometer surveys were conducted.

11.3.2.1 MAGNETICS (Figure 13)

Other than a general southeast to northwest trend there were no notable anomalies.

11.3.2.2 VLF-EM (Figure 14)

Once again no conductors were found.

11.3.3 GEOCHEMISTRY (Figures 15,16,17)

The geochemical results indicate a definite northwest - southeast trend for copper, lead and zinc. The source of the anomaly can only be due to disseminated mineralization in the lapilli tuff, chert and hornblende schist sequence which underlies the gridded area.

Although the trace of the geochemical anomaly cross-cuts the local strike as well as the magnetic and VLF-EM filtered trends, the anomaly itself is defined generally by several point sources, with intervening no sample locations. It is assumed that if samples could have been collected, the results would have defined zones, paralleling the regional trends. For all three elements a anomalous zone exists in the southwest corner of the grid. This trend more closely approximates the overall geological and geophysical traces.

11.4 PAS GRID

The PAS grid is located at the north end of the property between lines 48W and 56W.

11.4.1 GEOLOGY (Figure 18)

The PAS grid contains an old trench heavily mineralized with chalcopyrite, within a sequence of lapilli tuffs,chert and hornblende schists. Earlier chip sampling indicated a grade of 2.35% copper over 13.5 feet in this zone, which prompted the use of a bulldozer to strip the surrounding area for two purposes. First to determine the extent of the mineralization and second to determine its relationship to the tuff-chert sequence or any other rock association.

The stripping exposed numerous small outcrops on all sides of the main trench. This revealed a metamorphosed and altered volcano-sedimentary sequence of hornblende schists, chert, lapilli tuff, biotite schist and chlorite-sericite schists which have been intruded by narrow granitic dykes and sills.

The chalcopyrite mineralization was not found to extend much past the trench although the host rock sequence can be traced for at least 30 feet on either side.

It appears that the massive and stringer chalcopyrite may have been an accumulation of more disseminated mineralization within the host and re-mobilized by the granite.

11.4.2 GEOPHYSICS

11.4.3 MAGNETICS (Figure 19)

The magnetic data shows a general northwest-southeast trend, coinciding with the strike of the rocks in the area.

A particular anomalous zone (greater than 2000 gammas) traces the lapilli tuff-chert -iron formation unit but does not indicate any magnetic features at the showing. However a large magnetic high does exist on the baseline on L54 W and forms a sub-parallel zone over a length of 500 feet. The cause of this anomaly could not be determined but may be due to a mafic intrusion, possibly of gabbroic composition. Gabbro mixed with hornblende schists were found during the mapping near the showing.

Structurally the magnetics reveal two faults, trending east-west. The traces have been indicated by the flexures of the contours and truncations. Displacements for both are about 100 feet.

11.4.4. VLF-EM (Figure 20)

The VLF-EM data did confirm the northwest-southeast trend but failed to find any conductors.

The presumed faults indicated by the magnetics are not well defined by this method.

11.4.5 GEOCHEMISTRY (Figures 21,22,23)

The geochemical results have indicated two dominant trends with the most northerly being less well developed.

The south trend has a very strong copper and zinc response but a weak lead response. The possibility of a scavenging effect in swampy soils should not be dismissed for the east end of the anomaly; however this is envisaged to increase the metallic concentration by a small precentage only.

This particular trend which, corresponds with a presumed fault zone, may also be the source of the massive chalcopyrite mineralization exposed in a nearby trench.

The second trend again is better represented by the copper and zinc results but seems to be more diffuse and possibly could be related to the north fault as shown in the magnetics.

In comparison to the bedrock geology the geochemical anomalies do not appear to have any direct relationship to a particular rock type. Some spot highs could be due to the granites while others overlie areas of hornblende schist or lapilli tuff.

11.4.5 TRENCHING AND SAMPLING (Figure 24)

One small trench was blasted along strike from the mineralized zone some 30 feet to the south. Although no mineralization was evident on surface it was hoped that a fresh exposure might show some disseminated mineralization. A total of 5 chip samples were taken but no encouraging assays were received.

12.0 CONCLUSIONS AND RECOMMENDATIONS

The Fripp Option property consisting of 149 mining claims about 17 miles south of Timmins, Ontario is underlain by a volcano-sedimentary sequence dominated by basic volcanics or their metamorphic equivalents.

These rocks have narrow interbeds of felsic volcanics, sulphide-iron formations and cherty bands.

Mineralization consisting of pyrrhotite, chalcopyrite and pyrite has been found within a lapilli tuff-chert unit which persists over a strike length of several miles. Numerous rock trenches have exposed the mineralization of which one showed a rich concentration of chalcopyrite.

This particular trench supported a model of disseminated mineralization in distal sediments that had become remobilized during metamorphism.

Due to the advanced stage of the field season it was decided that several sub-grids be established over the known showings and that geophysical, geological and geochemical surveys be conducted in order to discover, if any, relationships existed between the mineralization and these techniques.

These detailed orientation type surveys were in part successful, as well as, indicating several other anomalous zones not originally expected.

Because of the extremely small areas covered by the sub-grids, it could not be practical to rate any in the hopes of delineating particularly rich mineralized zones. On the contrary, the surveys have enhanced the property's overall potential.

The recommendations therefore are quite straight forward. First the reconnaissance VLF-EM and magnetometer surveys should be completed, plotted and contoured. Next a detailed interpretation should be made, preferably by an individual completely familiar with both techniques.

This first step should lead directly into the second which is the delineation of those anomalous zones that should receive further work, including, detailed geophysics and soil geochemistry, along intermediate lines.

Mapping, prospecting and rock trenching and sampling should proceed in conjunction with number two. The final results of all work should define several showings of merit, worthy of diamond drilling.

ADDENDUM

WES GRID ON
WESTFIELD MINERAL'S
MOUNTJOY PROPERTY

MCARTHUR TOWNSHIP
ONTARIO.

1.1 INTRODUCTION

The WES grid was another detailed grid, flagged over a known showing, on the Mountjoy Project of Westfield Minerals Limited.

It was of interest due to its polymetallic mineralization within the same iron formation horizon as the showing on the AVE grid.

Since this property had been studied at length in 1979 the "mini" exploration programme completed in 1981 omitted the geophysical surveys and geological mapping and centered on soil geochemistry, trenching and sampling.

2.0 EXPLORATION: 1979 AND 1981

2.1 GEOLOGY

The following is a portion of Frank Tagliamonte's report of 1979, describing the general geology of the claim group.

"Outcrops are sparse and of limited size within the property. They comprise no more, but perhaps less than 3% of the property.

Tuffaceous rock units predominate. For the most part, these rocks are thinly bedded and all trend NWest - SEast with dips invariably steeply to the NEast. Varieties include minor massive unstratified types and more abundant lapilli varieties. One small tuff breccia occurrence was observed in the SWest end of the property. Sills or dykes of the gabbro-diorite clan are next in abundance. These rocks are characteristically granular ranging from medium to fine grained. They vary from leuco to melanocratic in composition. Disseminated pyrite is sometimes present in these mafic intrusives as indicated.

An exposure of fine grained, black, peridotite, that is noteably magnetic, occurs on the extreme East end of line 100N.

A very small questionable felsic intrusive on L112N, East of the base line is pale pink, fine grained granular and sparsely mineralized with very fine pyrite. It is probably a small narrow dyke.

A wedge of pale pink aphanitic felsic material is exposed on the outcrops on the rapids in the Mountjoy River. It is situated between the lapilli tuffs and gabbro.

Iron formation is predominantly exposed at three locations. The iron formation is essentially finely laminated pyritic and cherty material. This material is occasionally intercalated with fine seams of magnetite in white chert. Pyrite is the predominant and most pervasive sulphide noted but pyrrhotite was observed to occur in discrete lenses or patches on the exposure on the power line right of way.

The iron formation trends generally NWest - SEast but is locally contorted and folded.

Two narrow chloritic shear zones generally conformable with the regional trend of the rock formations are exposed at the rapids on the Mountjoy River .

further to the west.

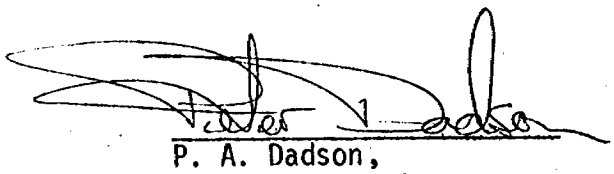
2.4 CONCLUSIONS AND RECOMMENDATIONS

The Westfield polymetallic showing occurs in a banded sequence of chert, tuff and iron formation, bounded to the east by diorite.

As part of Northgate's investigation of several showings on their property to the north, they also performed soil geochemistry and rock trenching on this property to fully evaluate the showing's potential.

Unfortunately the chip sampling revealed only low base and precious metal values but the soil geochemistry has shown one Zn-Cu and one Pb anomaly, which are located along strike and thus related to the same rock sequence.

As with the Northgate property the geophysical response from this rock unit should be assessed and further soil sampling should be completed to evaluate areas of potential. This could first be done at a regional scale with follow-up on sub-grids to follow. The possibility of locating an area suitable for diamond drilling should be the end result.



P. A. Dadson,
Project Supervisor

STATISTICAL SUMMARY WESTFIELD MINERALS LIMITED

MOUNTJOY PROJECT

WES GRID

Linecutting (Flagged Lines)	5500 Feet	100%
Soil Sampling (50' Station Interval)	91 Samples	100%
Rock Trenching	2 Trenches	100%
Chip Sampling	10 Samples	100%

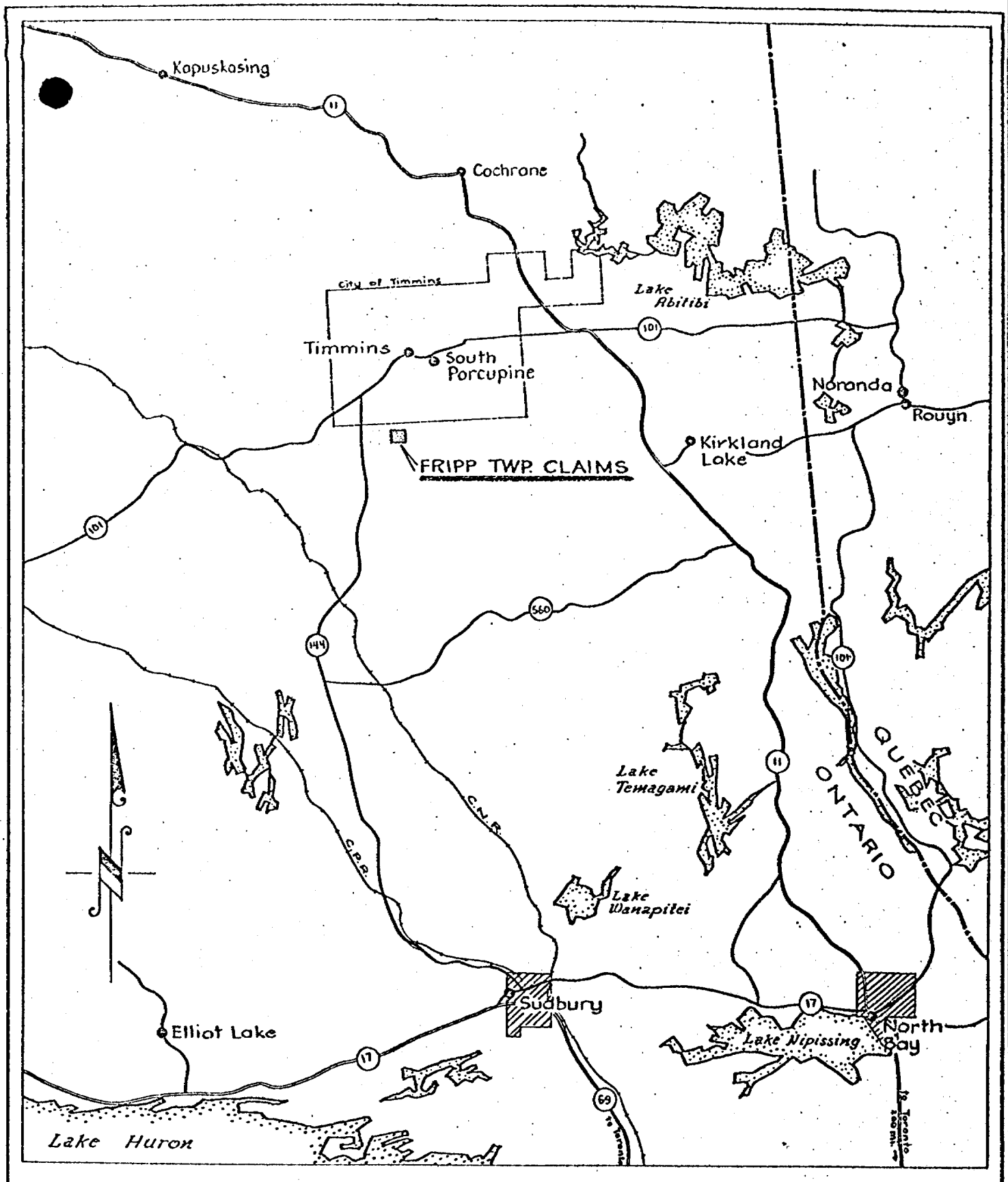
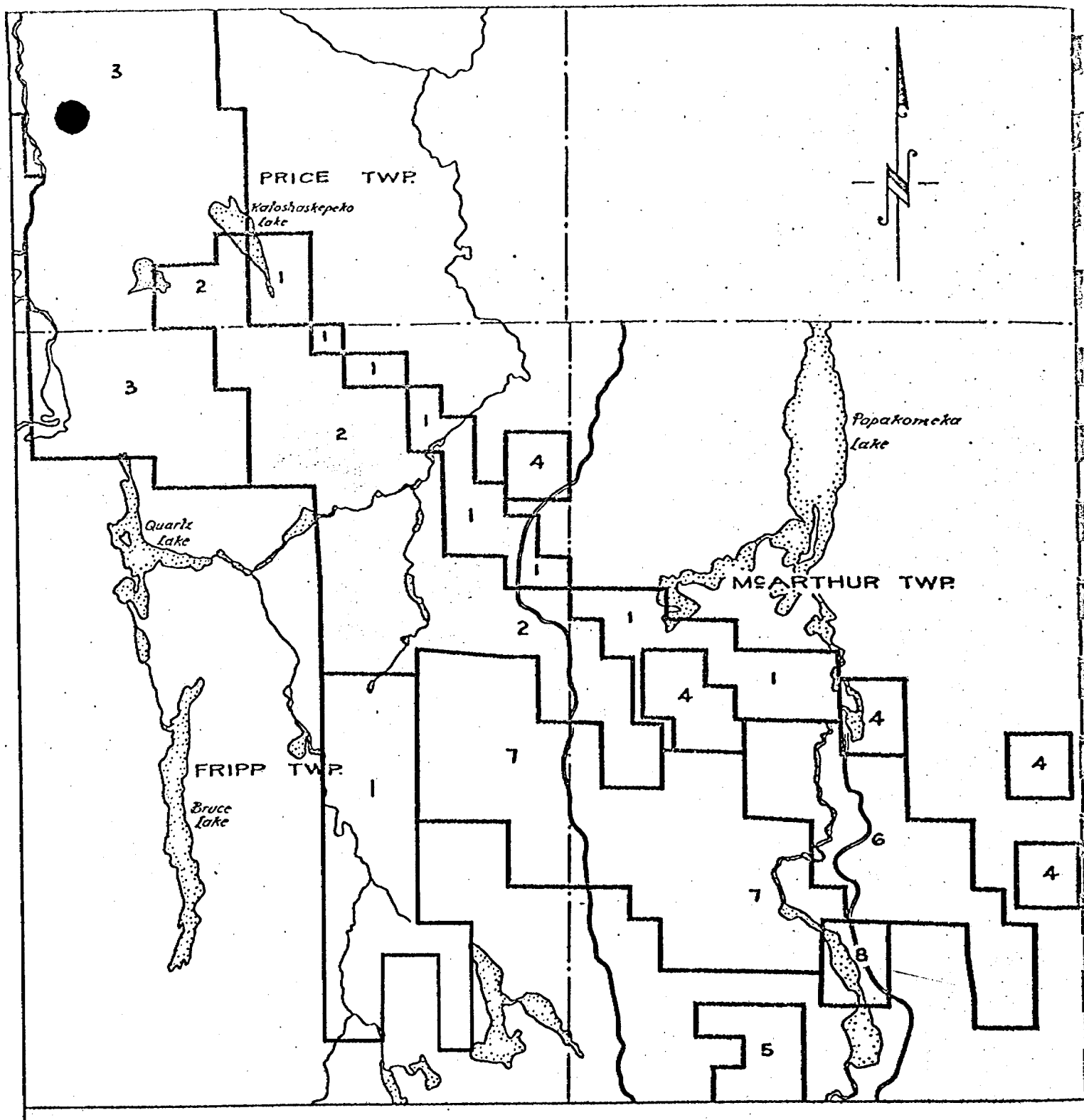


Figure 1

LOCATION MAP
showing
FRIPP TWP. CLAIMS

10 0 10 20 30 40 50
MILES

o r g



LEGEND

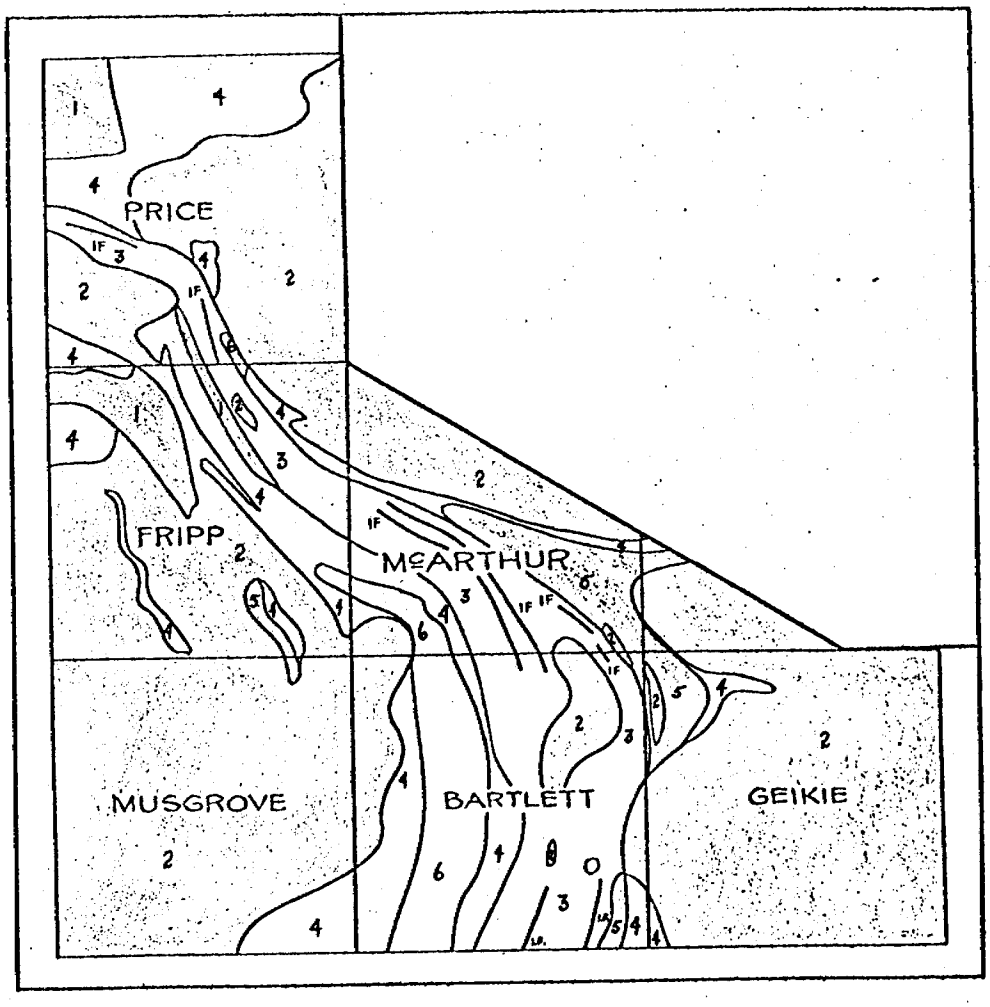
1 Northgate Exploration Limited
2 Bordin-Northgate Option
3 Argentex
4 Amax
5 Texas Gulf
6 Westfield Minerals
7 Mattagami Lake Mines Ltd
8 Lacana

Figure 2

FRIPP TOWNSHIP AREA

COMPANY HOLDINGS

Scale: 1" = 1 mile



LEGEND

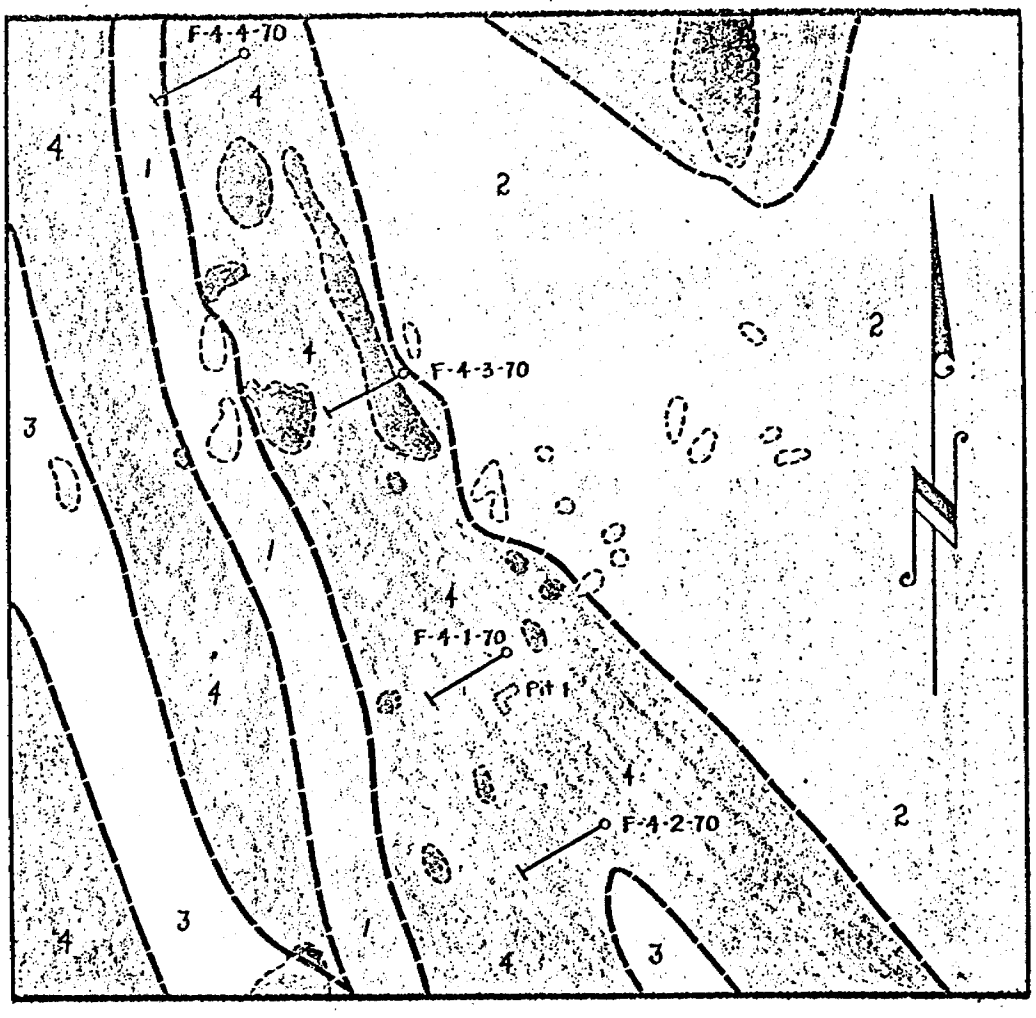
1	Greywacke, Siltstone
I.F.	Iron Formation
2	Felsic Intrusives
3	Felsic Volcanics
4	Mafic Volcanics
5	Ultramafic Volcanics
6	Gabbro

Figure 3

FRIPP TOWNSHIP AREA

REGIONAL GEOLOGY

Scale: 1" - 4 miles



LEGEND

- 1 Quartz Diabase
- 2 Granite Breccia
- 3 Hornblende Schist
- 4 Hornblende Schist (Andesite)
- Hollinger Diamond Drill Hole

Figure 4

HOLLINGER GOLD MINES LTD.

Pit 1, Bordin Property, Fripp Twp, Ont.

LOCAL GEOLOGY AND DRILL HOLE LOCATIONS

Scale: 1" = 400'

TABLE 1

Claims Bordin Property: Price, Fripp and McArthur Townships

Price Township

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-591040	Dennis Bordin	X	June 6, 1982
P-591041	" "	X	" " "
P-591155	" "	X	" " "
P-591156	" "	X	" " "
P-591594	" "	X	June 7, 1982
P-591595	" "	X	" " "
P-591596	" "	X	June 6, 1982

Sub-total 7 claims

Fripp Township

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-618161	Dennis Bordin	X	May 2, 1982
P-618162	" "	X	" " "
P-618163	" "	X	" " "
P-618164	" "	X	" " "
P-618165	" "	X	" " "
P-618166	" "	X	" " "
P-618167	" "	X	May 3, 1982
P-618168	" "	X	" " "
P-618169	" "	X	" " "
P-619315	" "	X	May 19, 1982
P-619316	" "	X	" " "
P-618985	" "	X	May 9, 1982
P-618986	" "	X	" " "
P-618987	" "	X	" " "
P-618988	" "	X	" " "
P-618989	" "	X	" " "
P-618990	" "	X	" " "
P-618991	" "	X	May 6, 1982
P-618992	" "	X	" " "
P-618993	" "	X	" " "
P-618994	" "	X	May 7, 1982
P-618995	" "	X	" " "
P-618996	" "	X	" " "
P-618997	" "	X	May 8, 1982
P-618998	" "	X	" " "
P-618999	" "	X	" " "
P-591027	" "	X	May 26, 1982
P-591028	" "	X	" " "
P-591029	" "	X	" " "
P-591030	" "	X	" " "
P-591031	" "	X	May 27, 1982
P-591032	" "	X	" " "
P-591033	" "	X	" " "
P-591034	" "	X	May 28, 1982
P-591035	" "	X	May 29, 1982
P-591036	" "	X	" " "

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-591037	Dennis Bordin	X	May 28, 1982
P-591038	" "	X	May 29, 1982
P-591039	" "	X	" " "
P-591147	" "	X	May 31, 1982
P-591148	" "	X	" " "
P-591149	" "	X	" " "
P-591150	" "	X	" " "
P-591151	" "	X	" " "
P-591152	" "	X	" " "
P-591153	" "	X	" " "
P-591926	" "	X	June 11, 1982
P-591927	" "	X	" " "
P-591928	" "	X	" " "
P-591929	" "	X	" " "
P-591930	" "	X	June 13, 1982
P-591931	" "	X	" " "
P-591932	" "	X	" " "
P-591936	" "	X	" " "
P-393149	" "	X	June 27, 1982
P-393150	" "	X	" " "
P-393151	" "	X	" " "
P-393152	" "	X	" " "

Sub-total 58 claims

McArthur Township

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-619317	Dennis Bordin	X	May 19, 1982
P-619318	" "	X	" " "
P-591933	" "	X	June 13, 1982
P-591934	" "	X	" " "
P-591935	" "	X	" " "
P-591937	" "	X	June 14, 1982
P-591938	" "	X	" " "
P-591939	" "	X	" " "
P-591940	" "	X	" " "

Sub-total 9 claims

Total 74 claims

TABLE 2

NORTHGATE CLAIMS: PRICE, FRIPP AND MCARTHUR TOWNSHIPS

PRICE TOWNSHIP

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624406	Gabriel Sutherland	X	August 23, 1982
P-624407	"	X	"
P-624408	"	X	"
P-624409	"	X	August 24, 1982
P-624410	"	X	"
P-624411	"	X	"

SUB TOTAL : 6 CLAIMS

FRIPP TOWNSHIP

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624154	Nolan Boa	X	August 16, 1982
P-624155	"	X	"
P-624281	Richard McAllister	X	"
P-624282	"	X	"
P-624823	"	X	"
P-624284	"	X	"
P-624285	"	X	"
P-624286	"	X	August 17, 1982
P-624287	"	X	"
P-624288	"	X	"
P-624289	"	X	"
P-624290	"	X	August 18, 1982
P-624291	"	X	"
P-624292	"	X	"
P-624293	"	X	September 9, 1982
P-624294	"	X	"
P-624295	"	X	September 10, 1982
P-624296	"	X	"
P-624297	"	X	"
P-624298	"	X	September 12, 1982
P-624299	"	X	"
P-624303	"	X	September 13, 1982
P-624304	"	X	"
P-628041	"	X	"
P-628042	"	X	"
P-628043	"	X	"
P-628044	"	X	September 11, 1982
P-628045	"	X	"
P-622582	Henry Gonzalez	X	September 9, 1982
P-622291	"	X	"
P-622292	"	X	"
P-622293	"	X	"
P-622294	"	X	"

TABLE 2 (CONTINUED)

FRIPP TOWNSHIP(CONTINUED)

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624096	Genry Gonzalez	X	September 10, 1982
P-624097	"	X	"
P-624098	"	X	"
P-624099	"	X	"
P-624100	"	X	"
P-624101	"	X	September 11, 1982
P-624102	"	X	"
P-624103	"	X	"
P-624104	"	X	"
P-624105	"	X	"
P-624106	"	X	September 12, 1981
P-624107	"	X	"
P-624108	"	X	"
P-624109	"	X	"
P-624110	"	X	"
P-624111	"	X	September 13, 1982
P-624113	"	X	"
P-624113	"	X	"
P-628036	"	X	"
P-628037	"	X	"

SUB TOTAL: 53 CLAIMS

MCARTHUR TOWNSHIP

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624156	Nolan Boa	X	August 16, 1982
P-624157	"	X	"
P-624158	"	X	August 17, 1982
P-624159	"	X	"
P-624160	"	X	"
P-624161	"	X	"
P-624612	"	X	"
P-624163	"	X	August 18, 1982
P-624164	"	X	"
P-624165	"	X	"
P-624166	"	X	"
P-624167	"	X	"
P-624168	"	X	"
P-624169	"	X	August 20, 1982
P-628038	Henry Gonzalez	X	September 21, 1982
P-628039	"	X	"

SUB TOTAL: 16 CLAIMS

TOTAL : 75 CLAIMS

TABLE 3

Geological Time Scale and Stratigraphic Units

Fripp Township Area

Phanerozoic

Cenozoic

Quaternary

Pleistocene and Recent

Clay, sand, gravel, swamp, and stream deposits

Unconformity

Precambrian

Late Precambrian

Mafic Intrusive Rocks

Olivine Diabase

Intrusive Contact

Middle Precambrian

Mafic Intrusive Rocks

Quartz Diabase

Intrusive Contact

Precambrian (Archean)

Mafic Intrusive Rocks

Gabbro, Diabase, Quartz Diorite

Intrusive Contact

Granitic Intrusive Rocks

Peterlong Lake Complex, Adams Batholith (Late Tectonic)

Monzonite, granodiorite, diorite, quartz-diorite

Feeder System (Syntectonic)

Quartz-feldspar porphyry

Intrusive Contact

Metamorphosed Mafic and Ultramafic Intrusive Rocks (Pre-tectonic)

Gabbro, quartz gabbro, pyroxenite, peridotite

Intrusive Contact

Metavolcanics and Metasediments

Intermediate to Felsic Metavolcanics - tuff and lapilli-tuff, volcanic breccia, massive and pillowed flows, siltstone, greywacke, iron formation

Mafic Metavolcanics - massive and pillowed flows, tuff, lapilli tuff, volcanic breccia

Ultramafic Metavolcanics - massive polysaturated, serpentenized peridotite, spinifex textured flows, tuff, lapilli tuff

TABLE 4

Assays-Bordin Property-Fripp Township

Trench #	Sample Type	Cu%	Pb%	Zn%	Ag (gMg)	Au (g/Mg)
4	Grab	12.5	0.01	0.08	15	Tr
4	"	936 ppm	<0.01	0.07	10	
2	"	0.13	0.45	3.65	98	
2	"	<0.01	0.12	0.01	12	
1	"	10.77	0.07	0.08	1.26 (oz.)	0.05 (oz.)
West Showing	"	0.09			0.02 (oz.)	Tr
West #1 Showing	"	0.06			0.04 (oz.)	Tr
Main Cu Showing	"	26.52	0.01	0.01	0.44 (oz.)	Tr

900

175

1983 09 22

2.4766

Mr. William L. Good
Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

RE: Geophysical (Electromagnetic and Magnetometer) Geological and Geochemical and Assaying Expenditures Survey on Mining Claims P 591928 et al in the Townships of Fripp, Price and McArthur

---

The Geophysical (Electromagnetic and Magnetometer) Geological and Geochemical and Assaying Expenditures Surveys assessment work credits as listed with my Notice of Intent dated August 23, 1983, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6640
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-1380

D. Kinvig:mc

Encl.

cc: Northgate Exploration Limited
P.O. Box 143
1 First Canadian Place
Toronto, Ontario
M5X 1C7

cc: Resident Geologist
Timmins, Ontario

Ministry of Natural Resources
Ontario

Technical Assessment Work Credits

File 2.4766

Date 1983 08 23

Mining Recorder's Report of Work No. 175

Recorded Holder: NORTHGATE EXPLORATION LIMITED

Township or Area: FRIPP, PRICE AND MC ARTHUR TOWNSHIPS

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	P 591928 618162 618165 619317-18
Electromagnetic _____ days	
Magnetometer _____ days	
Radiometric _____ days	
Induced polarization _____ days	
Other _____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological 40 days	
Geochemical 40 days	
Man days [X] Airborne [ ]	
Special provision [ ] Ground [X]	
[X] Credits have been reduced because of partial coverage of claims.	
[X] Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

[ ] not sufficiently covered by the survey

[X] Insufficient technical data filed

P 591933
622291
622294
624098
P 624101
624104
624107
624109 to 13 inclusive
P 624293 to 95 inclusive
628036
628044

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77(19)—60:

828 (83/6)

Ministry of Natural Resources
Ontario

Technical Assessment Work Credits

File 4766

Date 1983 08 23

Mining Recorder's Report of Work No. 175

Recorded Holder: NORTHGATE EXPLORATION LIMITED

Township or Area: FRIPP, PRICE AND McARTHUR TOWNSHIPS

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	P 591928
Electromagnetic 19 days	618162
Magnetometer 19 days	618165
Radiometric ____ days	
Induced polarization ____ days	
Other ____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological ____ days	
Geochemical ____ days	
Man days [X] Airborne [ ]	
Special provision [ ] Ground [X]	
[X] Credits have been reduced because of partial coverage of claims.	
[X] Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

[ ] not sufficiently covered by the survey

[X] Insufficient technical data filed

P 591933
619317-18
622291
622294
624098

P 624101
624104
624107
624109 to 13 inclusive

P 624293 to 95 inclusive
628036
628044

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77(19)—60;

828 (83/6)

Ministry of Natural Resources
Ontario

Technical Assessment Work Credits

File 2.4766

Date 1983 08 23

Mining Recorder's Report of Work No. 175

Recorded Holder: NORTHGATE EXPLORATION LIMITED

Township or Area: FRIPP, PRICE AND McARTHUR

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological _____ days Geochemical _____ days Man days ☐ Airborne ☐ Special provision ☐ Ground ☐ ☐ Credits have been reduced because of partial coverage of claims. ☐ Credits have been reduced because of corrections to work dates and figures of applicant.	$3,640.03 spent on assaying samples from Mining Claims P 591928, P 618162, P 618165, P 619317-18. 243 days credit allowed which may be grouped in accordance with Section 76(6) of the Mining Act. For Mining Recorder use: The work assignment of the above listed five claims is 48.5 days per claim.

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☒ Insufficient technical data filed

P 591933

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77 (19) — 60:

828 (83/6)

Ministry of
Natural
Resources

Ontario

Sept. 14/83

Your file: 175

1983 08 23

Our file: 2.4766

Mr. William L. Good
Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. F.W. Matthews at 416/965-1380.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

DK D. Kinvig:mc

Encls:

cc: Northgate Exploration Limited
P.O. Box 143
1 First Canadian Place
Toronto, Ontario
M5X 1C7

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

845

Ministry of Natural Resources

Ontario

Notice of Intent

for Technical Reports

1983 08 23

2.4766

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Lands Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.

Ministry of Natural Resources

Report of Work

The Mining Act

Instructions – Submit required data on a separate form for each type of work to be recorded (see table below).
– For Geo-technical work use form no. 1382 "Report of Work (Geological, Geophysical, Geochemical and Expenditures)".

Name and Postal Address of Recorded Holder	Prospector's Licence No.
NORTHGATE EXPLORATION LIMITED 2.47666	T-835
P.O. BOX 143, 1 FIRST CANADIAN PLACE, TORONTO, ONTARIO M5X 1C7	

Summary of Work Performance and Distribution of Credits

Total Work Days Cr. claimed: 27

for Performance of the following work. (Check one only)

- ☐ Manual Work
- ☒ Shaft Sinking Drifting or other Lateral Work.
- ☒ Compressed Air, other Power driven or mechanical equip.
- ☐ Power Stripping
- ☐ Diamond or other Core drilling
- ☐ Land Survey

Mining Claim Prefix	Mining Claim Number	Work Days Cr.
P	~~See~~	~~0490~~
	~~Attached~~	
	~~Sheets~~	
	591928	4.5
	591933	4.5
	618162	4.5
	618165	4.5
	619317	4.5
P	619318	4.5

MINING RECORDS OFFICE - TORONTO
RECEIVED
APR 30 1982
AM 7 8 9 10 11 12 1 2 3 4 5 6 PM

All the work was performed on Mining Claim(s): P 591928, 591933, 618162, 618165, 619317, 619318

RECEIVED
MAR 10 1983
MINING LANDS SECTION

Required Information eg: type of equipment, Names, Addresses, etc. (See Table Below)

EQUIPMENT: COBRA DRILL

PERSONNEL:

Name	Address	Date of Work	Hours per Day	
S. Conquer	5 Shannon St. Orillia, Ont. L3V 6L6	Nov. 5, 6, 11, 12, 13, 14, 17/81	9	(Includes preparation of samples for shipment)
D. Collins	99 Gilroy Dr. Scarborough, Ont. M1P 2A2	Nov. 6/81	9	
P. Dadson	4 Moffat Ave. Brampton, Ont.	Nov. 5/81	9	

Date of Report	Recorded Holder or Agent (Signature)
Dec. 17/81	R Zinn

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
GERALD HARPER, Ph.D., 26 ORCHARD CRESCENT, ETOBICOKE, ONTARIO

M8Z 3E1

Date Certified: 29th April 1982.

Certified by (Signature): G. HARPER

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

Table of Information/Attachments Required by the Mining Recorder

Type of Work	Specific Information per type	Other Information (Common to 2 or more types)	Attachments
Manual Work	Nil	Names and addresses of men who performed manual work/operated equipment, together with dates and hours of employment.	Work Sketch: these are required to show the location and extent of work in relation to the nearest claim post.
Shaft Sinking, Drifting or other Lateral Work			
Compressed air, other power driven or mechanical equip.	Type of equipment		
Power Stripping	Type of equipment and amount expended. Note: Proof of actual cost must be submitted within 30 days of recording.	Names and addresses of owner or operator together with dates when drilling/stripping	

Ministry of Natural Resources
Ontario

Geotechnical Report Approval

File 2.4766

Mining Lands Comments

- FILE DID NOT GET ROUTED TO YOUR OFFICE, SEE routing sheet enclosed.

☑ To: Geophysics MR. ROGER BARLOW

Comments

☑ Approved ☐ Wish to see again with corrections | Date July 26/83 | Signature Douglas H. Pulito

☐ To: Geology - Expenditures

Comments

☐ Approved ☐ Wish to see again with corrections | Date | Signature

☐ To: Geochemistry

Comments

☐ Approved ☐ Wish to see again with corrections | Date | Signature

☐ To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-1380)

1593 (81/10)

Assessment Work Breakdown

...s are based on eight (8) hour Technical or Line-cutting days. Technical days include work performed by consultants, draftsmen, etc..

Type of Survey
GEOLOGICAL

Technical Days		Technical Days Credits		Line-cutting Days		Total Credits		No. of Claims		Days per Claim
32	X 7 =	224	+	5	=	229	÷	30	=	7.63

Type of Survey
GEOCHEMICAL

Technical Days		Technical Days Credits		Line-cutting Days		Total Credits		No. of Claims		Days per Claim
32.5	X 7 =	241.5	+	0	=	241.5	÷	30	=	8.05

241.5

Type of Survey
GEOPHYSICAL MAG AND E.M. (V.L.F.)

Technical Days		Technical Days Credits		Line-cutting Days		Total Credits		No. of Claims		Days per Claim
16	X 7 =	112	+	0	=	112	÷	30	=	3.73

Type of Survey
TRENCH BLAST AND SAMPLE (SEE YELLOW FORM)

Technical Days		Technical Days Credits		Line-cutting Days		Total Credits		No. of Claims		Days per Claim
	X 7 =		+		=		÷		=	

YOUR FILE 2.4766

Personell, see the sheet attached for 3 names and address.
The work was performed in the face of a (NOV) Exact dates not available.

APPLIED TO CLAIMS
622291, 94
624293 → 99
624303, 04
628041 → 45
624098, 101, 104 → 113
628036, 37
30 total

2.4766

NORTHGATE EXPLORATION LIMITED
SUITE 3140, P.O. BOX 143, 1 FIRST CANADIAN PLACE, TORONTO, CANADA M5X 1C7 • TELEPHONE (416) 362-6683 • TELEX 06-217766

January 31st, 1983

Mr. E.F. Anderson
Director
Land Management Branch
Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3

Dear Mr. Anderson:

Re: Your File Number 2.4766

Please find enclosed our corrected maps as per your instructions in your letter to us dated January 7th, 1983. You will note that the pink form you returned to us does not belong to the maps, so I have xeroxed the last page and included it with the pertinent data.

Peter Dadson is no longer with Northgate Exploration, so Dr. W. W. Weber, our exploration manager, has signed the maps.

Yours truly,

NORTHGATE EXPLORATION LIMITED

R. A. Zinn
Project Geologist

/ba

Encl.

2.4766 File

Ministry of Natural Resources

Ontario

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL
TECHNICAL DATA STATEMENT

RECEIVED
MAY 3 1982
MINING LANDS SECTION

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) V.L.F. - E.M. MAGNETIC
Township or Area PRICE, FRIPP, MCARTHUR
Claim Holder(s) NORTHGATE EXPLORATION LIMITED

Survey Company NORTHGATE EXPLORATION LIMITED
Author of Report P. DADSON
Address of Author 4 MOFFAT AVE., BRAMPTON, ONTARIO
Covering Dates of Survey 09/81 - 04/82 (linecutting to office)
Total Miles of Line Cut 2.2

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
—Electromagnetic	
—Magnetometer	
—Radiometric	
—Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer ______ Electromagnetic ______ Radiometric ______ (enter days per claim)

DATE: 29th April 1982 SIGNATURE: ______ Author of Report or Agent

REGISTERED PROFESSIONAL ENGINEER G. HARPER PROVINCE OF ONTARIO

Res. Geol. ______ Qualifications 63.1058

Previous Surveys

File No.	Type	Date	Claim Holder

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
P	591928
	591933
	618162
	618165
	619317
	619318

If space insufficient, attach list

TOTAL CLAIMS 6

837 (5/79)

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS -- If more than one survey, specify data for each type of survey

Number of Stations 233 Number of Readings 233

Station interval 50 feet Line spacing 100 feet

Profile scale 1 inch = 20%

Contour interval 50 gammas

MAGNETIC

Instrument SCINTREX MP-2

Accuracy -- Scale constant ± 1 gamma

Diurnal correction method BASE STATION MBS-2

Base Station check-in interval (hours)

Base Station location and value

ELECTROMAGNETIC

Instrument GEONICS EM-16; V.L.F.

Coil configuration

Coil separation

Accuracy

Method: ☒ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency ANAPOLIS, MARYLAND (specify V.L.F. station)

Parameters measured IN PHASE AND QUADRANGLE

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION / RESISTIVITY

Instrument

Method ☐ Time Domain ☐ Frequency Domain

Parameters -- On time Frequency

-- Off time Range

-- Delay time

-- Integration time

Power

Electrode array

Electrode spacing

Type of electrode

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

_____

Corrections made _____

_____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

_____

Additional information (for understanding results) _____

_____

_____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

_____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

_____

_____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

_____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

_____

Drainage Development _____

Estimated Range of Overburden Thickness _____

_____

_____

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

_____

_____

_____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ANALYTICAL METHODS

Values expressed in: per cent ☐
p. p. m. ☐
p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

YOUR FILE 2.4766

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken P 619165, 166, 161, 162; 591928, 30, 31, 32; 619317, 18; 516802, 803

Total Number of Samples 477

Type of Sample ROCK AND SOIL
(Nature of Material)

Average Sample Weight ±10 g

Method of Collection HAND

Soil Horizon Sampled A

Horizon Development GOOD

Sample Depth SURFACE

Terrain LOW HILLS TO SWAMP

Drainage Development GOOD TO POOR

Estimated Range of Overburden Thickness 0-30 m

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis

General

ANALYTICAL METHODS

Values expressed in: per cent ☒
p. p. m. ☐
p. p. b. ☐

(Cu), (Pb), (Zn), Ni, Co, Ag, Mo, As,-(circle)

Others Au Ag PPM

Field Analysis (_____ tests)
Extraction Method
Analytical Method
Reagents Used

Field Laboratory Analysis
No. (_____ tests)
Extraction Method
Analytical Method
Reagents Used

Commercial Laboratory (477 tests)
Name of Laboratory BELL WHITE
Extraction Method
Analytical Method
Reagents Used

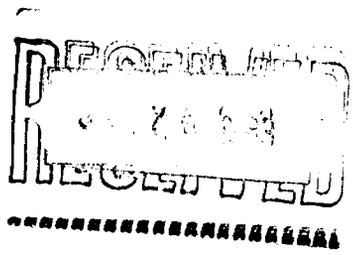
General

Ministry of
Natural
Resources
Ontario

Your file:

1983 01 07 Our file: 2.4766

Northgate Exploration Limited
Suite 3140
P.O. Box 143
1 First Canadian Place
Toronto, Ontario
M5X 1C7



Dear Sirs:

Enclosed are your geological, geophysical and geochemical survey maps covering Mining Claims P 393149 et al in the Townships of Fripp, Price and McArthur. Please have these maps corrected as follows:

1. Each map must be signed by the author of the report,

2. The claim limits and numbers must be shown on each map,

3. The geological maps must be coloured to designate the rock outcrops.

Also, please provide the certificates of analysis and receipts verifying the expenditure of $3,640.03. Finally the last page on the enclosed pink sheet should be completed.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

F.W. Matthews:sc

cc: Mining Recorder
Timmins, Ontario

cc: P. Dadson
Brampton, Ontario

cc: G. Harper
Etobicoke, Ontario

Ministry of Natural Resources
Ontario

Geotechnical Report Approval

File 2.4766

[redacted]

Mining Lands Comments

- no Receipts for assaying
- certificates of analysis for assaying
- maps not signed
- claim lines & claim numbers
- geology maps not coloured, no legend

☑ To: Geophysics Mr Barlow.

Comments

☐ Approved ☐ Wish to see again with corrections | Date | Signature

☑ To: Geology - Expenditures W/R Kustra

Comments

- Claim numbers should be shown on ~~all~~ location map only.

Geology should be colored, according to the Act

No legend required here since maps ~~are~~ name rock types

☒ Approved ☐ Wish to see again with corrections | Date Dec 3/82 | Signature e kustra

☑ To: Geochemistry Dr. Fortescue

Comments

- Maps not signed.
- No receipts for analyses.
- Claim numbers on location maps only.
- Geochemistry not filled in on form.

LD

☒ Approved ☐ Wish to see again with corrections | Date Dec 13/82 | Signature J.A. Fortescue

called Oct 7/82

☐ To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-1380)

1593 (81/10)

1983 01 07 2.4766

Northgate Exploration Limited
Suite 3140
P.O. Box 143
1 First Canadian Place
Toronto, Ontario
M5X 1C7

Dear Sirs:

Enclosed are your geological, geophysical and geochemical survey maps covering Mining Claims P 393149 et al in the Townships of Fripp, Price and McArthur. Please have these maps corrected as follows:

1. Each map must be signed by the author of the report,

2. The claim limits and numbers must be shown on each map,

3. The geological maps must be coloured to designate the rock outcrops.

Also, please provide the certificates of analysis and receipts verifying the expenditure of $3,640.03. Finally the last page on the enclosed pink sheet should be completed.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

F.W. Matthews:sc

cc: Mining Recorder
Timmins, Ontario

cc: P. Dadson
Brampton, Ontario

cc: G. Harper
Etobicoke, Ontario

Ontario

Ministry of Natural Resources

File _____

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) MAGNETOMETER

Township or Area PRICE, FRIPP, MCARTHUR

Claim Holder(s) NORTHGATE EXPLORATION LIMITED

Survey Company NORTHGATE EXPLORATION LIMITED

Author of Report G. HARPER, Ph.D.

Address of Author 26 ORCHARD CRESCENT, ETOBICOKE, ONTARIO

Covering Dates of Survey SEPT./81 - APRIL/82 (linecutting to office)

Total Miles of Line Cut 94.8

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	
–Magnetometer	40
–Radiometric	
–Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: 29th April 1983 SIGNATURE: _____
Author of Report or Agent

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

Res. Geol. _____ Qualifications _____

63 1058

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

See Attached Claim Sheets

(prefix) (number)

TOTAL CLAIMS _____

If space insufficient, attach list

837 (5/79)

original sent to Northgate 7.1.83.

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations 5016 Number of Readings _____

Station interval 100 feet Line spacing 400 feet

Profile scale _____

Contour interval 200 gammas and 1,000 gammas

MAGNETIC

Instrument SCINTREX MP-2 (Appendix II)

Accuracy – Scale constant ± 1 gamma

Diurnal correction method BASE STATION RECORDER MPS-2 (Appendix II)

Base Station check-in interval (hours) _____

Base Station location and value _____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

Base station value and location _____

Elevation accuracy _____

RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

1982 05 28 2.4766

Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

We have received reports and maps for a Geophysical (Electromagnetic and Magnetometer) Geological and Geochemical Surveys submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims P 393149 et al in the Townships of Fripp, Price and McArthur.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1316

J. Skura/amc

cc: Northgate Exploration Limited
Toronto, Ontario

cc: Mr. G. Harper
Etobicoke, Ontario

P-591928

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

#175

Fripp Twp.

The Mining Act 2.4766

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s): GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL
Township or Area: Fripp, Price, McArthur
Claim Holder(s): NORTHGATE EXPLORATION LIMITED
Prospector's Licence No.: T-835
Survey Company: NORTHGATE EXPLORATION LIMITED
Survey Dates (linecutting to office): Day 09 Mo. 81 Yr. – Day 04 Mo. 82 Yr.
Total Miles of line Cut: 2.2
Name and Address of Author (of Geo-Technical report): P. DADSON, 4 MOFFAT AVENUE, BRAMPTON, ONTARIO

Special Provisions Credits Requested

Instructions: For first survey: Enter 40 days. (This includes line cutting). For each additional survey: using the same grid: Enter 20 days (for each)

Geophysical	Days per Claim
- Electromagnetic	
- Magnetometer	
- Radiometric	
- Other	
Geological	
Geochemical	

Man Days

Instructions: Complete reverse side and enter total(s) here

Geophysical	Days per Claim
- Electromagnetic	1.87
- Magnetometer	1.87
- Radiometric	
- Other	
Geological	7.63
Geochemical	8.05

Airborne Credits

Note: Special provisions credits do not apply to Airborne Surveys.

	Days per Claim
Electromagnetic	
Magnetometer	
Radiometric	

RECEIVED ... MINING DIVISION ... AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

Expenditures (excludes power stripping)

Type of Work Performed: ASSAYING
Performed on Claim(s): P 591928, 591933, 618162, 618165, 619317, 619318

Calculation of Expenditure Days Credits
Total Expenditures $ 3,640.03 ÷ 15 = Total Days Credits 242.67

Instructions: Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Mining Claims Traversed (List in numerical sequence)

Prefix	Number	Expend. Days Cr.
P	Work Done On:	
	591928	
	591933	
	618162	
	618165	
	619317	
	619318	
	EXPENDITURES - Assaying (Sect. 77(19))	
	Apply Credit To:	
	622291	15.17
	622294	15.17
	624098	15.17
	624101	15.17
	624107	15.17
	624109	15.17
	624110	15.17
	624111	15.17
	624112	15.17
	624113	15.17
	624293	15.17
	624294	15.17
	624295	15.17
	628036	15.17
	628044	15.17

Prefix	Number	Expend. Days Cr.
P	624104	15.17

See revised statement

RECORDED MAY 19 1982 Receipt No. ....

Total number of mining claims covered by this report of work. 22

For Office Use Only

Total Days Cr. Recorded: 727.24 / 242.67
Date Recorded: May 19/82
Mining Recorder:
Date Approved as Recorded:
Regional/Branch Director:

Report Completed

Date of Report: Dec. 17, 1981
Recorded Holder or Agent (Signature):

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: Gerald Harper, Ph.D., 26 Orchard Crescent, Etobicoke, Ontario M8Z 3E1

Date Certified:
Certified by (Signature):

REGISTERED PROFESSIONAL ENGINEER G. HARPER

NORTHGATE EXPLORATION LIMITED

TORONTO, CANADA

0006778

October 21, 19 81

PAY T$ 2409.50

$ 2409.50

NORTHGATE EXPLORATION LIMITED

TO THE ORDER OF
Bell-Whyte Analytical Laboratories Ltd.
P.O. Box 187
Haileybury, Ontario
P0J 1K0

THE TORONTO-DOMINION BANK
55 KING ST. W. & BAY ST.
TORONTO, M5K 1A2 CANADA

PER _____

NOT NEGOTIABLE

PER _____

NORTHGATE EXPLORATION LIMITED - REMITTANCE ADVICE

PLEASE DETACH BEFORE DEPOSITING

DEBIT			CREDIT		
AC	$		AC	$	
775-504	2008.00				
775-646	69.50				
785-204	332.00				

NORTHGATE EXPLORATION LIMITED

TORONTO, CANADA

0006922

November 16th 19 81

PAY T$ 2403.05

$ 2,403.05

NORTHGATE EXPLORATION LIMITED

TO THE ORDER OF
Bell-White Analytical Laboratories Ltd.,
P.O.Box 187
Haileybury,Ontario P0J 1K0

THE TORONTO-DOMINION BANK
55 KING ST. W. & BAY ST.
TORONTO, M5K 1A2 CANADA

PER _____

NOT NEGOTIABLE

PER _____

NORTHGATE EXPLORATION LIMITED - REMITTANCE ADVICE

PLEASE DETACH BEFORE DEPOSITING

DEBIT			CREDIT		
AC	$		AC	$	
775-504	1,320.00				
775-646	83.05				
785-204	202.00				
785-304	798.00				

NORTHGATE EXPLORATION LIMITED

TORONTO, CANADA

0007123

December 29, 19 81

PAY

$ 6414.10

NORTHGATE EXPLORATION LIMITED

TO THE ORDER OF
Bell-White Analytical Laboratories Ltd.
P.O. Box 187
Haileybury, Ontario
P0J 1K0

THE TORONTO-DOMINION BANK
55 KING ST. W. & BAY ST.
TORONTO, M5K 1A2 CANADA

PER

NOT NEGOTIABLE

PER

NORTHGATE EXPLORATION LIMITED - REMITTANCE ADVICE

PLEASE DETACH BEFORE DEPOSITING

DEBIT			CREDIT		
AC	$		AC	$	
107-002	576.07				
785-204	1449.90				
785-304	858.13				
775-504	3530.00				

FILE COPY

407-201 (10) 160.00

785-

BELL-WHITE ANALYTICAL LABORATORIES LTD.

P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Soil Samples

Certificate of Analysis

NO. B352-81 Page 1 of 4 DATE: October 28, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: October 1981

SAMPLE(S) FROM: Northgate Exploration Limited

Sample No.	Copper ppm	Lead ppm	Zinc ppm	Arsenic ppm
AVE 1	12	4	16	ND
2	10	4	13	ND
3	8	ND	11	ND
4	8	2	16	ND
5	12	2	14	ND
6	4	4	8	ND
7	6	ND	11	ND
8	6	ND	8	ND
9	4	ND	7	ND
12	20	4	8	ND
13	18	2	12	ND
16	8	2	11	ND
17	4	4	8	ND
18	12	ND	25	ND
19	8	ND	10	ND
20	4	ND	9	ND
21	4	10	10	ND
22	6	4	12	ND
23	6	4	16	ND
24	16	8	12	ND
25	28	4	14	ND
26	30	2	10	ND
27	18	ND	13	ND
28	6	2	11	ND
29	6	2	13	ND
30	4	4	10	ND
31	10	2	15	ND
33	4	ND	8	ND
34	4	4	9	ND
35	2	ND	9	ND
36	4	ND	12	ND
37	8	2	16	ND
39	14	ND	11	ND
40	14	2	14	ND
41	10	4	17	ND

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER

BELL - WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B352-81 DATE: October 28, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: October 1981

SAMPLE(S) FROM: Northgate Exploration Limited

Sample No.	Copper ppm	Lead ppm	Zinc ppm	Arsenic ppm
AVE 42	12	4	10	ND
43	6	2	13	ND
44	8	4	9	ND
45	4	ND	9	ND
46	10	ND	10	ND
47	10	2	14	ND
48	10	2	10	ND
50	14	6	12	ND
51	54	2	16	ND
52	32	4	15	ND
53	12	2	10	ND
56	14	6	29	ND
57	10	8	29	ND
58	10	ND	10	ND
59	8	ND	38	ND
60	8	2	20	ND
61	10	ND	16	ND
62	10	4	18	ND
63	8	2	16	ND
64	22	2	18	ND
65	42	2	26	ND
66	16	2	12	ND
67	12	ND	11	ND
68	6	2	10	ND
71	6	2	13	ND
72	8	4	9	ND
73	6	2	9	ND
74	6	6	10	ND
75	6	2	20	ND
76	8	10	16	ND
77	10	4	17	ND
78	8	10	21	ND
79	10	2	27	ND
80	14	8	22	ND
81	38	10	17	ND
82	18	4	10	ND

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER

BELL - WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY. ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B352-81 Page 3 of 4 DATE: October 28, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: October 1981

SAMPLE(S) FROM: Northgate Exploration Limited

Sample No.	Copper ppm	Lead ppm	Zinc ppm	Arsenic ppm
AVE 83	6	6	10	ND
84	8	4	11	ND
85	10	2	16	ND
86	18	2	17	ND
88	6	6	14	ND
89	8	ND	10	ND
90	4	2	13	ND
91	4	2	16	
92	4	ND	12	
94	8	2	8	
95	8	4	20	
96	18	4	23	
97	56	2	30	
98	46	4	20	
99	56	4	19	
100	4	ND	7	
101	6	2	12	
102	8	6	22	
103	8	4	20	
104	6	2	6	
107	6	4	21	
108	10	2	22	
108A	8	ND	11	
108B	10	2	7	
109	8	ND	15	
110	14	ND	16	
111	14	ND	14	
112	38	6	20	
~~113~~ (1)	8	2	10	
113 (2)	10	ND	8	
115	8	2	18	
116	38	ND	17	
117	8	2	12	
119	6	ND	10	
120	4	4	7	
121	8	2	9	

BELL-WHITE ANALYTICAL LABORATORIES LTD.

Per

BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B352-81 Page 4 of 4 DATE: October 28, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: October 1981

SAMPLE(S) FROM: Northgate Exploration Limited

Sample No.	Copper ppm	Lead ppm	Zinc ppm	Arsenic ppm
AVE 122	4	2	6	
123	4	6	6	
126	12	4	18	
127	6	6	10	
128	2	4	4	
129	6	6	11	
130	8	4	24	
131	8	4	10	
132	8	4	11	
133	6	6	12	
134	8	4	24	
135	38	ND	15	
136	14	8	11	
137	10	8	22	
138	8	2	10	
139	4	4	7	
DEB 1	8	8	22	
3	28	6	37	
4	28	32	55	
5	12	10	24	
6	6	4	11	
7	6	6	8	
8	4	2	10	
9	16	8	18	
11	22	14	27	
12	20	6	16	
13	24	4	9	
14	8	8	9	

ND denotes not detected.

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P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. 49092 **DATE:** December 8, 1981

SAMPLE(S) OF: Rock(10) **RECEIVED:** November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited

Sample No.	Oz. Gold	Oz. Silver	% Copper	% Lead	% Zinc	
748	Trace	Trace	0.014	0.008	0.033	
749	Trace	0.03	0.033	0.005	0.016	
750	Trace	0.02	0.029	0.022	0.030	
751	Trace	Trace	0.017	0.008	0.022	
752	Trace	Trace	0.020	0.006	0.035	
753	Trace	Trace	0.091	0.007	0.139	AVE-GRID T-5
754	Trace	Trace	0.020	0.013	0.015	
755	Trace	Trace	0.010	0.008	0.011	
756	Trace	Trace	0.024	0.006	0.004	
757	0.002 *	Trace	0.011	0.013	0.015	

* Estimated.

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. 47252 DATE: December 1, 1981

SAMPLE(S) OF: Rock(13) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited

Samp.No.	Oz. Gold	Oz. Silver	% Copper	% Lead	% Zinc
728	Trace	0.03	0.005	0.004	1.01
729	Trace	0.02	0.012	0.006	0.009
730	Trace	0.03	0.065	0.006	0.168
731	Trace	0.02	0.021	0.001	0.012
732	Trace	0.02	0.021	0.004	0.020
733	Trace	Trace	0.055	0.001	0.054
734	Trace	0.02	0.046	0.004	0.104
735	Trace	0.02	0.014	0.002	0.014
736	Trace	0.03	0.130	0.006	0.103
737	Trace	Trace	0.110	0.007	0.591
738	Trace	Trace	0.012	0.002	0.056
739	Trace	Trace	0.014	0.003	0.020
740	Trace	Trace	0.066	0.005	0.152

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. 44393 DATE: November 18, 1981

SAMPLE(S) OF: Rock(23) RECEIVED: November 1981

SAMPLE(S) FROM: Northgate Explorations Limited

Sample No.	Oz. Gold	Oz. Silver
712	Trace	0.02
3	Trace	0.13 *
4	Trace	Trace
5	Trace	0.12 *
6	Trace	0.29 *
7	Trace	0.03 *
8	Trace	0.04
9	0.005	0.05
720	Trace	Trace
1	Trace	Trace
2	Trace	Trace
3	Trace	0.02
4	Trace	0.02
5	Trace	Trace
6	Trace	Trace
7	Trace	Trace
741	Trace	Trace
2	Trace	Trace
3	Trace	Trace
4	Trace	Trace
5	Trace	Trace
6	Trace	Trace
7	Trace	Trace

* Checked.

RECEIVED NOV 19 1981

Note: Copper, Lead and Zinc to follow.

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. 47253 **DATE:** December 1, 1981

SAMPLE(S) OF: Rock(23) **RECEIVED:** November 1981

SAMPLE(S) FROM: Northgate Explorations Limited

Sample No.	% Copper	% Lead	% Zinc
712	0.025	0.080	0.054
713	0.064	0.530	0.760
714	0.020	0.062	0.096
715	0.098	0.290	0.306
716	0.059	0.330	0.615
717	0.008	0.009	0.012
718	0.022	0.007	0.084
719	0.021	0.004	0.111
720	0.026	0.003	0.017
721	0.051	0.006	0.486
722	0.006	0.002	0.012
723	0.009	0.005	0.020
724	0.037	0.005	0.066
725	0.002	0.003	0.007
726	0.023	0.004	0.012
727	0.014	0.002	0.012
741	0.005	0.003	0.013
742	0.007	0.001	0.012
743	0.005	0.021	0.019
744	0.038	0.006	0.042
745	0.010	0.001	0.023
746	0.014	ND	0.063
747	0.005	ND	0.014

Note: ND denotes not detected.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER

BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B395-81 Page 1 of 4 DATE: December 9, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
WES 1	4	6	10
2	4	6	9
3	2	ND	10
4	4	4	11
5	4	ND	11
6	2	2	20
7	4	ND	13
8	6	4	10
9	6	ND	19
10	4	ND	14
11	4	ND	16
13	4	2	8
14	2	2	9
15	4	10	13
16	2	2	9
17	2	ND	20
18	2	ND	11
19	2	ND	12
20	4	ND	17
21	2	ND	10
22	2	ND	7
23	2	2	9
24	2	2	8
25	4	4	10
26	6	ND	12
27	4	4	8
28	2	2	8
29	2	ND	5
30	2	4	7
31	2	ND	11
33	2	2	13
34	2	2	13
35	2	2	18
36	4	ND	11

RECEIVED DEC 10 1981

Cont'd...

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER

BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B395-81 Page 2 of 4 DATE: December 9, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
WES 37	2	ND	21
38	6	ND	21
39	2	2	19
40	4	4	11
41	4	ND	12
42	8	8	19
43	4	2	12
48	4	6	14
49	2	2	9
50	4	2	9
51	4	4	8
52	2	6	9
53	4	2	11
54	2	4	7
55	2	4	8
56	2	2	8
57	2	ND	7
58	4	ND	9
59	2	2	7
60	4	2	22
62	50	ND	206
63	10	2	46
64	4	ND	21
65	4	ND	12
66	6	ND	12
69	4	ND	10
70	4	ND	9
71	2	ND	11
72	2	ND	10
73	2	2	10
74	2	2	10
75	2	ND	9
76	2	ND	7
77	4	ND	9

Cont'd...

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B395-81 Page 3 of 4 DATE: December 9, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
WES 78	2	6	8
79	2	ND	4
80	4	2	12
81	2	2	7
82	2	ND	12
83	2	ND	6
84	4	ND	9
85	2	ND	9
86	2	ND	9
87	2	ND	9
88	4	ND	10
91	6	ND	13
95	2	2	7
96	2	37	7
97	2	44	7
98	2	39	10
99	5	28	11
100	4	16	7
101	2	20	9
102	2	16	11
103	4	22	9
104	2	14	14
PAS 1	6	18	16
2	8	10	19
3	6	40	17
4	8	14	21
5	10	20	41
6	6	12	19
7	6	12	22
8	62	12	43
9	68	12	41
10	9	14	20
11	28	28	25
12	7	21	17

Cont'd...

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B395-81 Page 4 of 4 DATE: December 9, 1981

SAMPLE(S) OF: Soils(135) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
PAS 13	5	46	20
14	12	5	15
15	5	18	10
16	9	23	32
17	9	9	18
18	16	14	21
19	7	21	20
20	9	12	26
21	48	14	22
22	99	28	51
23	12	9	16
24	69	14	26
25	7	12	14
26	14	23	20
27	16	16	21
28	12	7	27
29	25	32	37
30	16	12	22
31	18	18	42
32	5	12	9
33	14	12	22
34	30	27	37
35	35	21	55
36	28	16	69
37	41	9	66
38	9	2	33
39	87	2	69
40	7	ND	22
41	9	9	20
42	12	18	31
43	18	7	20
44	60	9	39
45	7	7	20

ND denotes not detected.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

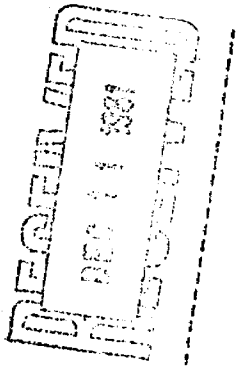
NO. B397-81 Page 1 of 4 DATE: December 9, 1981

SAMPLE(S) OF: Soils(138) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
PAS 46	7	5	31
47	21	5	32
48	7	12	27
49	12	16	41
50	8	12	16
51	6	8	12
52	2	6	8
53	14	30	31
54	36	14	31
55	56	54	18
56	10	8	19
57	12	8	21
58	16	14	20
59	24	10	21
60	16	8	19
61	58	14	29
62	30	10	20
63	6	8	32
64	2	16	41
65	158	46	44
66	50	6	42
67	14	6	16
68	50	12	18
69	14	14	23
70	8	10	11
71	6	16	10
72	52	6	9
73	260	8	62
74	280	18	27
75	24	12	15
76	22	18	16
77	10	10	14
78	8	8	15
79	6	8	13
80	22	28	30

Cont'd...



IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B397-81 DATE: December 9, 1981

SAMPLE(S) OF: Soils(138) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
PAS 81	20	10	11
82	10	8	14
83	8	8	10
84	4	10	10
85	12	12	18
86	14	16	11
87	16	12	13
88	10	10	17
89	80	14	28
90	48	4	29
91	16	6	17
92	10	2	10
93	18	8	18
94	146	12	27
95	70	10	26
96	900	36	41
97	86	10	22
98	16	2	15
99	16	2	15
100	6	4	8
101	8	14	15
102	6	4	15
103	6	12	13
104	8	6	13
106	6	12	12
107	6	4	8
108	6	8	11
109	6	2	14
110	10	6	10
111	6	2	8
114	12	2	9
115	8	4	15
116	24	8	35
117	20	ND	14
118	54	4	22
119	98	ND	23

Cont'd...

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

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BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B397-81 Page 3 of 4 DATE: December 9, 1981

SAMPLE(S) OF: Soils(138) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.

Sample No.	Copper ppm	Lead ppm	Zinc ppm
AVE 141	8	8	14
142	6	6	16
143	6	4	13
144	6	2	12
145	6	2	11
146	6	4	13
147	6	8	10
150	8	8	9
151	6	ND	11
152	18	6	11
153	18	6	12
154	4	4	11
155	14	10	13
156	10	4	9
157	26	2	13
158	6	6	12
159	6	4	20
160	10	6	12
161	2	ND	5
162	2	2	7
163	6	6	13
165	12	ND	12
166	10	8	14
167	4	ND	13
168	4	4	19
169	8	4	9
170	6	4	20
171	10	6	15
172	12	4	21
173	4	2	9
174	18	ND	12
175	12	ND	18
176	16	ND	15
177	4	ND	7
DEB 15	8	6	12
16	12	6	21

Cont'd...

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

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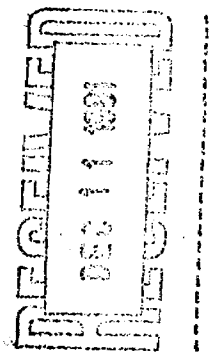
BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B397-81 DATE: December 9, 1981

SAMPLE(S) OF: Soils(138) RECEIVED: November 1981

SAMPLE(S) FROM: Mr. S. Conquer, Northgate Exploration Limited.



Sample No.	Copper ppm	Lead ppm	Zinc ppm
DEB 18	12	20	33
19	6	10	12
20	6	8	5
21	20	6	11
22	4	ND	4
23	4	4	4
27	6	2	9
28	16	6	14
29	2	ND	6
30	4	ND	6
31	24	4	11
32	22	28	29
33	6	14	5
34	4	6	6
35	8	10	15
36	2	ND	7
37	6	18	6
38	6	32	13
39	6	30	9
41	14	12	11
42	10	4	17
43	10	ND	10
44	114	50	260
45	36	18	37
46	6	8	7
47	14	12	17
49	48	8	42
50	2	2	5
51	8	2	8
53	6	4	5
54	4	6	5

Note: ND denotes not detected.

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

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PER

File_____

Ontario

Ministry of Natural Resources

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) MAGNETOMETER

Township or Area PRICE, FRIPP, MCARTHUR

Claim Holder(s) NORTHGATE EXPLORATION LIMITED

Survey Company NORTHGATE EXPLORATION LIMITED

Author of Report G. HARPER, Ph.D.

Address of Author 26 ORCHARD CRESCENT, ETOBICOKE, ONTARIO

Covering Dates of Survey SEPT./81 - APRIL/82 (linecutting to office)

Total Miles of Line Cut 94.8

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	
–Magnetometer	40
–Radiometric	
–Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer_____ Electromagnetic_____ Radiometric_____
(enter days per claim)

DATE: 29th April 1982 SIGNATURE: _____
Author of Report or Agent

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

Res. Geol._____ Qualifications_____

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

If space insufficient, attach list

See Attached Claim Sheets

(prefix) (number)

TOTAL CLAIMS_____

837 (5/79)

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations 5016 Number of Readings _____

Station interval 100 feet Line spacing 400 feet

Profile scale _____

Contour interval 200 gammas and 1,000 gammas

MAGNETIC

Instrument SCINTREX MP-2 (Appendix II)

Accuracy – Scale constant ± 1 gamma

Diurnal correction method BASE STATION RECORDER MPS-2 (Appendix II)

Base Station check-in interval (hours) _____

Base Station location and value _____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

Base station value and location _____

Elevation accuracy _____

INDUCED POLARIZATION

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

TABLE 1

Claims Bordin Property: Price, Fripp and McArthur Townships

Price Township

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-591040	Dennis Bordin	X	June 6, 1982
P-591041	" "	X	" " "
P-591155	" "	X	" " "
P-591156	" "	X	" " "
P-591594	" "	X	June 7, 1982
P-591595	" "	X	" " "
P-591596	" "	X	June 6, 1982

Sub-total 7 claims

Fripp Township

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-618161	Dennis Bordin	X	May 2, 1982
P-618162	" "	X	" " "
P-618163	" "	X	" " "
P-618164	" "	X	" " "
P-618165	" "	X	" " "
P-618166	" "	X	" " "
P-618167	" "	X	May 3, 1982
P-618168	" "	X	" " "
P-618169	" "	X	" " "
P-619315	" "	X	May 19, 1982
P-619316	" "	X	" " "
P-618985	" "	X	May 9, 1982
P-618986	" "	X	" " "
P-618987	" "	X	" " "
P-618988	" "	X	" " "
P-618989	" "	X	" " "
P-618990	" "	X	" " "
P-618991	" "	X	May 6, 1982
P-618992	" "	X	" " "
P-618993	" "	X	" " "
P-618994	" "	X	May 7, 1982
P-618995	" "	X	" " "
P-618996	" "	X	" " "
P-618997	" "	X	May 8, 1982
P-618998	" "	X	" " "
P-618999	" "	X	" " "
P-591027	" "	X	May 26, 1982
P-591028	" "	X	" " "
P-591029	" "	X	" " "
P-591030	" "	X	" " "
P-591031	" "	X	May 27, 1982
P-591032	" "	X	" " "
P-591033	" "	X	" " "
P-591034	" "	X	May 28, 1982
P-591035	" "	X	May 29, 1982
P-591036	" "	X	" " "

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-591037	Dennis Bordin	X	May 28, 1982
P-591038	" "	X	May 29, 1982
P-591039	" "	X	" " "
P-591147	" "	X	May 31, 1982
P-591148	" "	X	" " "
P-591149	" "	X	" " "
P-591150	" "	X	" " "
P-591151	" "	X	" " "
P-591152	" "	X	" " "
P-591153	" "	X	" " "
P-591926	" "	X	June 11, 1982
P-591927	" "	X	" " "
P-591928	" "	X	" " "
P-591929	" "	X	" " "
P-591930	" "	X	June 13, 1982
P-591931	" "	X	" " "
P-591932	" "	X	" " "
P-591936	" "	X	" " "
P-393149	" "	X	June 27, 1982
P-393150	" "	X	" " "
P-393151	" "	X	" " "
P-393152	" "	X	" " "

Sub-total 58 claims

McArthur Township

Claim Number	Recorder	Transferred To NGX	Anniversary Date
P-619317	Dennis Bordin	X	May 19, 1982
P-619318	" "	X	" " "
P-591933	" "	X	June 13, 1982
P-591934	" "	X	" " "
P-591935	" "	X	" " "
P-591937	" "	X	June 14, 1982
P-591938	" "	X	" " "
P-591939	" "	X	" " "
P-591940	" "	X	" " "

Sub-total 9 claims

Total 74 claims

TABLE 2

NORTHGATE CLAIMS: PRICE, FRIPP AND MCARTHUR TOWNSHIPS

PRICE TOWNSHIP

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624406	Gabriel Sutherland	X	August 23, 1982
P-624407	"	X	"
P-624408	"	X	"
P-624409	"	X	August 24, 1982
P-624410	"	X	"
P-624411	"	X	"

SUB TOTAL : 6 CLAIMS

FRIPP TOWNSHIP

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624154	Nolan Boa	X	August 16, 1982
P-624155	"	X	"
P-624281	Richard McAllister	X	"
P-624282	"	X	"
P-624823	"	X	"
P-624284	"	X	"
P-624285	"	X	"
P-624286	"	X	August 17, 1982
P-624287	"	X	"
P-624288	"	X	"
P-624289	"	X	"
P-624290	"	X	August 18, 1982
P-624291	"	X	"
P-624292	"	X	"

14

MCARTHUR TOWNSHIP

Claim Number	Recorder	Transferred to NGX	Anniversary Date
P-624156	Nolan Boa	X	August 16, 1982
P-624157	"	X	"
P-624158	"	X	August 17, 1982
P-624159	"	X	"
P-624160	"	X	"
P-624161	"	X	"
P-624612	"	X	"
P-624163	"	X	August 18, 1982
P-624164	"	X	"
P-624165	"	X	"
P-624166	"	X	"
P-624167	"	X	"
P-624168	"	X	"
P-624169	"	X	August 20, 1982
P-628038	Henry Gonzalez	X	September 21, 1982
P-628039	"	X	"

SUB TOTAL: 16 CLAIMS

TOTAL : 36 ~~75~~ CLAIMS

2.4766

	Geol.	Mag.	E.M.	Geoch.
P-591928	✓	✓	✓	✓
591933	0	0	0	0
618163	✓	✓	✓	✓
618165	✓	✓	✓	✓
619317	✓	NO MAPS	NO MAPS	✓
619318	✓	NO MAPS	NO MAPS	✓

Actual work was done on 5 claims.
(3 claims for Mag + E.M)

Geol. linecutting

32 Tech days x 7 = 224 + 5 = 229 ÷ 5 = 45.8 = (46) days per claim

Geochem

32.5 x 7 = [illegible] ÷ 5 claims = (45.5) days per claim

D.K.

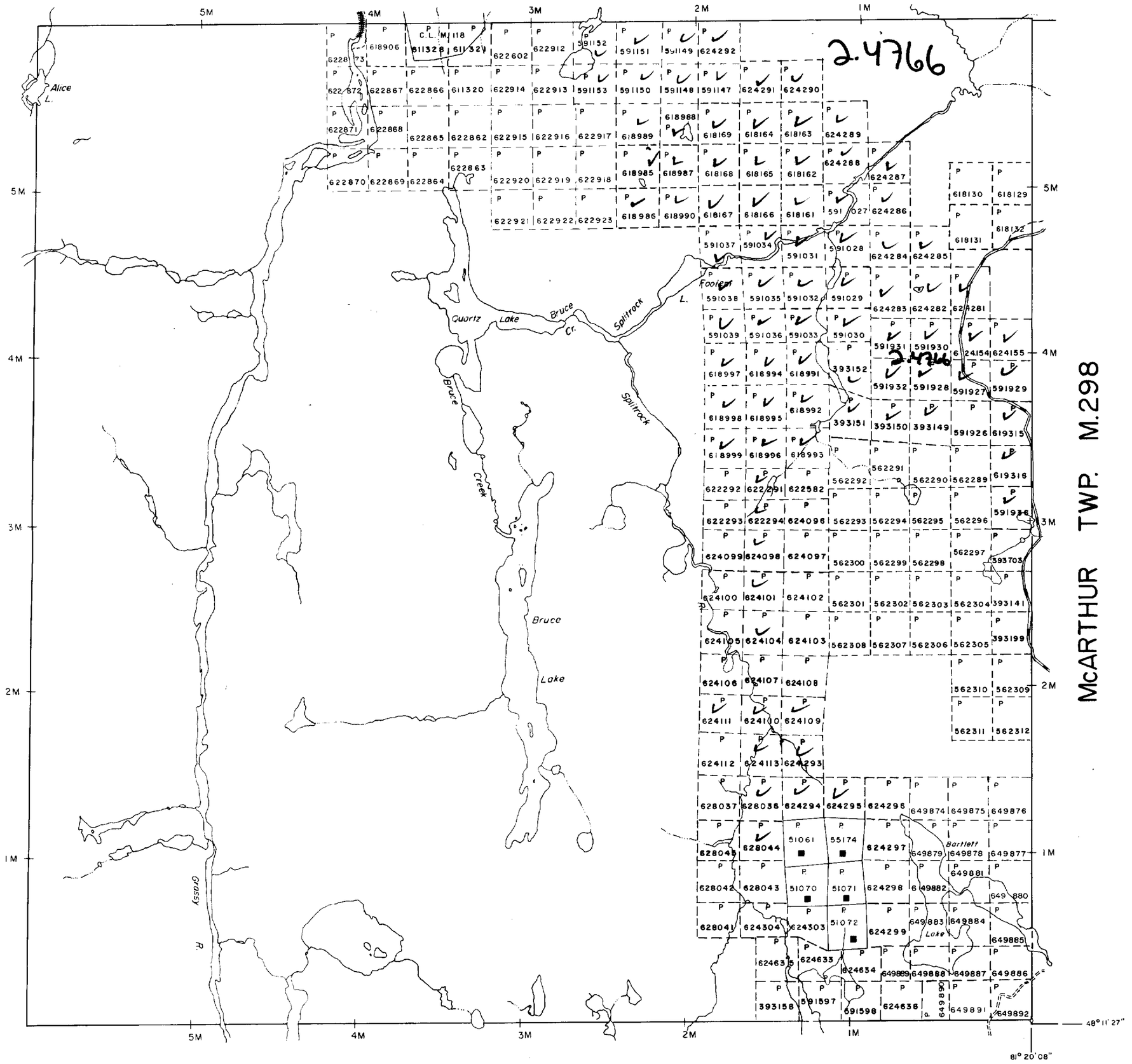
Mag + E.M.
16 x 7 = 112 ÷ 3 claims = 37.3 or (19) (18.6) days/claim for Mag + E.M.

PRICE TWP. M.307

McKEOWN TWP. M.299

TWP. M.298 McARTHUR

MUSGROVE TWP. M.304



THE TOWNSHIP OF

FRIPP

DISTRICT OF TIMISKAMING

PORCUPINE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

DISPOSITION OF CROWN LANDS

PATENT, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LEASE, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LICENCE OF OCCUPATION

ROADS
IMPROVED ROADS
KING'S HIGHWAYS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
CANCELLED C.

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

Areas withdrawn from staking under Section 43 of the Mining Act (R.S.O. 1970.)

Order Nº	File	Date	Disposition

DATE OF ISSUE
DEC 20 1982
Ministry of Natural Resources
TORONTO

PLAN NO. M. 281

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

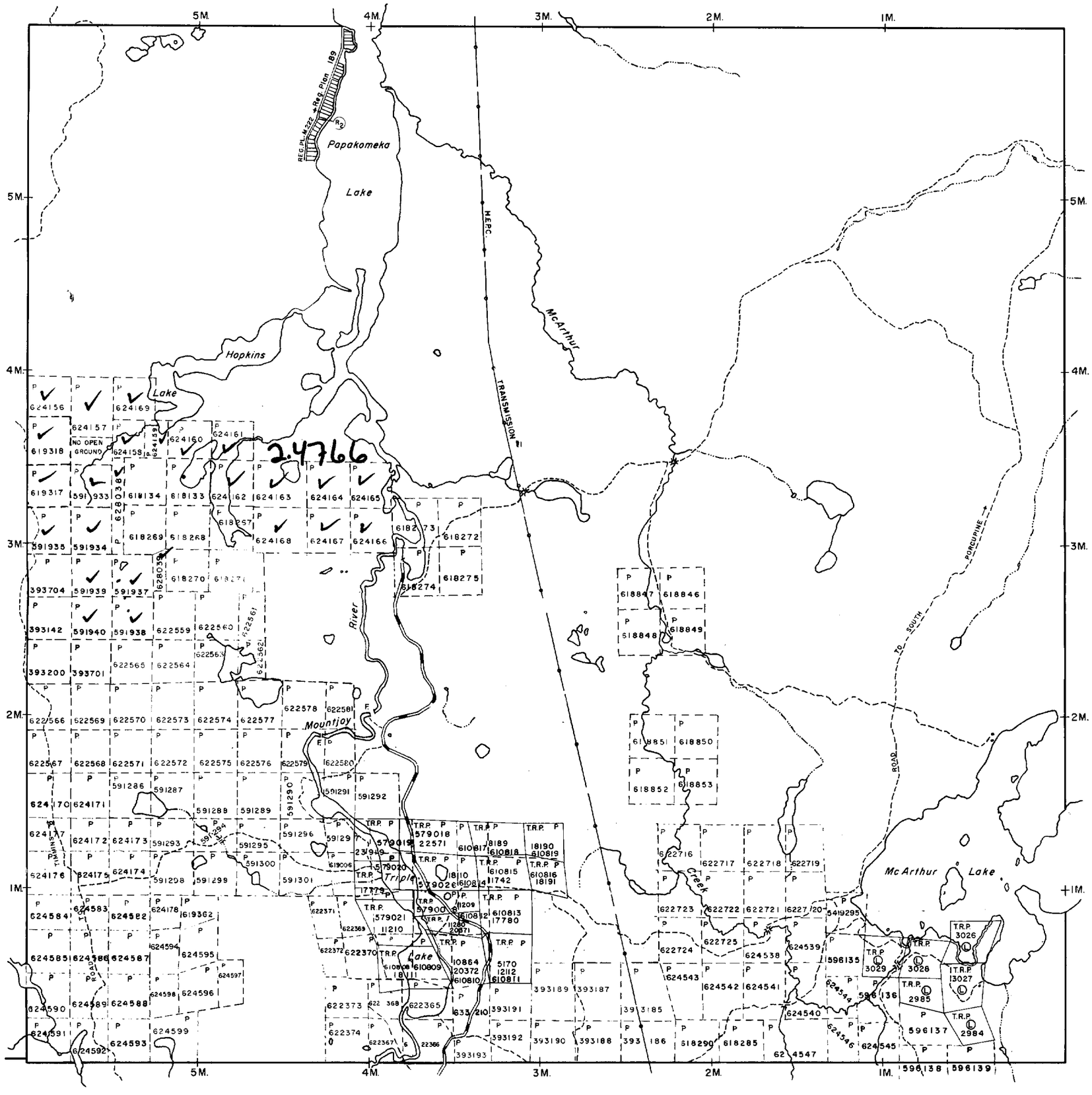
42A06SW0085 2.4766 FRIPP

Adams Twp. – M.261

Fripp Twp. – M.281

Douglas Twp. – M.274

Bartlett Twp. – M.262



THE TOWNSHIP OF

McARTHUR

DISTRICT OF **TIMISKAMING**

PORCUPINE MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	C.S.
LEASES	(L)
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C.

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

RESERVATIONS:

(R1) — Reserved for recreational purposes under Sec.3 P.L.A. File 188543.

(R2) PUBLIC ACCESS POINT — S.R.O. RES. , FILE 164584, vol.2

PLAN NO.- **M.298**

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

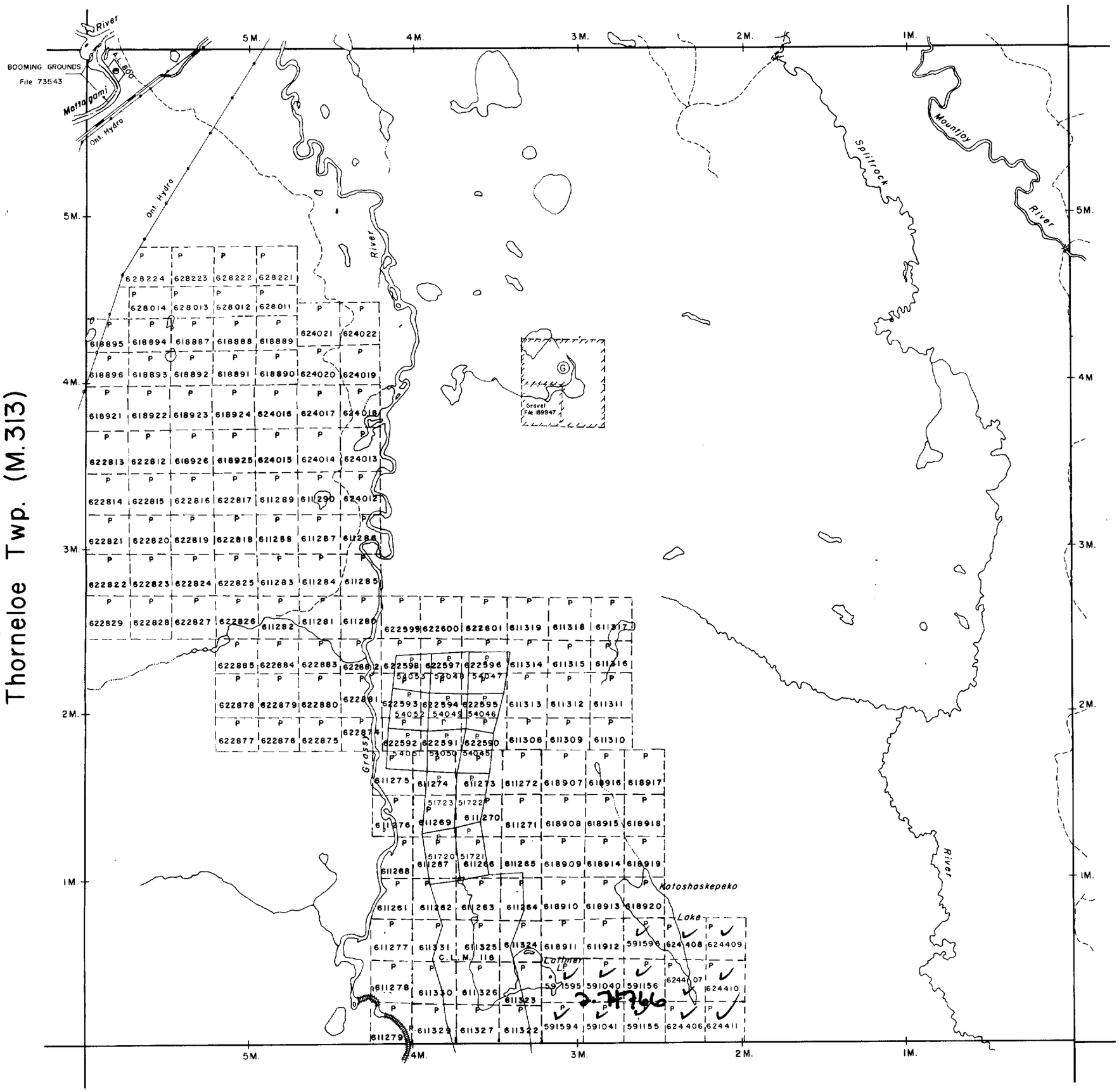
Bob

Ogden Twp. (M.305)

Thorneloe Twp. (M.313)

Adams Twp. (M.261)

Fripp Twp. (M.281)



THE TOWNSHIP OF

PRICE

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

DISPOSITION OF CROWN LANDS

PATENT, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LEASE, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LICENCE OF OCCUPATION

ROADS
IMPROVED ROADS
KING'S HIGHWAYS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
CANCELLED C.

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

Areas withdrawn from staking under Section 43 of the Mining Act (R.S.O. 1970).

Order Nº | File | Date | Disposition

DATE OF ISSUE
DEC 20 1982
Ministry of Natural Resources
TORONTO

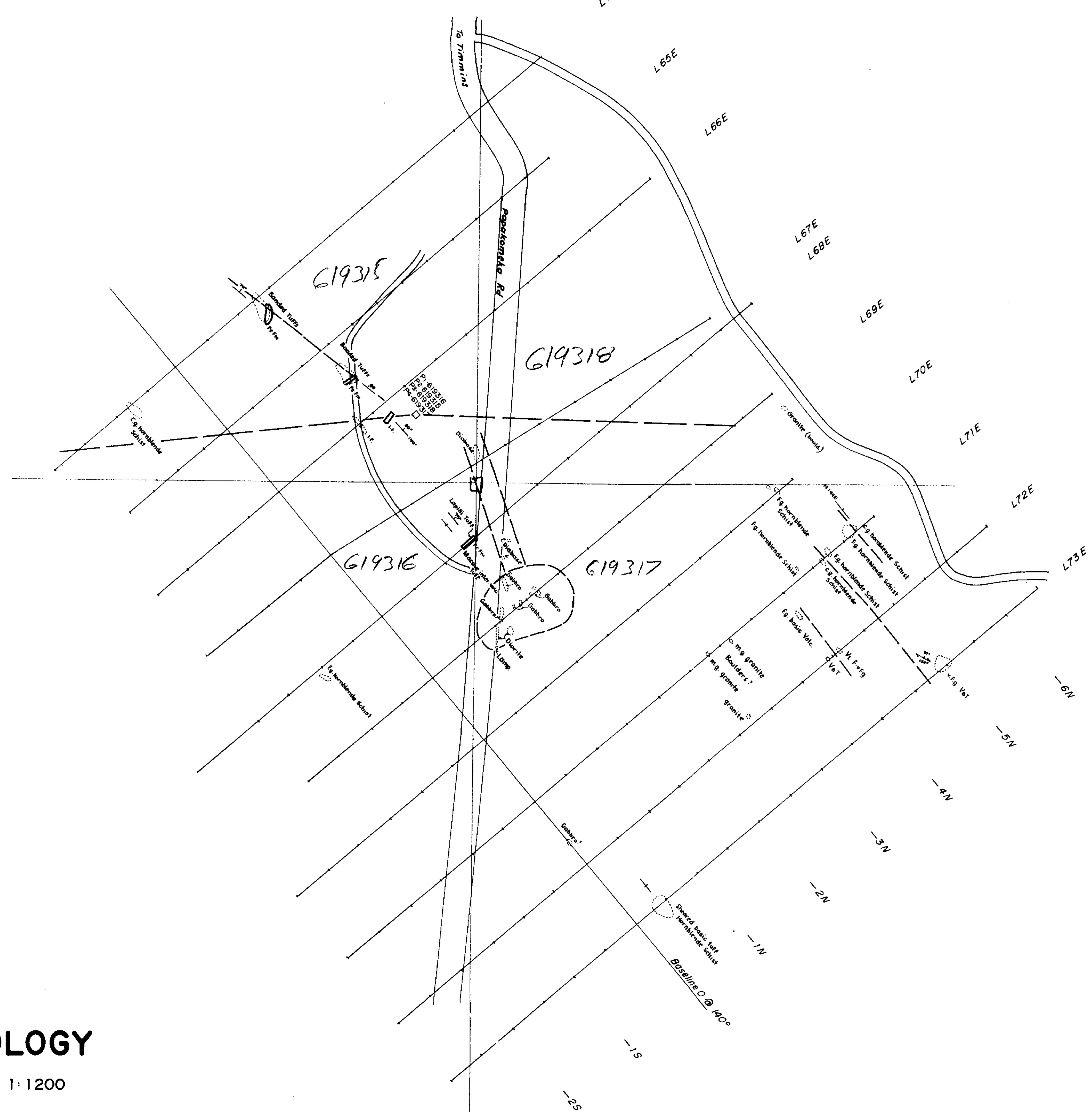
SAND AND GRAVEL

Ⓖ QUARRY PERMIT

This township lies within the Municipality of the CITY of TIMMINS.

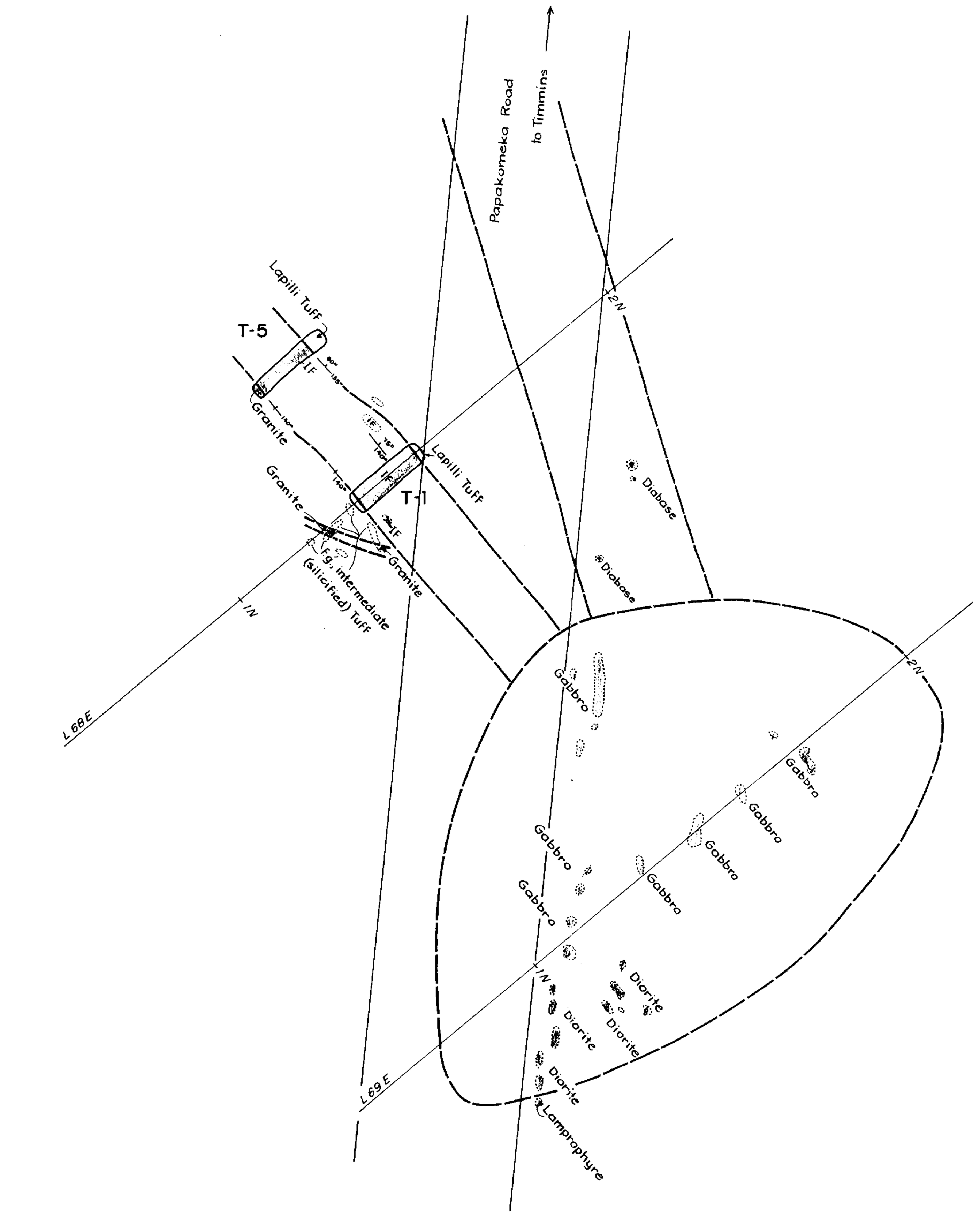
PLAN NO. M-307

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH



GEOLOGY

SCALE 1:1200

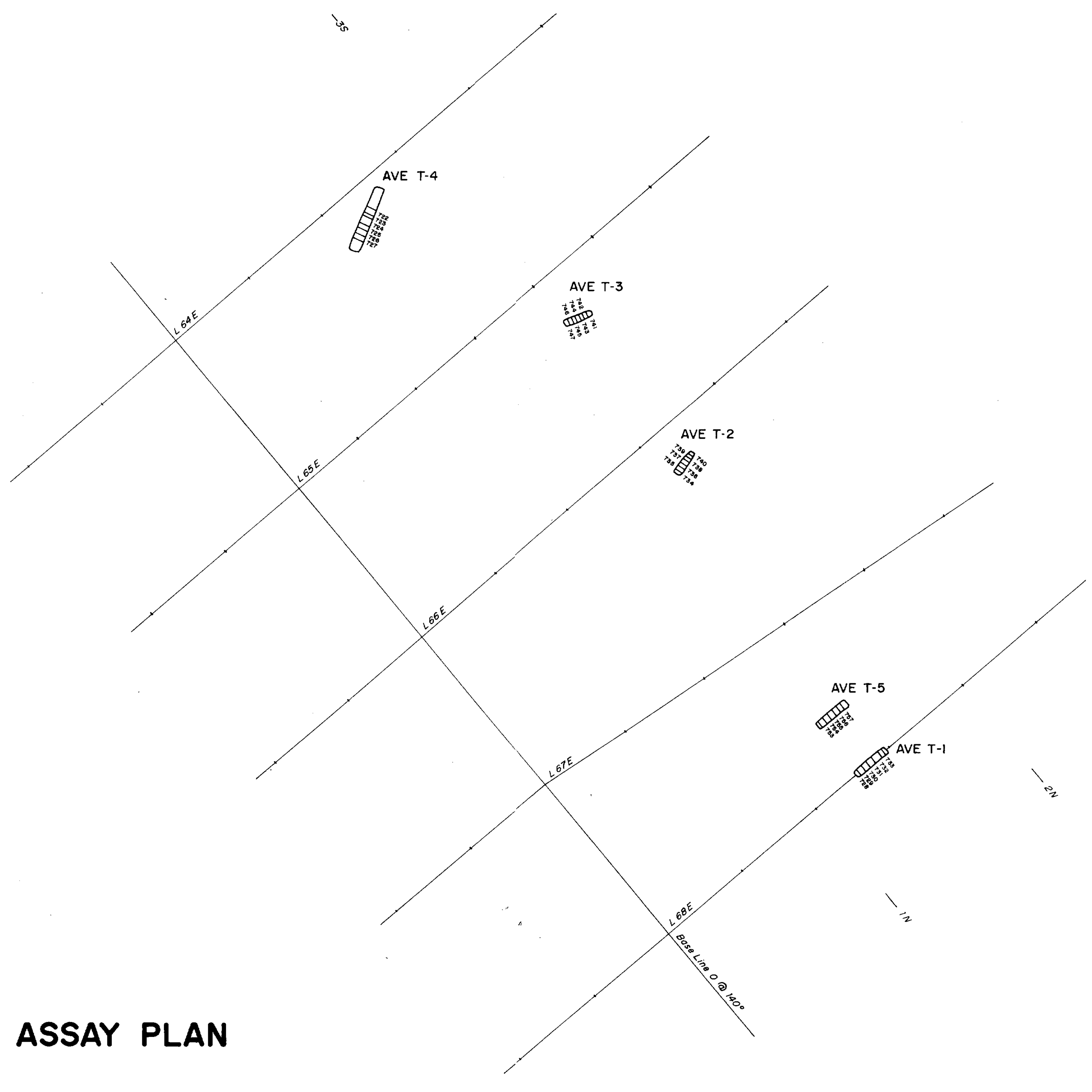


DETAILED MAPPING - STRIPPED AREA

SCALE 1:240

IF-Iron Formation-consists of lapilli tuff, cherty units and schist (hornblende) units

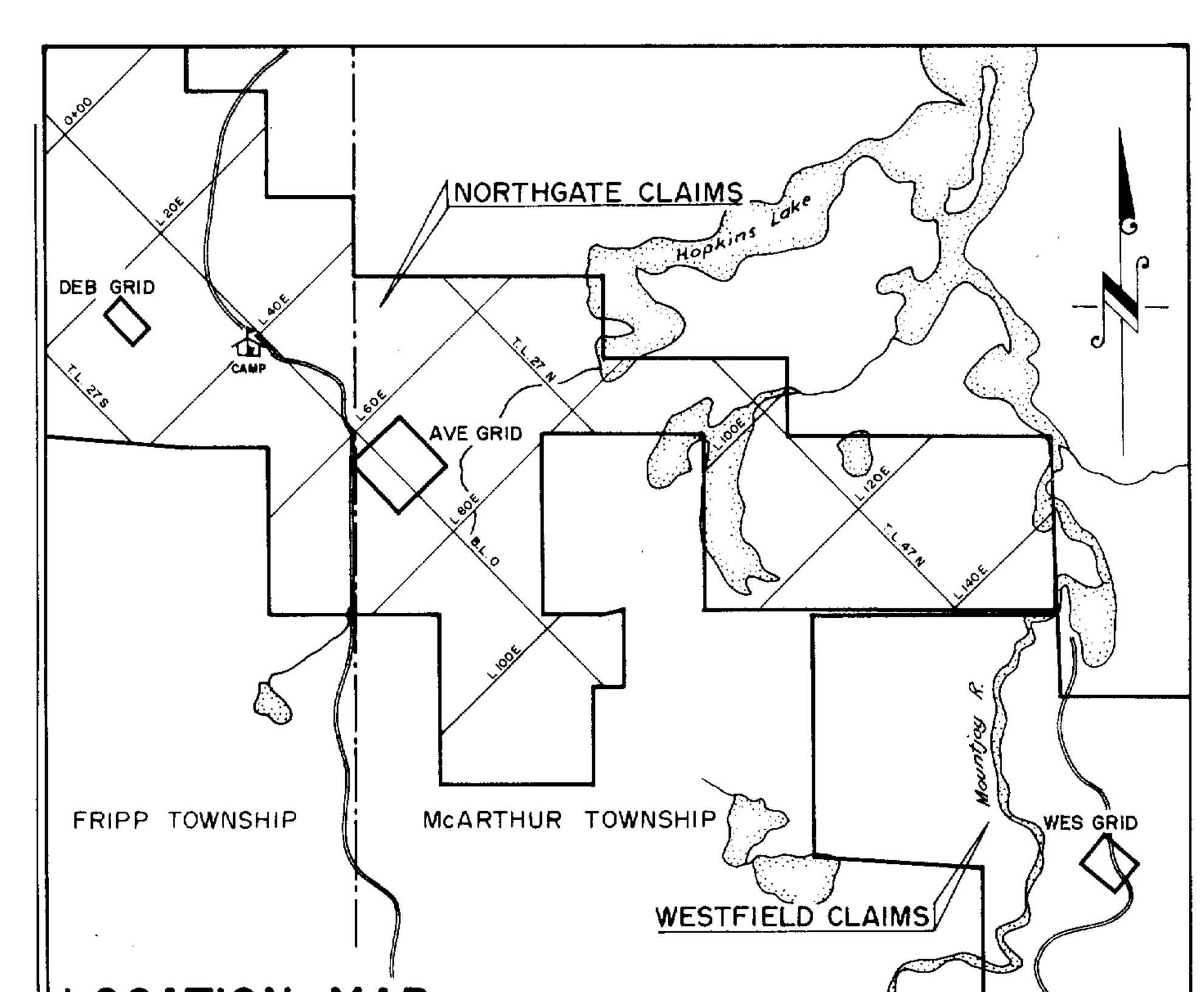
-Mineralization-disseminated and massive - py, po, cpy, sph



SAMPLE NUMBER	SAMPLE LENGTH	% Cu	% Pb	% Zn	OZ. Au	OZ. Ag
722	3'	0.006	0.002	0.012	Tr	Tr
723	2'	0.009	0.005	0.020	Tr	0.02
724	4'	0.037	0.005	0.066	Tr	0.02
725	2.5'	0.002	0.003	0.007	Tr	Tr
726	3'	0.023	0.004	0.012	Tr	Tr
727	3'	0.014	0.002	0.012	Tr	Tr
728	1.2'	0.005	0.004	1.010	Tr	0.03
729	2.5'	0.012	0.006	0.009	Tr	0.02
730	3'	0.065	0.006	0.168	Tr	0.03
731	3.2'	0.021	0.001	0.012	Tr	0.02
732	4.5'	0.021	0.004	0.020	Tr	0.02
733	2'	0.055	0.001	0.054	Tr	Tr
734	2'	0.046	0.004	0.104	Tr	0.02
735	2'	0.014	0.002	0.014	Tr	0.02
736	2'	0.130	0.006	0.103	Tr	0.03
737	2'	0.110	0.007	0.591	Tr	Tr
738	2'	0.012	0.002	0.056	Tr	Tr
739	2'	0.014	0.003	0.020	Tr	Tr
740	1.6'	0.066	0.005	0.152	Tr	Tr
741	3'	0.005	0.003	0.013	Tr	Tr
742	2'	0.007	0.001	0.012	Tr	Tr
743	2'	0.005	0.021	0.019	Tr	Tr
744	2'	0.038	0.006	0.042	Tr	Tr
745	2'	0.010	0.001	0.023	Tr	Tr
746	2'	0.014	ND	0.063	Tr	Tr
747	2.3'	0.005	ND	0.014	Tr	Tr
753	3'	0.091	0.007	0.139	Tr	Tr
754	3'	0.020	0.013	0.015	Tr	Tr
755	3'	0.010	0.008	0.011	Tr	Tr
756	3'	0.024	0.006	0.004	Tr	Tr
757	2'	0.011	0.013	0.015	0.002	Tr

TRENCH AND ASSAY PLAN

SCALE 1:480



LOCATION MAP Scale: 1 inch = 1/2 mile

Northgate Exploration Limited

N.T.S No.

FRIPP TOWNSHIP PROJECT - № 785

McARTHUR TWP, DISTR. OF TIMISKAMING, ONTARIO

AVE GRID

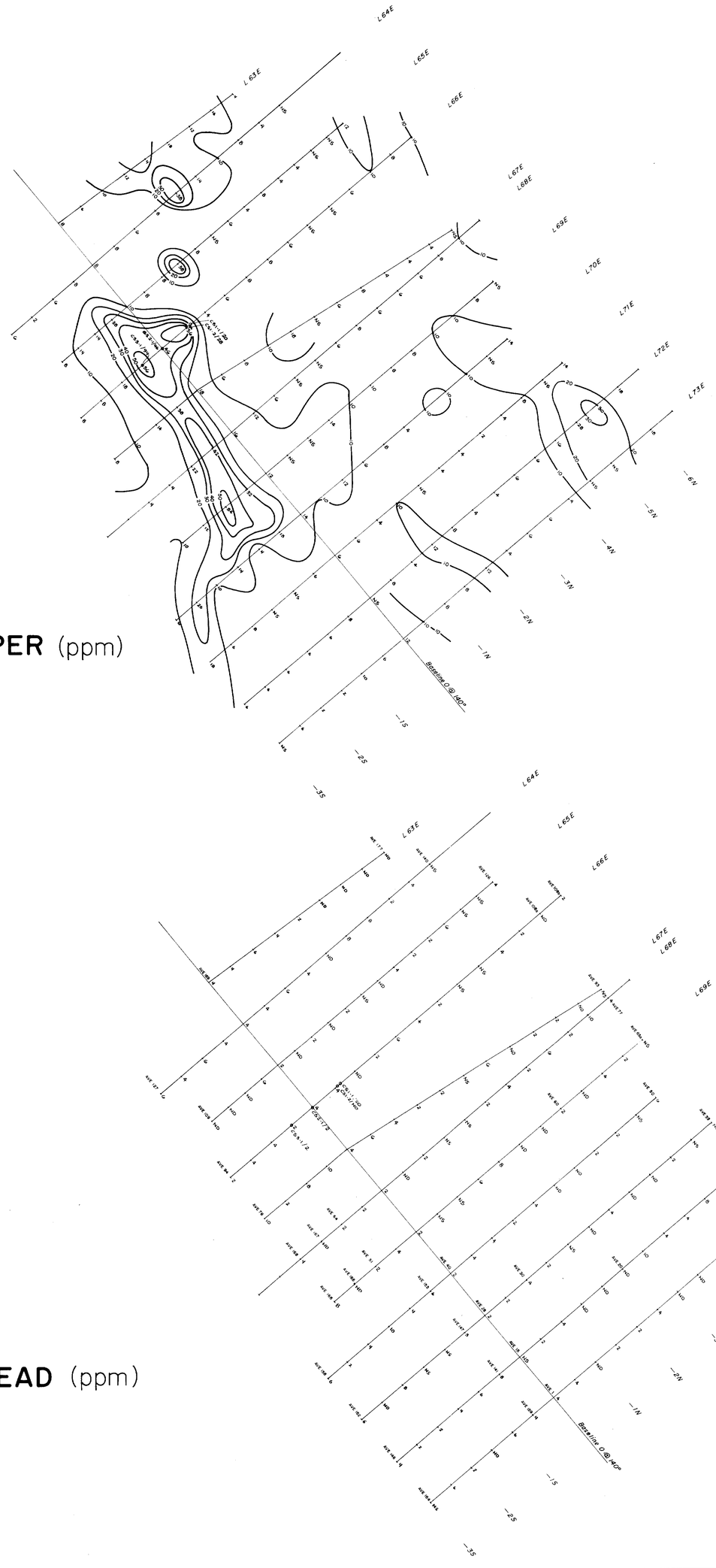
GEOLOGY, TRENCHES AND ASSAYS

Work by: P. Dodson, S. Conquer	Date: Oct. 1981	Proj. no: 785	Scale: As Shown
Drawn by: A.R. Gunther	Date: Dec., 1981	Rev. by:	Date:

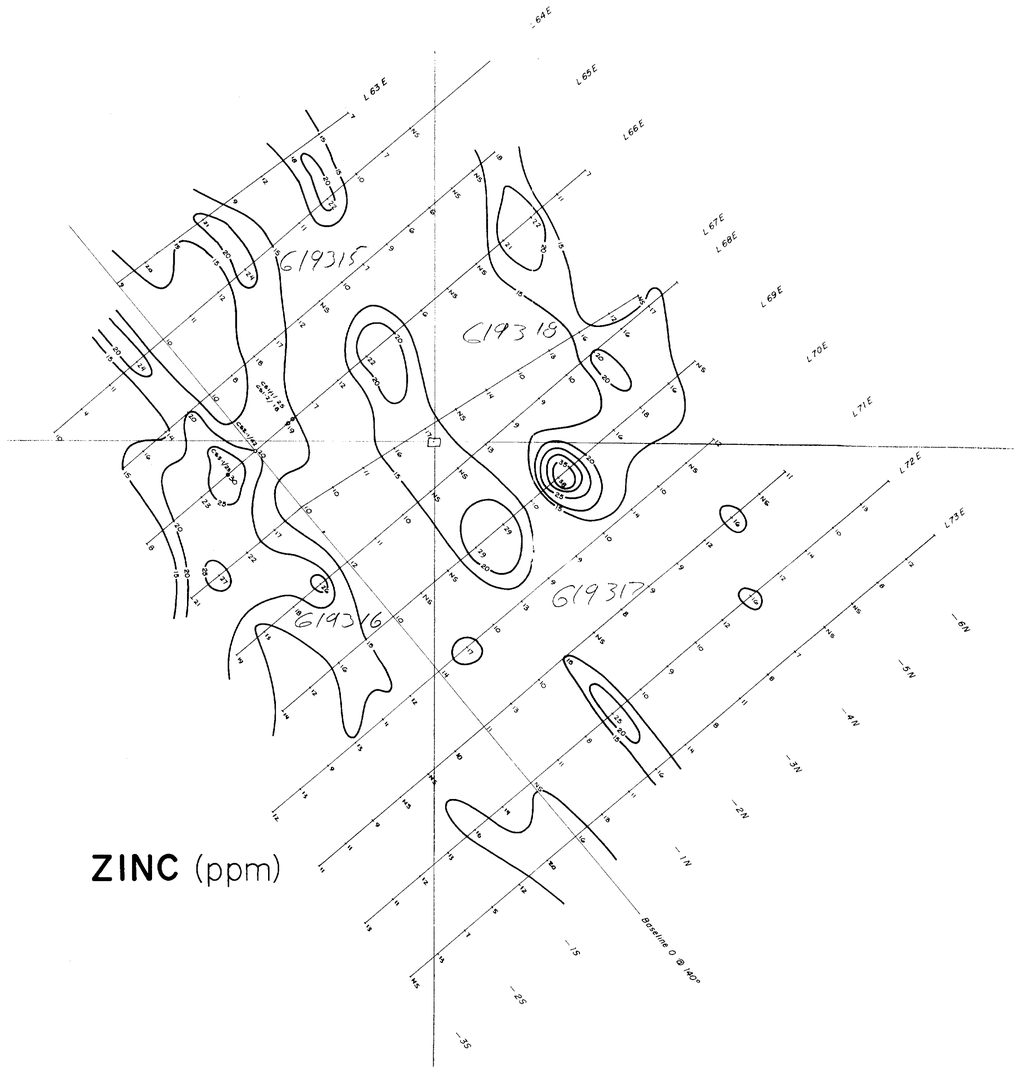
2.4766 dupl.

Figures 5, 11

230

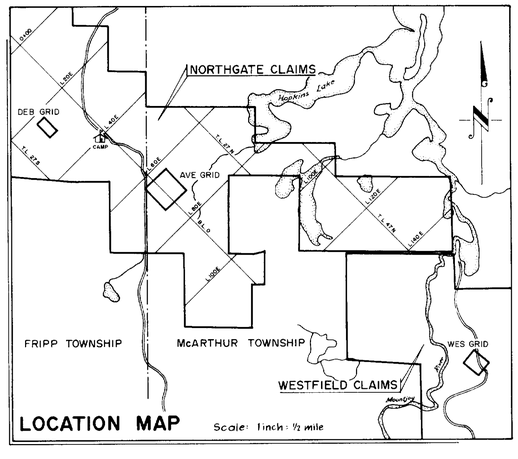


COPPER (ppm)



ZINC (ppm)

LEAD (ppm)



SCALE 1:1200

FEET 0 100 150 200 500 400

METERS 0 10 20 40 60 80 100 120

Northgate Exploration Limited

N.T.S

No.

FRIPP TOWNSHIP PROJECT - N9 785

McARTHUR TWP, DISTR. OF TIMISKAMING, ONTARIO

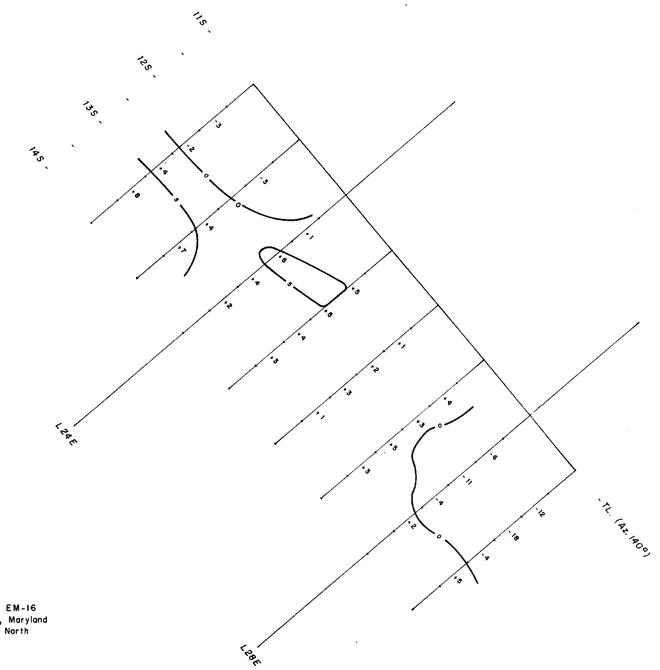
AVE GRID

SOIL SAMPLING

Work by: P. Dadson, S. Conquer	Date: Oct., 1981	Proj. no: 785	Scale: 1:1200
Drawn by: A.R. Gunther	Date: Dec., 1981	Rev. by:	Date:

Figures 8, 9, 10

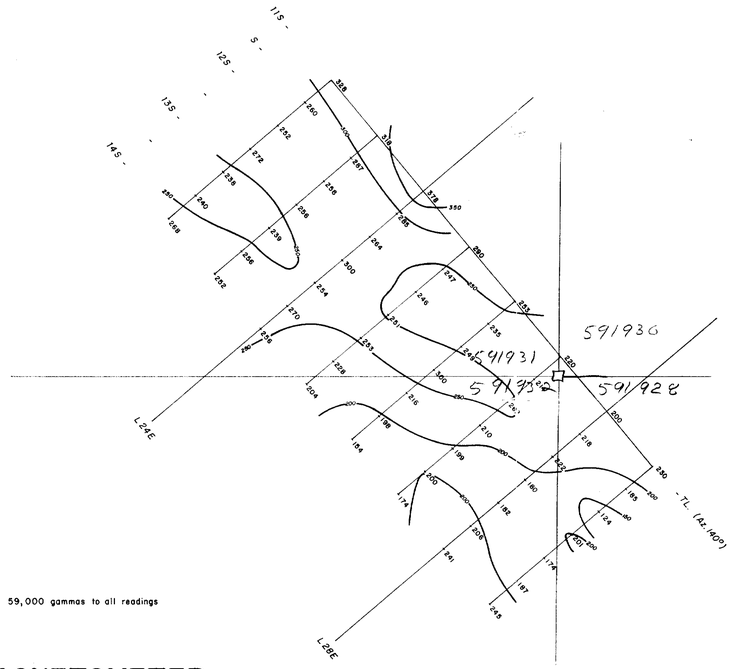
240



Note:

- Instrument: GEONICS EM-16
- Transmitter: Annapolis, Maryland
- Readings Taken Facing North

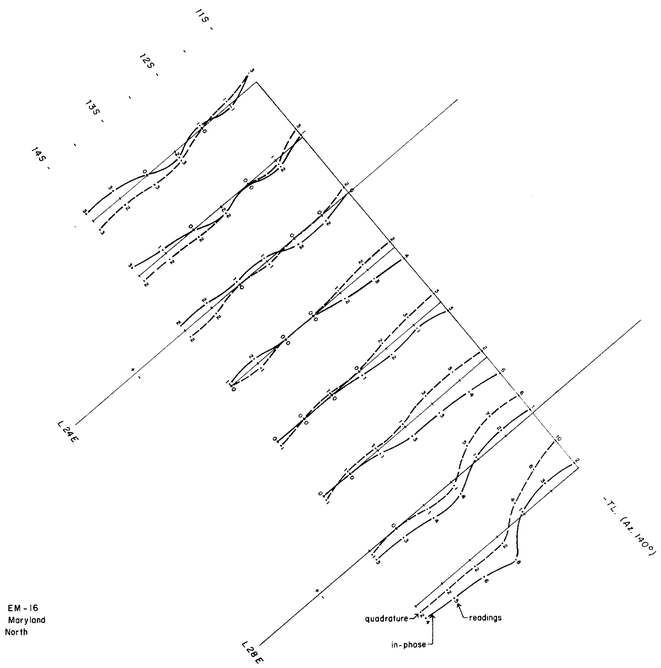
VLF-EM SURVEY
FRASER FILTER



Note:

- Add 59,000 gammas to all readings

MAGNETOMETER SURVEY

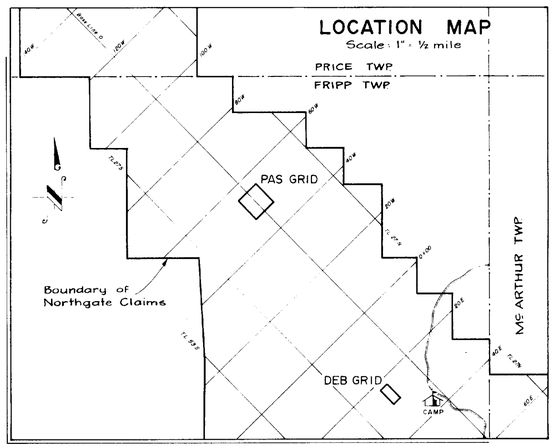


Note:

- Instrument: GEONICS EM-16
- Transmitter: Annapolis, Maryland
- Readings Taken Facing North

VLF-EM SURVEY

Scale: 1" = 100' 1" = 20%



Northgate Exploration Limited

N.T.S

No.

FRIPP TOWNSHIP PROJECT - NO. 785

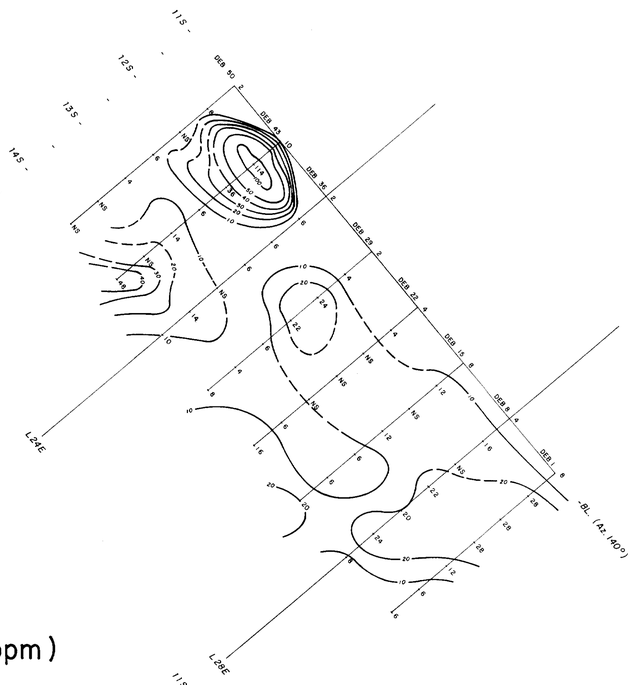
FRIPP TOWNSHIP - DISTRICT OF TIMISKAMING ONTARIO

DEB GRID

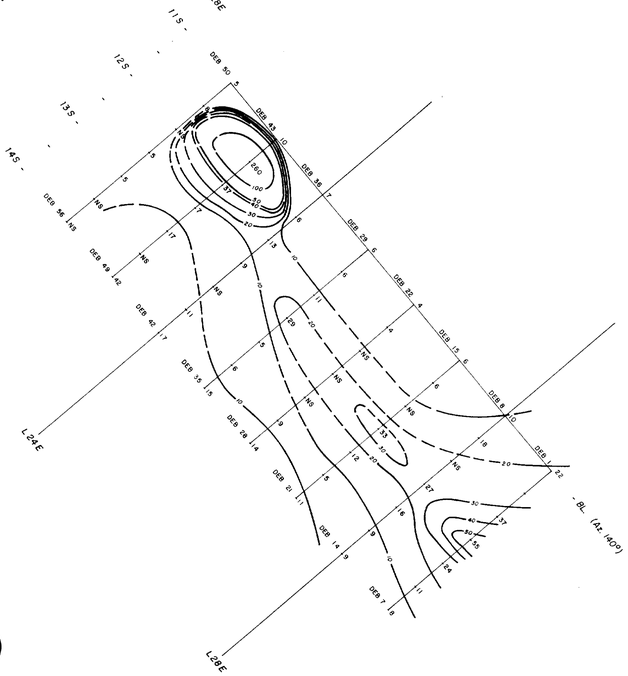
GEOPHYSICAL SURVEYS

Work by	P. Dodson S. Conquer	Date	Oct. 1980	Proj. no	785	Scale	1" = 100' 1:1200
Drawn by	Rodel Ortiz	Date	Jan. 1982	Rev. by		Date	

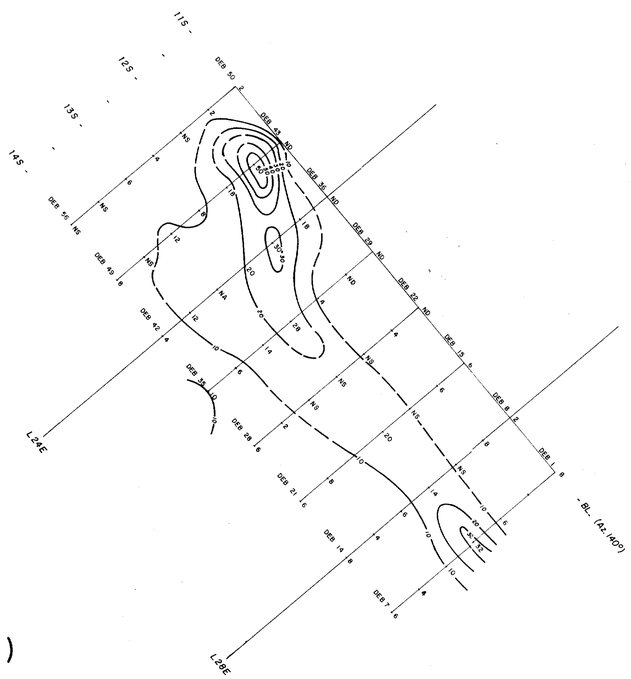
Figures 13, 14



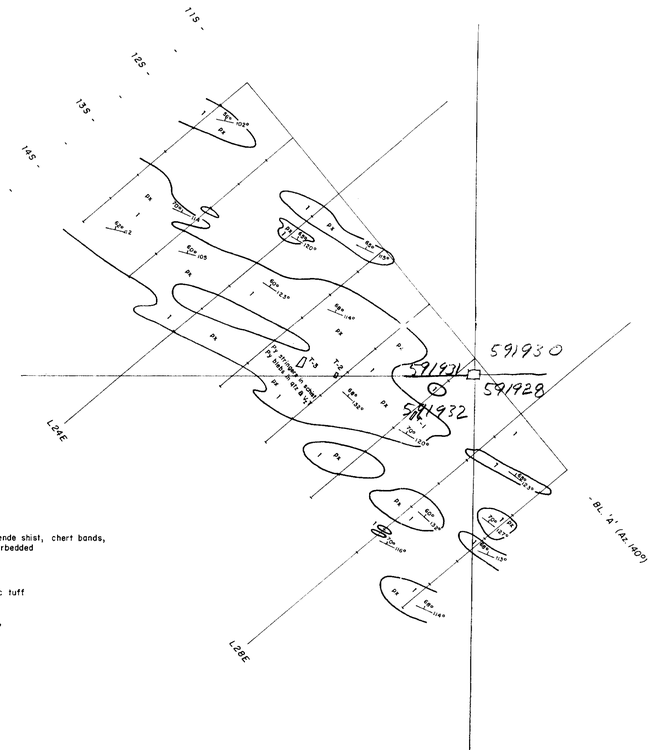
COPPER (ppm)



ZINC (ppm)



LEAD (ppm)

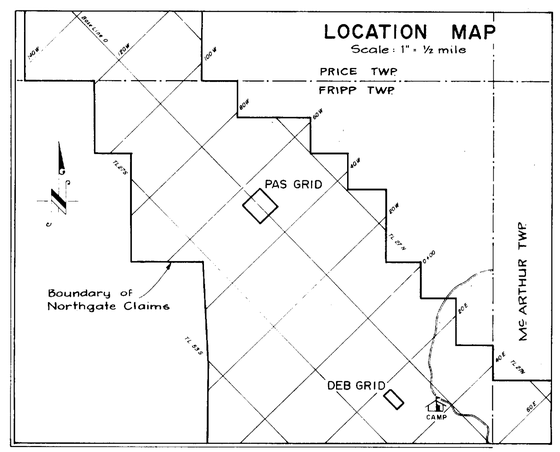


1 Lapilli tuff, hornblende shist, chert bands, quartz stringer interbedded

px - Poor exposure

V_1T - Intermediate volcanic tuff

GEOLOGY



Northgate Exploration Limited

N.T.S

FRIPP TOWNSHIP PROJECT No. 785

FRIPP TOWNSHIP - DISTRICT OF TIMISKAMING - ONTARIO

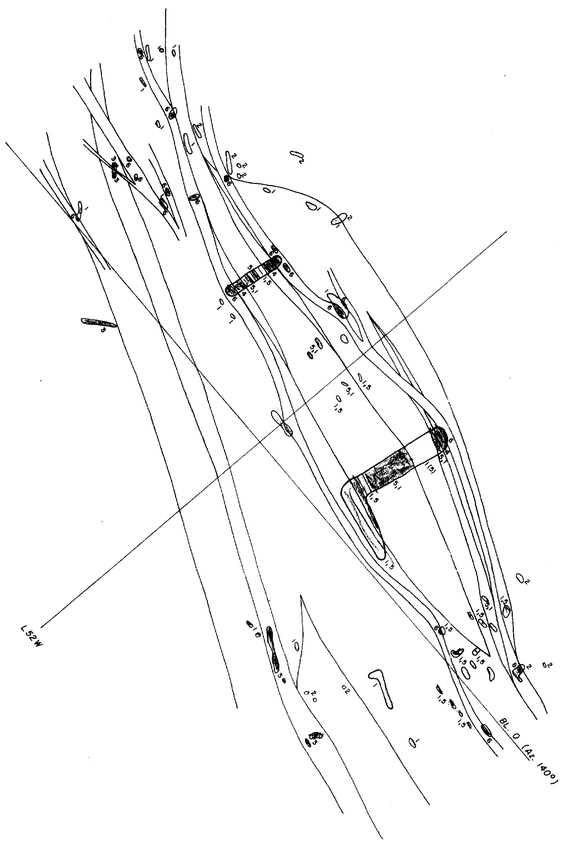
DEB GRID

GEOLOGY AND SOIL SAMPLING

Work by: P. Dodson, S. Conquer	Date: Oct 1980	Proj. no: 785	Scale: 1" = 100' 1 : 1200
Drawn by: Rodel Ortiz	Date: Jan. 1982	Rev. by:	Date:

2.4766 Geophysics

Figures 12, 15, 16, 17

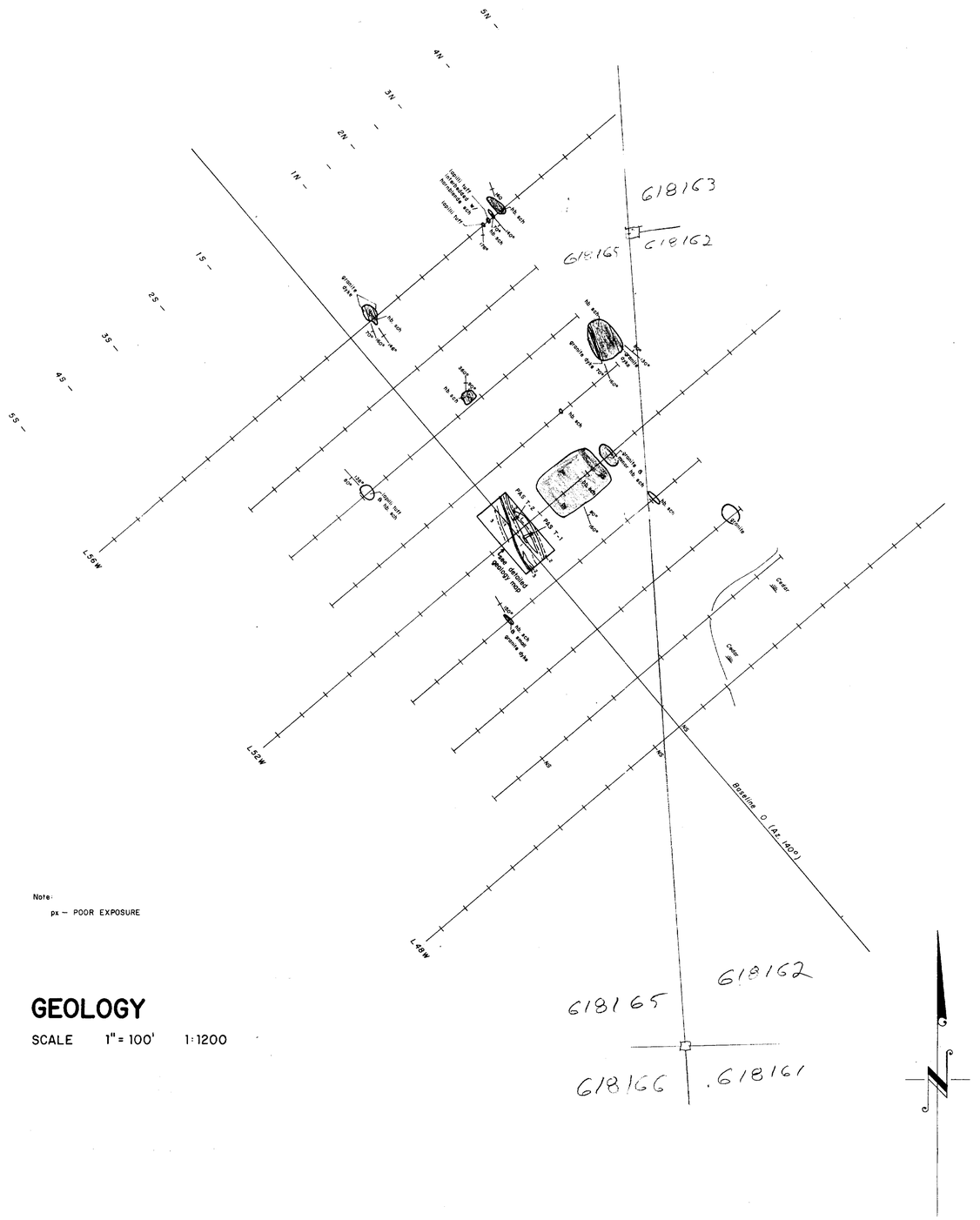


Legend:

- 1 LAPILLI TUFF
- 2 CHLORITE - SERICITE SCHIST
- HORNBLENDE SCHIST
- BIOTITE SCHIST
- CHERT
- GRANITE

DETAILED GEOLOGY MAP - STRIPPED AREA

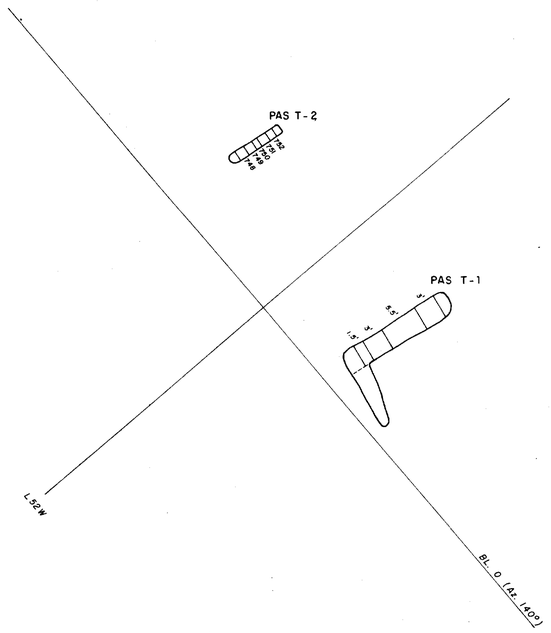
SCALE 1" = 10' 1:120



Note:
px — POOR EXPOSURE

GEOLOGY

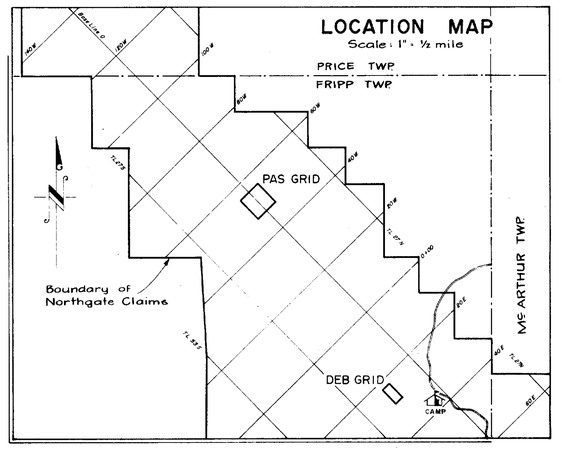
SCALE 1" = 100' 1:1200



SAMPLE NUMBER	SAMPLE LENGTH	%			OZ.	
		Cu	Pb	Zn	Au	Ag
748	1.5'	0.014	0.008	0.033	Tr.	Tr.
749	1.5'	0.033	0.005	0.016	Tr.	0.03
750	0.7'	0.029	0.022	0.030	Tr	0.02
751	1.5'	0.017	0.008	0.022	Tr.	Tr.
752	1.0'	0.020	0.006	0.035	Tr.	Tr.
	3.0'	0.56	NA	0.010	NA	NA
	5.5'	1.92	NA	0.020	NA	NA
	30'	6.18	NA	0.070	NA	NA
	1.5'	0.11	NA	0.008	NA	NA

TRENCH AND ASSAY PLAN

SCALE 1" = 10' 1:120



Northgate Exploration Limited

N.T.S No.

FRIPP TOWNSHIP PROJECT - Nº 785

FRIPP TOWNSHIP - DISTRICT OF TIMISKAMING - ONTARIO

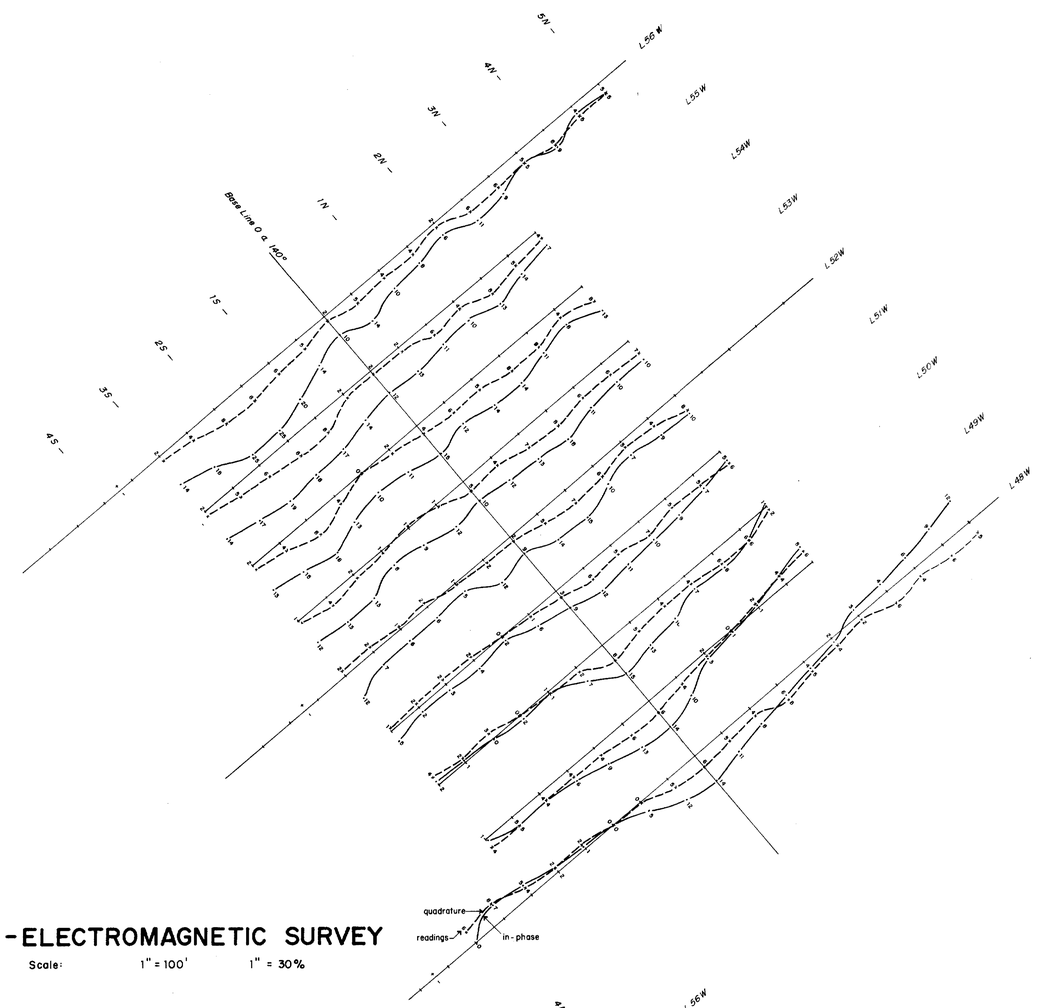
PAS GRID

GEOLOGY, TRENCH AND ASSAY PLAN

Work by: P Dadson, S.Conquer	Date: Oct. 1980	Proj. no: 785	Scale: As Shown
Drawn by: R.E. Ortiz	Date: Jan. 1982	Rev. by:	Date:

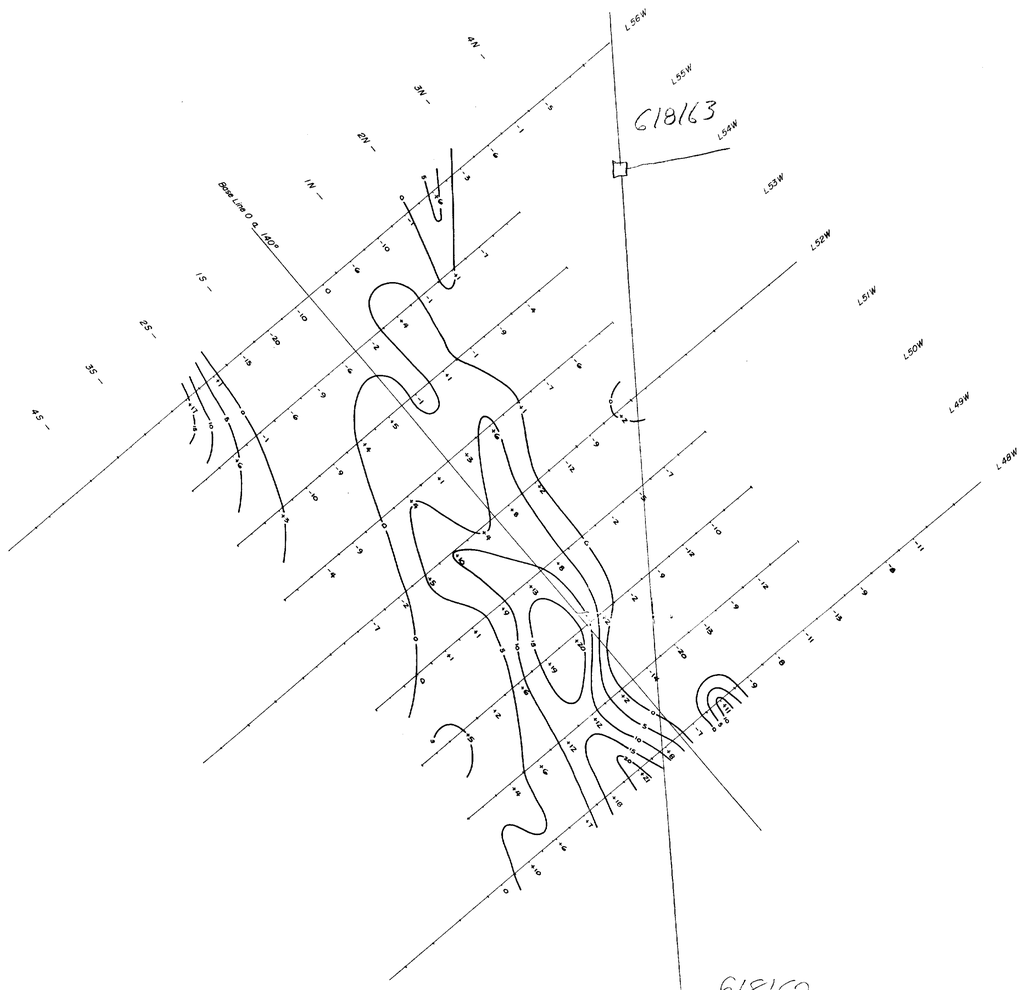
Figures 18, 24

2.4766



VLF - ELECTROMAGNETIC SURVEY

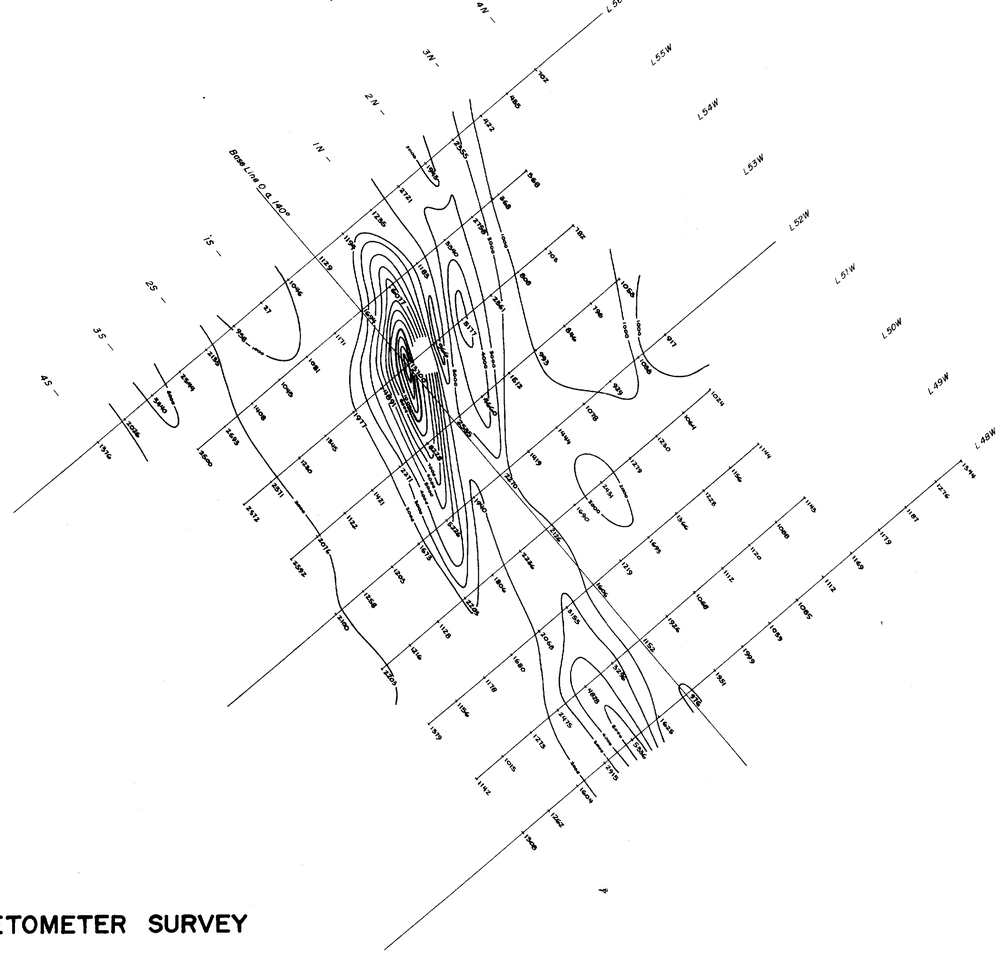
Scale: 1" = 100' 1" = 30%



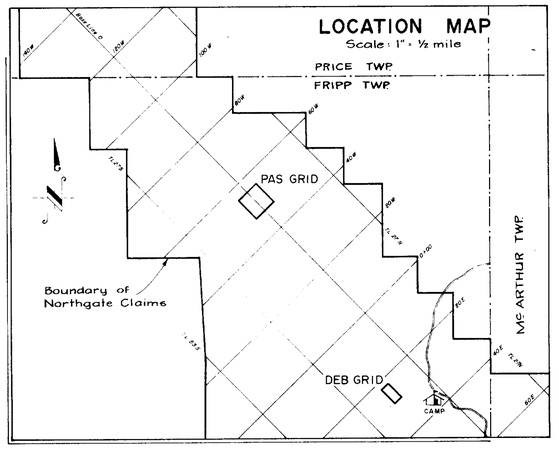
618162

VLF - ELECTROMAGNETIC SURVEY - FRASER FILTER

618165
618166 618161



MAGNETOMETER SURVEY



SCALE 1:1200

FEET

METERS

Northgate Exploration Limited

N.T.S No.

FRIPP TOWNSHIP PROJECT - Nº 785

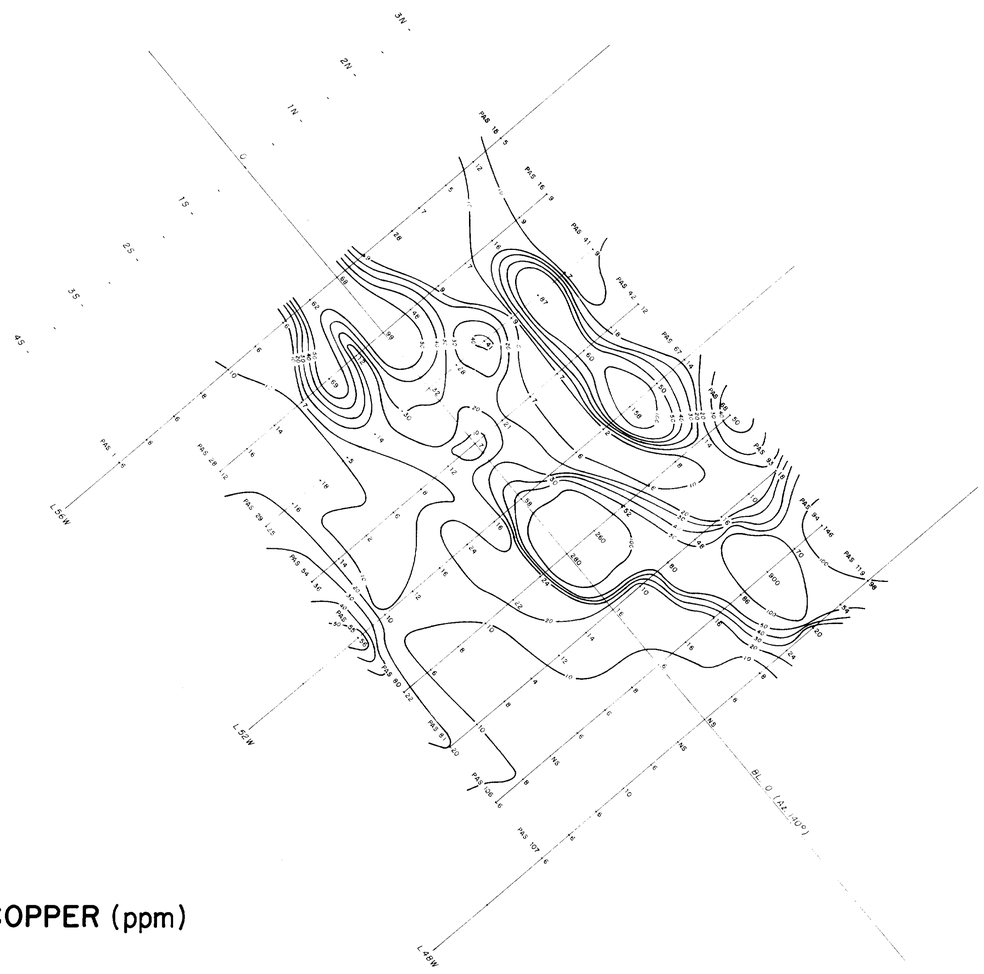
FRIPP TOWNSHIP - DISTRICT OF TIMISKAMING - ONTARIO

PAS GRID

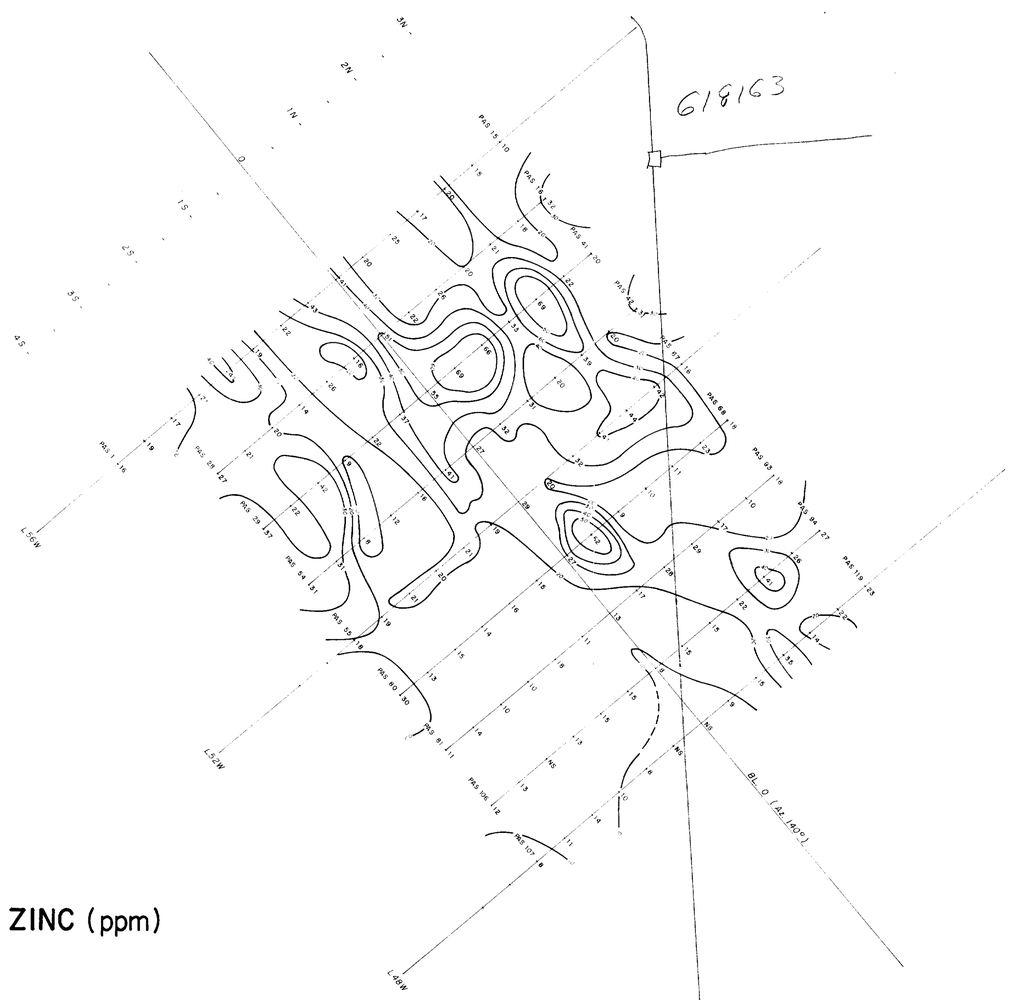
GEOPHYSICS

Work by: P Dodson, S Conquer	Date: Oct 1980	Proj. no: 785	Scale: 1 : 1200
Drawn by: A.R. Gunther	Date: Dec 1980	Rev. by:	Date:

2.4766 dupl Figures 19, 20



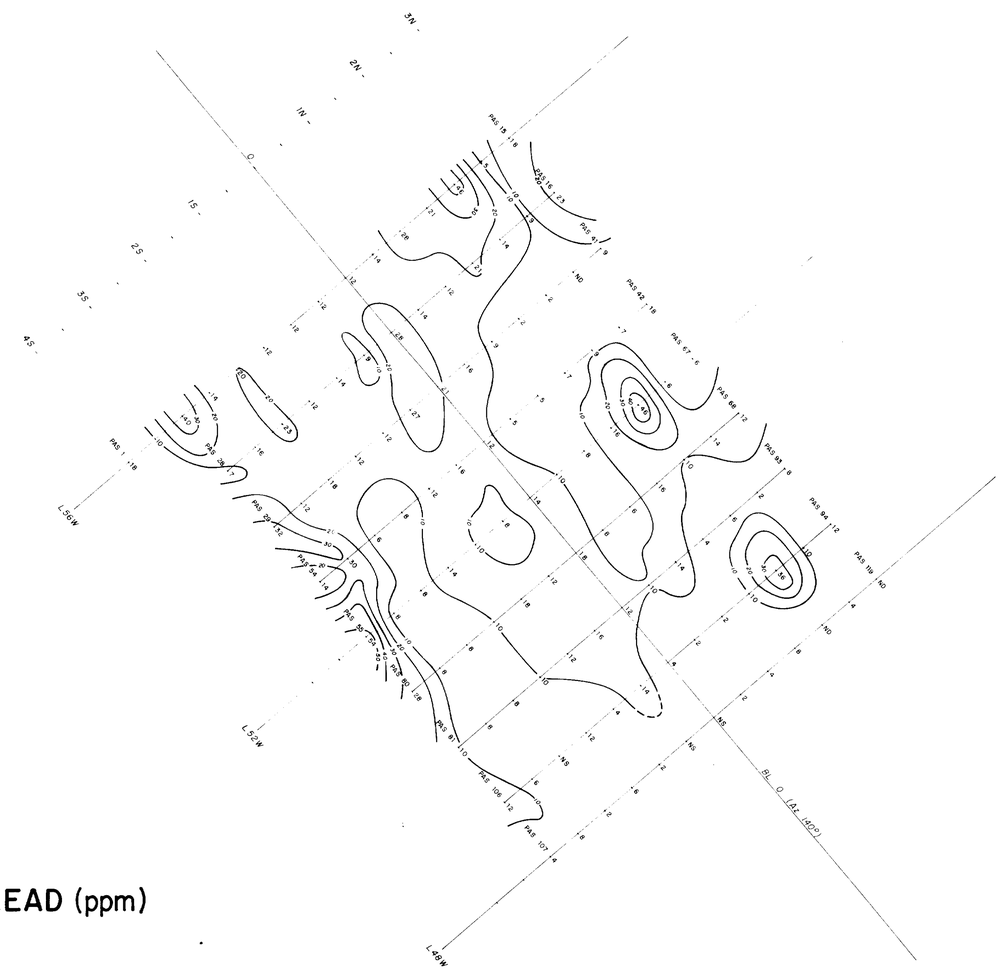
COPPER (ppm)



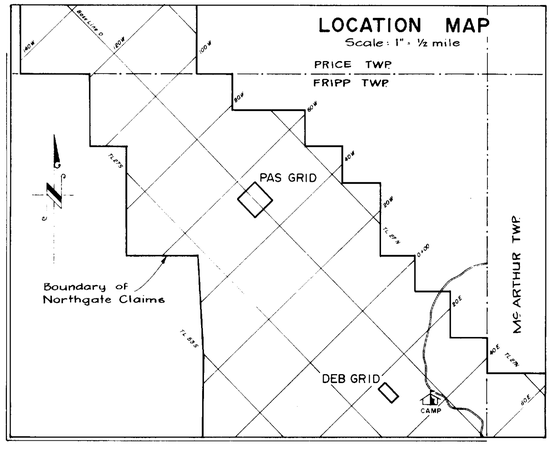
ZINC (ppm)

618163

618167	618162
618166	618161



LEAD (ppm)



Northgate Exploration Limited

N.T.S No.

FRIPP TOWNSHIP PROJECT - No 785

FRIPP TOWNSHIP - DISTRICT OF TIMISKAMING - ONTARIO

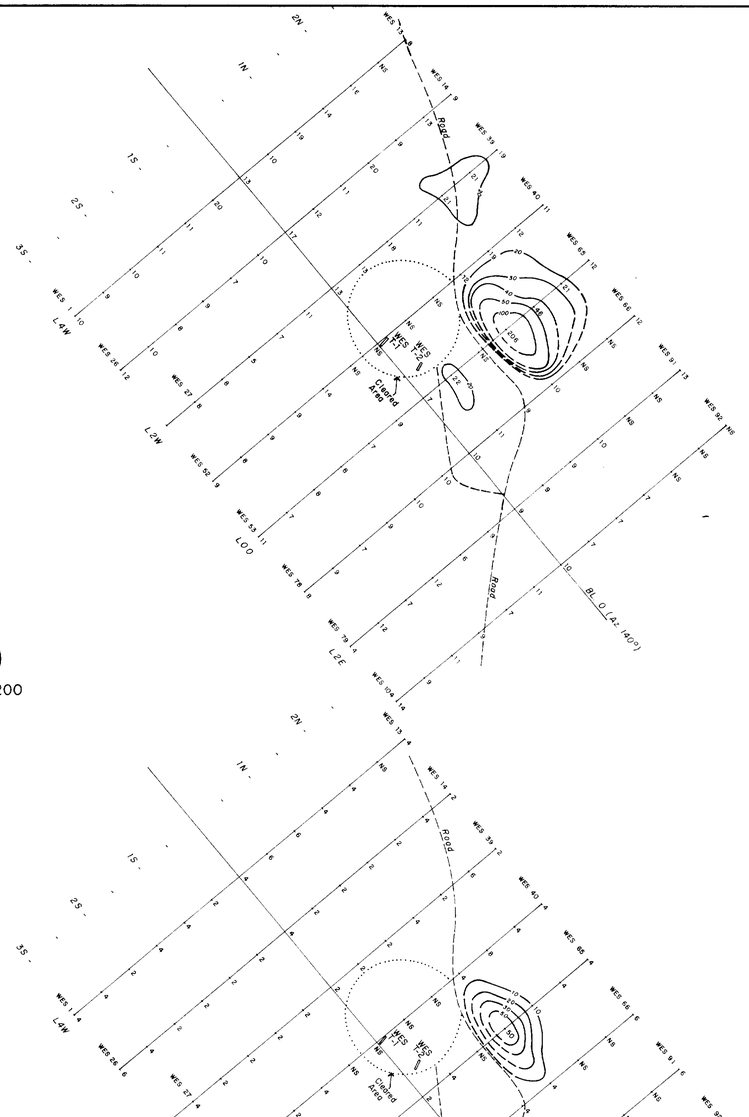
PAS GRID

SOIL SAMPLING

Work by: P. Dodson, S. Conquer	Date: Oct. 1980	Proj. no: 785	Scale: 1" = 100' 1 : 1200
Drawn by: Rodel Ortiz	Date: Jan. 1982	Rev. by:	Date:

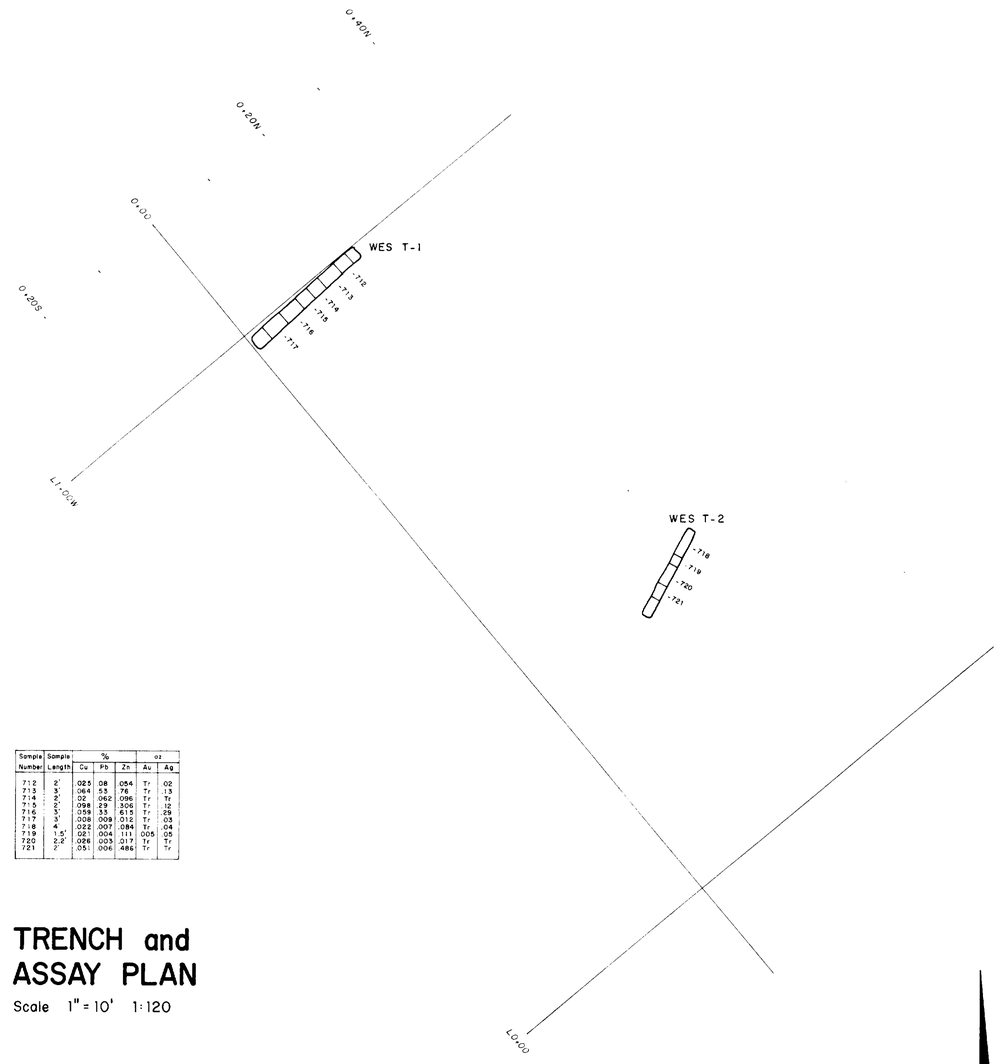
Figures 21, 22, 23

ZINC (ppm)
Scale 1" = 100' 1:1200



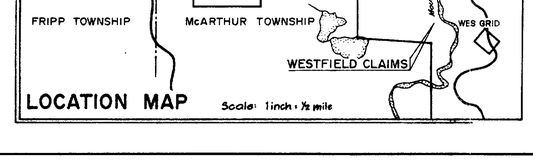
COPPER (ppm)
Scale 1" = 100' 1:1200

LEAD (ppm)
Scale 1" = 100' 1:1200



Sample Number	Sample Length	% Cu	% Pb	% Zn	oz Au	oz Ag
712	2'	.025	.08	.054	Tr	.02
713	3'	.064	.53	.76	Tr	.13
714	2'	.02	.062	.096	Tr	.14
715	2'	.098	.29	.306	Tr	.12
716	3'	.059	.53	.615	Tr	.29
717	3'	.008	.009	.012	Tr	.03
718	4'	.022	.007	.084	Tr	.04
719	1.5'	.021	.004	.111	.005	.05
720	2.2'	.026	.003	.017	Tr	Tr
721	2'	.051	.004	.486	Tr	Tr

TRENCH and ASSAY PLAN
Scale 1" = 10' 1:120



Northgate Exploration Limited

N.T.S No.

FRIPP TOWNSHIP PROJECT - Nº 407

McARTHUR TOWNSHIP - DISTRICT OF TIMISKAMING - ONTARIO

WES GRID

SOIL SAMPLING
TRENCH AND ASSAY PLAN

Work by: S. Conquer	Date:	Proj. no: 407	Scale: As Shown
Drawn by: Rodel Ortiz	Date: Jan. 1982	Rev. by:	Date:

Figures 25, 26, 27, 28

2.4766