83-#167 - #11247

REPORT ON

GEOLOGICAL, GEOCHEMICAL, MAGNETOMETER

AND

VERY LOW FREQUENCY - ELECTROMAGNETIC SURVEYS

CONDUCTED ON THE L.P. 3

MINERALS CLAIM

VERNON MINING DIVISION

N.T.S. 82E/15E AND 82E/16W

49° 55' N LATITUDE AND 118° 30' W LONGITUDE

OWNER OF CLAIMS: MOHAWK OIL CO. LTD.

OPERATOR: MOHAWK OIL CO. LTD.

AUTHOR: M.W. WALDNER

DATE: May 6, 1983

TABLE OF CONTENTS

APPENDICES

MAPS AND TABLES

INTRODUCTION

Exploration on the LP 3 mineral claim during the 1982 field season included geological mapping, geochemical soil sampling, a VLF-EM survey and a magnetic survey. Previous work on the claim and contiguous claims owned by Mohawk Oil Co. Ltd. included reconnaissance type geological mapping and a widely spaced geochemical soil and silt survey.

LOCATION AND ACCESS

The claim is located in the Monashee Mountains of British Columbia approximately 5 kilometers northeast of Lightning Peak, map sheet N.T.S. 82E/15E and 82E/16W, latitude 49° 55' N and longitude 118° 30' W longitude.

Access to the property is via a dirt road which joins Highway 6 approximately 110 kilometers southeast of Vernon. The road crosses the claim boundary approximately 15 kilometers from Highway 6. It is advisable to use a four-wheel drive vehicle to travel the road although it is not absolutely necessary.

PHYSIOGRAPHY

The topography slopes from approximately the 1,850 metre elevation towards the northwest to an elevation of about 1,600 metres above sea level. The claim is cut by several northerly flowing creeks which join Winnifred Creek north of the claim. The major drainage is the northerly flowing Teepee Creek which intersects the northeastern corner of the claim.

MOHAWK OIL Co. LTD.

LP3 CLAIM

LOCATION MAP

FIGURE 1

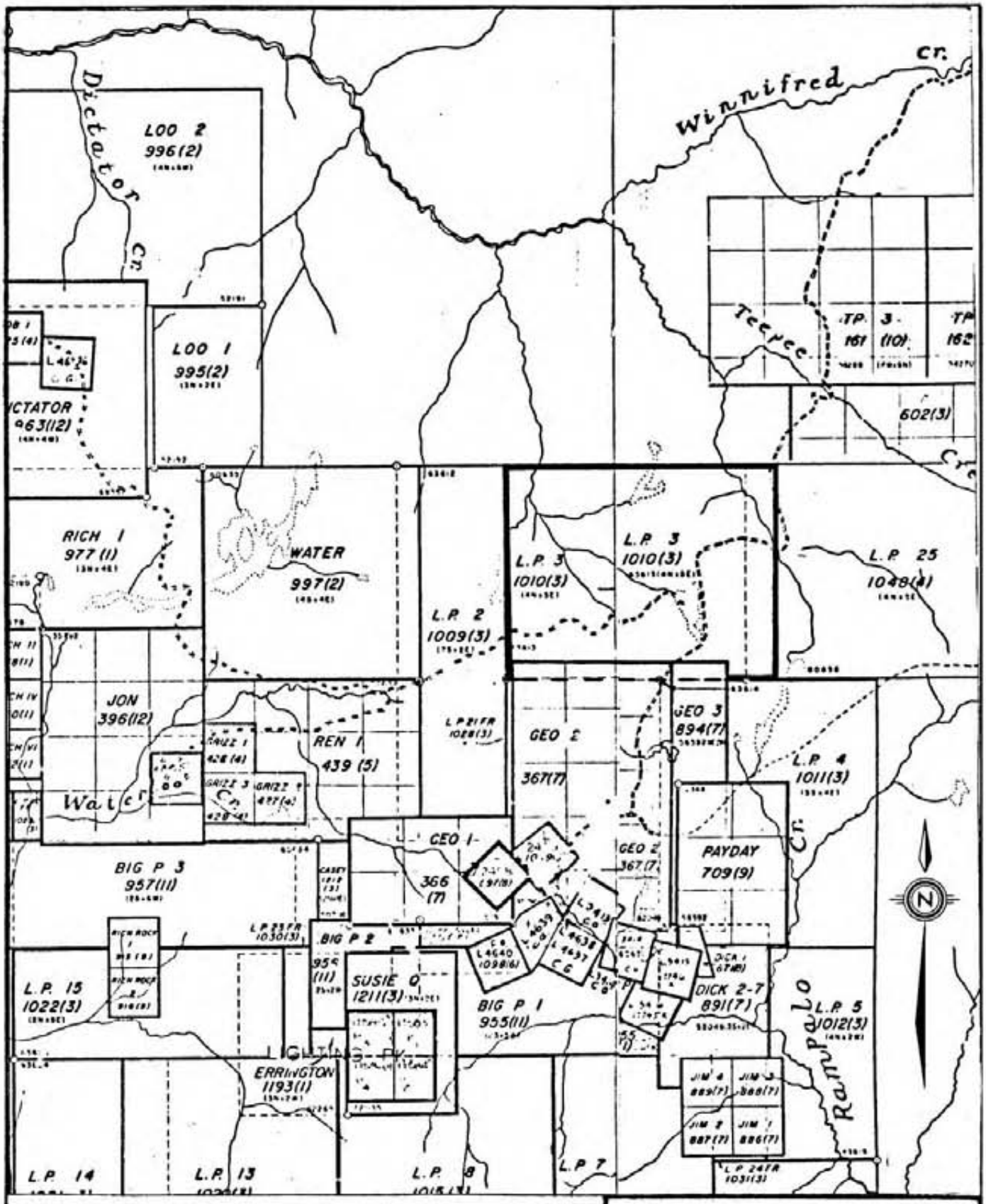
The claim is forested with stands of fir and spruce primarily. The trees are not very closely spaced. Rock outcrop is sparse. Approximately 2 to 5 percent of the claim has rock outcrop. Overburden depth appears to be between 3 and 10 metres but probably average's less than 5 metres deep.

MINING PROPERTY

The L.P. 3 claim is a 20 unit claim staked in the early part of 1981. The claim is located in the Vernon Mining Division, Record Number 1010, Record Date March 6, 1981. The property is located in a area of lead, zinc, gold, silver mineralization. The most notable property in the vicinity is the Waterloo Mine which produced high grade silver ore primarily during the 1920's and 1930's. The Waterloo Mine is located about 4 kilometers southwest of the claim and is on the same geological setting. The claim was staked in this area of favourable geology. There are old exploration trenches on the property. These claims, the old "Pilot and Uta Claims" are described briefly by Cairnes (1930).

SUMMARY

The property was mapped and surveyed on a scale of 1:5000. The geological mapping included study of rock outcrops on the geochemical and geophysical grid and plotting of the geological structures and rock types. The geological interpretations employed the outcrop mapping, magnetic data, VLF-EM data and aerial photographs.



SCALE 1:50,000

METRES 0 1000 2000 3000

MOHAWK OIL CO. LTD.

CLAIMS MAP

DRAWN BY	DATE	DRAWING NO.
M.W.W.	4/15/83	FIG. 2

The geochemical and geological survey grid included 11 lines, each approximately 2,400 metres long and 9 shorter lines for a total of about 32.4 line kilometers. These lines were flagged and chained for control for the surveys conducted on the property.

The VLF-EM dip angle readings were taken at 15 metre intervals along about 10.2 kilometers of the flagged lines. Magnetic readings were taken at about 15 metre intervals along about 20.3 kilometers of these same grid lines and soil samples collected at 50 metre intervals along all grid lines. A total of 646 soil samples were collected. In addition a closely spaced magnetic survey was conducted over the old trench area.

Location of the chain and compass flagged grid lines were assisted using a theodelite and E.D.M. survey instrument. Approximately 4 days were spent establishing the grid locations and the claims locations employing the theodelite and E.D.M. The claims were tied to topographic features and legal survey points in the vicinity.

Access to the property required some improvement. The access road to and through the property required some widening using a D-6 bulldozer. Approximately 26 hours was spent improving the existing road and buildng some new road.

GENERAL GEOLOGY

The entire property was mapped along the flagged grid lines on a scale of

1:5000 (Drawing No. 1). This reconnaissance type mapping program used the geochemical and geophysical grid lines as control in establishing outcrop locations. Only about 2 percent of the property is rock outcrop. The general geology of the area is described by Cairnes (1930) and Little (1957). The Permian (?) Anarchist Group rocks consist of greenstone greywacke, tuffs, limestone and paragneiss. These rocks host the lead, zinc, silver mineralizations at the nearby Waterloo Mine. The Anarchist Group rocks form a roof pendant in the Lightning Peak area and are intruded by Cretaceous (?) Valhalla Intrusions and Nelson Intrusions. These instrusive rocks in the vicinity of the property have been interpreted by Little to be Nelson Intrusions.

The intrusive rocks mapped on the property are primarily granodiorite although the composition is somewhat variable and locally is diorite in composition. There are also some outcrops which are quartz diorite in composition. These rocks are generally coarse-grained and often porphyritic distinquished by K-feldspar phenocrysts of 1 to 2 cm in length. The mafic mineral is usually biotite which composes about 10 percent of the rock. The remainder of the rock is composed generally of about 30 percent quartz, 30 percent plagioclase and 30 percent orthoclase although these compositions do vary depending upon the rock type.

The Anarchist Group rocks which outcrop on the property are composed primarily of metamorphosed andesitic lava, tuffs and minor tuffaceous sediments. Limestone does occur in the vicinity but was not mapped on the property. The

metamorphosed andesitic lava is generally green, frequently foliated and contains fine-grained phenocrysts of biotite. The metamorphic rocks on the property are primarily the metamorphosed andesitic lavas. These Anarchist Group rocks have often been the host for high grade lead, zinc, silver mineralization although structural controls and proximity to the intrusive rocks is possibly an ore control also.

Minor intrusive rocks occur within the metavolcanics and tuffs. These dykes are commonly less than a metre wide and are quartz porphyry, granite porphyry or pegmatites. The dykes are generally classified as acid dykes or acid porphyries and are probably related to the intrusive rocks. These dykes are not very common in the metamorphic rock outcrops.

STRUCTURAL GEOLOGY

The structural geology has been interpreted using aerial photography, VLF-EM data and magnetic data in conjunction with the geological mapping. The property is disturbed by several major faults notably in the western, south-western, and northeast sectors of the claim. The topographic expression of these faults are the northward flow creeks on the western side of the claim and by Teepee Creek in the northeast. In addition there are several other topographic features and VLF-EM "cross-overs" which have been interpreted to be faults.

These interpreted structures are illustrated on Drawing No. 1.

ECONOMIC GEOLOGY

In approximately the middle of the claim, centered on line 8+00 N the old "Pilot and Uta" claims trenches occur. Old reports mention chalcopyrite and molybdenite mineralization. Exploration in this vicinity did lead to the discovery of pyrite, pyrrhotite and chalcopyrite hosted in metamorphosed andesite. However detailed exploration in this vicinity did not uncover any significant mineralization. The sulphide mineralization observed occurred as fine disseminations and fracture infillings in the andesite. It is suspected that the economic potential for the property may be a porphyry type system host in, and related to the intrusives rather than a vein type or shear zone mineralization hosted in the Anarchist Group rocks. Exploration on the old Pilot and Uta claims was apparently confined primarily to the metavolcanics.

Most of the geochemical soil anomalies are apparently related to the intrusive rocks rather than the metamorphic rocks. Copper and molybdenum anomalies occur on its property in areas underlain primarily by intrusives. There is a subtle, elemental zoning of the soil geochemistry on the claim. These appear to be a "central" zone of copper anomalies occuring in the central and south-western portion of the property. This zone is surrounded on the northwest, north and eastern margins by a molybdenum zone which is overlain and surrounded by anomalous soil geochemistry values of lead, zinc and silver. Areas of propylitic, argillic and potassic alterations have also been mapped at some locations (see Drawing No. 1) on the property.

The model suggested for a possible ore body on the property is a porphyry type system with disseminated and veinlet copper type mineralization occurring in the central and southwestern sector. This would be surrounded on the northwest, north and east by vein type and disseminated sphalerite, molybdenite and galena mineralization and peripheral vein type sphalerite, galena and silver mineralization. This would likely be hosted within the intrusives but possibly at major fault intersections. (i.e. intersection of north and northwest striking faults in northwestern corner of property coincident with lead, zinc, silver geochemical and geophysical anomolies.).

A total of six rock samples were collected on the claim and assayed for gold, silver, copper, lead, zinc and molybdenum. These samples are identified on the geology map (Drawing No. 1). The assay results are illustrated on Table I.

TABLE I - ROCK SAMPLE ASSAYS

SAMPLE NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)
4677	15	.8	21	22	31	12
4678	10	1.2	13	26	52	12
4666	l.t. 5	.6	33	180	232	
4667	l.t. 5	.2	13	38	50	
4912	65	4.1	100	200	100	l.t. 50
4913	65	5.1	100	400	100	l.t. 50

Samples 4912 and 4913 were grab samples collected from the old Pilot and Uta claims trenches. The host rock that was sampled is altered and sheared volcanics containing disseminated pyrite, pyrrhotite, minor chalcopyrite and numerous calcite veinlets. The assays indicate that there may be gold and silver mineralization and possibly copper, lead and zinc mineralization in the vicinity. There is a significant copper soil geochemical anomaly in the vicinity. It may be that there is economic copper, gold, silver mineralization hosted in the nearby intrusives rather than the volcanics which were sampled.

The remaining four rock samples that were collected and analysed were taken within the intrusive rocks. Samples 4677 and 4678 were altered granodiorite with hematite staining, approximately 1 percent pyrite and boxwork. There is a molybdenum anomloy close-by samples 4666 and 4667 and some secondary K-feldspar was observed in the vicinity.

GEOCHEMISTRY

The geochemical soil survey was conducted on the grid lines approximately 200 metres apart and later follow-up done in some areas on 100 metre line spacings. Soil samples were taken along these lines at about 50 metre intervals. The grid lines were established as flagged lines only. All results were plotted in parts per million on 1:5000 scale base maps. A total of 24 silt samples were collected in locations where streams crossed the grid lines.

A total of 646 soil samples were collected. The samples were taken in the "B" horizon whenever possible. This horizon was generally reddish-brown in colour and occurred at a depth of 10 to 50 cm and was about 20 cm thick. A small mattock was used to dig the hole. Coarse rock debris and organic matter was discarded. Samples were not collected in swampy areas, in areas of talus or rock outcrop. If the "B" horizon was not developed but a "C" soil horizon was developed the "C" horizon was sampled. The grid location, soil horizon type and depth, degree of oxidation of soil and exposure were noted at each soil sample site.

All soil samples were boxed and freighted to Kamloops for preparation and analysed by Kamloops Research and Assay Laboratories Ltd. Samples were dried and screened to minus 80 mesh. A measured amount of the minus 80 mesh material was then digested in hot aqua regia. Atomic absorption was used to determine values in parts per million for lead, zinc, silver, copper, molybdenum, antimony and arsenic.

The assay data has been plotted on single element maps at a scale of 1:5000. The data treatment has included contouring and definition of subanomalous, anomalous and 2nd order anomalous values for the five elements over the intrusive rocks and Anarchist Group metamorphic rocks. Table II illustrates the statistical data, contour intervals, and subanomalous, anomalous and 2nd order anomalous values for each of the seven elements analyzed. Generally subanomalous values for each element are the mean plus one standard deviation, anomalous values are the mean plus two standard deviations and 2nd order anomalous values are the mean plus three standard deviations.

TABLE II - GEOCHEMICAL PARAMETERS

Parameter	Anarchist Group Rocks (ppm)							Intrusive Rocks (NELSON INTRUSIVES) (p.p.m.)						
	Pb	Zn	Ag	Cu	Mo	As	Sb	Pb	Zn	Ag	Cu	Mo	As	Sb
Mean	16	55	.8	18	3	1	9	16	70	.9	15	4	1	8
Standard Deviation	7	38	.3	13	3	0	3	9	20	.3	14	4	5	6
Contour Interval	10	40	.3	15	4	-	4	10	20	.3	15	4	5	6
Sub Anomalous	25	90	1.1	30	4	-	12	25	90	1.1	30	8	5	14
Anomalous	35	130	1.4	45	8	-	16	35	110	1.4	45	12	10	20
2nd Order Anomalous	45	170	1.7	60	12	-	20	45	130	1.7	60	16	15	26

INTERPRETATION OF GEOCHEMISTRY

The zinc soil geochemistry is illustrated on Drawing No. 3. There is a very prominent zinc anomaly in the northwestern corner of the claim. This anomaly is coincident with anomalously high silver and lead anomalies. The magnetic relief in the vicinity of this zinc anomaly is between 300 and 500 gammas over reading intervals of 75 to 100 metres. A very high zinc soil anomaly of 840 ppm coincides with a magnetic low of 57775 gammas (see Drawing No. 11). However it is suspected that the magnetic relief may be more significant than the individual magnetic readings. In fact there may be zinc mineralization in the vicinity of the 840 ppm sample with related magnetic mineralization (pyrrhotite or magnetite ?) or alteration (illemanite ?). There are VLF-EM dip angle cross-overs coincident with this northwestern zinc anomaly indicating a possible structural control to any zinc mineralization. (see Drawings Nos. 9 and 10). There is a discontinuous zone of zinc anomalies along the eastern side of the property and several coincident copper, molybdenum, lead and silver soil geochemistry anomalies. There are also subtle magnetic dipoles exhibiting relief of more than 300 gammas coincident with zinc anomalies on lines 20+00 N and 4+00 N. In the northeastern sector zinc anomalies correlate with VLF-EM dip angle cross-overs.

The lead soil geochemical results are illustrated on Drawing No. 2. Anomalous values for lead are the same for the volcanic and intrusive rocks. Lead anomalies of 58 ppm and 60 ppm occur in the northwest corner of the claim on lines 16+00 N and 17+00 N coincident with zinc and silver anomalies and a subtle magnetic dipole of approximately 200 gammas relief. The VLF-EM was not done, in the vicinity of these lead anomalies but may respond, since

mineralization related to the anomalies may be structurally controlled or massive. The VLF-EM did exhibit dip angle cross-overs on lines 13+00 N and 14+00 N coincident with lead anomalies of 115 ppm and 68 ppm respectively. Both Annapolis and Hawaii did respond although the Annapolis response was slightly stronger. (41° of relief vs 35° of relief for Hawaii). These lead anomalies on lines 13+00N and 14+00 N correspond with zinc and molybdenum anomalies.

The silver soil geochemical results are illustrated on Drawing No. 4. A magnetic dipole exhibiting about 400 gammas of relief corresponds with a silver anomaly of 2.1 ppm on the west end of line 17+00 N. This could indicate the presence of vein type silver mineralization and an associated magnetic mineral. The silver values are generally highest in the north, east, south and northwest sectors of the claim. Silver anomalies generally do not occur with the higher copper geochemical results in the central and south-western part of the property. This could indicate a peripheral zone of silver mineralization around a copper enriched core. There is a general correspondence of zinc and silver anomalies. The most significant silver anomalies occur on the west end of line 17+00N (2.1 ppm) coincident with zinc and lead anomalies, and on the eastern ends of lines 8+00N and 7+00N coincident with zinc, copper, molybdenum and perhaps neighbouring lead anomalies.

The copper soil geochemistry values are plotted and contoured on Drawing No. 7. There is a zone of copper anomalies in the southwestern and central part of the claim with values up to 130 ppm in the central part of line 8+00N. The pattern of dispersion may indicate the existance of veinlet and/or disseminated porphyry type copper mineralization in the vicinity of the copper

anomalies. There is a general lack of correlation of copper in this area with anomalous values of other elements. There is a 98 ppm copper anomaly on the east end of line 18+00N which corresponds with a zinc anomaly and VLF-EM dip angle cross over. This may be an indication of vein type copper, zinc mineralization.

Arsenic determinations are illustrated on Drawing No. 5. Anomalously high arsenic values could indicate the possible existance of gold mineralization or if coincident with high silver soil geochems may indicate the existence of proustite mineralization. Arsenic anomalies of 110 ppm on line 2+00N and 24 ppm on line 20+00 N correspond with silver anomalies. These two are the only arsenic anomalies identified.

Antimony soil geochemical results are plotted and contoured on Drawing No. 6. The subanomalous values for antimony in the northwestern corner of the property occur in an area of anomalous zinc, silver and minor lead. This may indicate the presence of pyrargyrite mineralization.

The molybdenum soil geochemical results are illustrated on Drawing No. 8. There is a zone of molybdenum anomalies along the eastern side of the claim. Very high values of 33 ppm and 50 ppm occur, respectively on lines 12+00 N and 10+00 N. Anomalous molybdenum values correspond with zinc anomalies on lines 5+50 N, 12+00 N, 14+00 N and with silver on line 8+00 N. It is very likely that molybdenite mineralization is related to the high molybdenum values. The magnetic and VLF-EM surveys was not conducted in the vicinities of the molybdenum anomalies.

GEOPHYSICS

A VLF-EM survey was conducted over parts of the property but time constraints did not allow a complete survey. A total of 10.3 kilometres was surveyed. It may be worthwhile to conduct VLF-EM surveys in areas of suspected, structurally controlled or massive sulphide mineralization. The instrumentation and theory of VLF-EM surveys are described in Appendix I. Dip angle readings were taken at 15 metre intervals along some of the sample grid lines flagged across the property. The field strength data was found to be of limited use and therefore was not collected. Dip angle readings were collected for the Hawaiian (23.4 KH_z) and Annapolis, M.D. (21.4 KH_z) transmitters. The Fraser filtered and unfiltered (Null) data are presented on Drawings 9 and 10. The filtered data has been presented in profile form on these same drawings. The VLF-EM data was used to interpret the locations of faults and to a limited extent in establishing rock contacts. Very strong dip angle cross-overs occur on lines 20+00 N, 18+00N and 14+00N in the northwestern corner of the property. Fraser filtered dip angle readings show cross-overs with more than 35 degrees of relief (Hawaii) in this vicinity and indicate the presence of a north striking structure. There is also a northwest striking fault interpreted to intersect the north striking fault in the vicinity of zinc, lead and silver soil geochemical anomalies in the northwest corner of the property. Generally the VLF-EM was not conducted in the anomalous areas.

The theory and instrumentation of magnetic surveys is outlined in Appendix II. A magnetic survey, using a Scintrex model MP-2 precession magnetometer, was conducted on about 11 lines. Readings were taken every 15 metres. In

addition a "fine grid" was surveyed on lines about 30 metres apart and instrument readings at 10 and 5 metre intervals. This "fine grid" is located in the central part of the property in the vicinity of the old Pilot and UTA Claims trenches. The total distance surveyed was 23.9 kilometers. The magnetic readings were plotted in gammas on the attached map (Drawing No. 11) and the data contoured on 100 gamma intervals. The property generally displays high magnetic values probably since most of the property is underlain by intrusive rocks. The intrusive rocks, generally a granodiorite in composition respond in the 58,100 to 58,500 gamma range whereas the volcanic generally were in the 57,800 to 58,100 gamma range. The "highs" along the eastern side of the property suggest a north-south trending structure or zone. Extreme "highs" on line 5+50N (Fine Grid) and 6+00N starting at the road and extending west suggest large north striking intrusions. The dipole located on 5+50N ("Fine-grid") suggests two "dyke" structures, in contact with one another exist at a depth of 28 metres dipping 45° east and 20 metres deep and near vertical. Three weak dipoles on line 4+00N may relate to igneous-volcanic rock contacts or possibly veins containing magnetite or pyrrhotite.

In the northwestern corner of the property moderate magnetic dipoles occur with up to 420 gammas of relief. These coincide generally with lead, zinc and silver soil geochem anomalies.

CONCLUSIONS AND RECOMMENDATIONS

There appears to be a zonal distribution of elements as indicated by the soil geochemical results. There is a "core zone" of anomalous copper soil geochems in the central and southwestern part of the property surrounded by a

peripheral molybdenum zone to the northeast and east of the copper zone. There is a peripheral zone of anomalously high soil geochemistry values for zinc, lead and silver, particularly in the northwest and eastern portions of the property. The elemental geochemical soil dispersion and elemental distribution pattern and geophysical responses support the possible existance of a porphyry type system. The geochemical anomalies generally occur in areas underlain by intrusive rocks. The geochemical dispersions and geology indicate that any copper mineralization related to the copper geochemical anomalies is probably veinlet or disseminated type mineralization, whereas any "peripheral" lead, zinc, silver molybdenum mineralization is probably vein or massive sulphide type mineralization.

It is recommended that detailed VLF-EM and magnetic surveys plus more sophisticated E.M. or perhaps S.P. be conducted over potential vein type lead, zinc, molybdenum or silver mineralizations in an effort to determine drilling or trenching targets. I.P. should be conducted in the "core" area of anomalous copper soil geochemical values to identify trenching or drilling targets of disseminated or veinlet type mineralization. A magnetic survey should be conducted over soil geochemical anomalies especially in the southeastern corner of the property on lines 8+00N and 7+00N (over silver anomalies of 2.7 ppm and 1.9 ppm respectively). The two anomalous samples for arsenic should be analyzed for gold or samples taken in the vicinity of the arsenic anomalies and analysed for gold.

AUTHOR'S QUALIFICATIONS

MATTHEW WILLIAM WALDNER

I graduated from the University of British Columbia in 1969 with a Bachelor of Science degree in Geology. Since graduating, I have continuously practiced my profession in various levels of responsibility in industry. The following is a synopsis of my employment experience:

1969	7 months as junior geologist and party chief in southern B.C. and Yukon Territory-Atlas Explorations Ltd. (N.P.L.)
1970-1973	3 1/2 years as open pit geologist at Endako Mines Ltd. - Placer Development Ltd.
1973-1979	6 1/3 years as pit geologist, Mine geologist and Chief Mine Geologist at Lornex in the Highland Valley of B.C. - Lornex Mining Corporation Ltd.
1979	4 months as Projects and Reclamation Engineer - Lornex Mining Corporation Ltd.
1979-1981	13 months as Chief Mine Engineer, in charge of the Mine Engineer Department - Lornex Mining Corporation Ltd.
1981 (Jan) Present	Chief Geologist - Responsible for mining exploration in Canada and Alaska - Mohawk Oil Co. Ltd., Mining Division.

DATE: March 21, 1983

SIGNED: M.W. Waldner

M.W. WALDNER,
Chief Geologist

BIBLIOGRAPHY

1. B.C.D.M. Annual Reports: 1926, 1927, 1928, 1930, 1931, 1932, 1937, 1948 and 1949.

2. Cairnes, C.E. (1930): Lightning Peak Area, Osoyoos District, B.C. G.S.C. Annual Report 1930, pages 79A to 115A.

3. Little, H.W. - Kettle River (East Half) Map Area, B.C. G.S.C. Map 6 - 1957, Sheet 82E (East).

4. Callaghan, B. - Geological and Geochemical Report on the L.P. Mineral Claims L.P. 2-20, 21, Fr., 23, Fr., 25. Vernon Mining Division, April 1982 Assessment Report.

APPENDIX I

Very Low Frequency Electromagnetic Survey - Instrumentation and Theory

A VLF-EM receiver, Model 27, manufactured by Sabre Electronics was used for the VLF-EM surveys. A transmitter located in Hawaii, U.S.A. and Annapolis, U.S.A. were used. The instrument measures the magnetic component of a very low frequency (VLF) electromagnetic (EM) field. The dip angles were measured on grid lines with the instrument oriented towards Hawaii and Annapolis. The VLF radio transmission from Hawaii and Annapolis produce an alternating magnetic field (primary). If a conductive mass such as a sulphide body or clay filled fault zone is within the magnetic field, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures. The VLF-EM uses a frequency range from 16 to 24 KHz. whereas most EM instruments use frequencies ranging from a few hundred to a few thousand KHz. Because of its relatively high frequency, the VLF-EM can pick up bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up.

Consequently, the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization (in places it can be used instead of IP). However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

Subsequent to the collection of dip angle measurements at each station on the grid lines the data is "Fraser Filtered". The dip angle measurements for Hawaii and Annapolis are treated separately. North to Northeast striking structures should respond better to the Hawaiian signal and West or Northwest striking structures should respond best to the Annapolis signal.

APPENDIX I (cont'd)

The Fraser Filter is essentially a 4-point difference operator which transforms zero crossings into peaks, and a low pass smoothing operator which reduces the inherent high frequency noise in the data. Therefore, the noisy non-contourable data are transformed into contourable data. Another advantage of this filter is that a conductor that does not show up as a cross-over on the unfiltered data quite often will show up on the filtered data.

Profiles of the filter data were prepared for Hawaii and Annapolis separately. These plots were then analyzed and structures interpreted and possible zones of sulphide mineralization or clay alteration indentified.

APPENDIX II

Magnetic Surveys - Instrumentation and Theory

The instrument used to perform the magnetic surveys was a proton precession magnetometer, model MP-2 manufactured by Scintrex. This instrument measures the magnitude of the total magnetic field at any given point on the surface. The total field is the sum of the external field and the internal field within and surrounding the material being measured. The magnetometer sensor consists of a chamber filled with a proton rich fluid enclosed within two wire wound coils. When a current passes through these coils for a short period of time a magnetic field is set up which aligns the spinning protons. When this polarizing current is abruptly switched off, the protons begin to precess around the earth's magnetic field and eventually re-align with it. This precession induces a small, exponentially decaying, AC signal in the sensor coils whose frequency is proportional to the flux of the ambient magnetic field. This frequency is measured, converted to gammas and presented on the digital display of the instrument.

The surveys consist of measuring accurately the resultant magnetic field of the earth's magnetism acting on rock formations having different magnetic properties and configurations. The resultant field is the vector sum of induced and remanent magnetism.

Thus there are three factors, excluding geometrical factors, which determine the magnetic field at any particular locality. These are the strength of the earth's magnetic field, the magnetic susceptibility of the rocks present and their remanent magnetism.

Magnetic surveys are useful in conjunction with geological mapping and for exploration for magnetically susceptible minerals. Interpretation of magnetic profiles and maps can assist in interpretation of rock type distribution and the locations of structural features. Often magnetic minerals such as magnetite, pyrrhotite or ilmenite are associated with the mineral deposits which are sought, or there may be a depletion of such minerals. Either case can assist in mineral exploration.

APPENDIX III

Itemized Cost Statement - LP 3 Claim

PERSONNEL	DUTIES/ POSITION	DAYS WORKED	PAY SCALE	TOTAL COST
K. Lyons	VLF-EM Geophysics Assist.	16	$85/day	$ 1,360.00
C. Nagati	Geologist	21	$95/day	1,995.00
B. Callaghan	Project Geologist	18	$110/day	1,980.00
K. Lindstrom	Geological Assist	11	$80/day	880.00
M. Waldner	Chief Geologist	7	$225/day	1,575.00
B. Timler	Geol. Assist.	6	$85/day	510.00
S. Maltby	Geological Tech	4	$90/day	360.00
D. Newton	Geol. Tech.	10	$90/day	900.00
H Mah	Geol. Assist.	12	$80/day	960.00
W. Kirkman	Geophysicist	13	$95/day	1,235.00
T. Barkiewicz	Geol. Assist.	10	$85/day	850.00
		Total		$12,605.00

ITEM	RATE	TASK COMPLETED	TOTAL
Room, Board	$30/man/day	123 man days	$ 3,690.00
D-6 Bulldozer & operator	$56/hr	26 hours	1,456.00
Camp Mobilization & demobilization	20% of total cost		1,414.54
Materials & Supplies	Exploration Equipment, Drafting Supplies, etc.		1,000.00
Drafting	$12/hr	88 hrs. drafting	1,056.00
VLF-EM	$15/day	16 days rental	240.00
Magnetometer	$25/day	10 days rental	250.00
4X4 crew cabs pickups	$35/day	26 days	910.00
Geochem Soil & S:H Samples	$9.40/sample	670 samples assayed For Ag, Zn, Pb, As, Sb, Cu, Mo	6,298.00
EDM Survey Instruments	$25/day	4 days	100.00
Rock Samples	$33/Sample*	6 Samples assayed for Au, Ag, Pb, Zn, Cu	198.00
	$7/Sample*	4 samples assayed for Mo	28.00
Freight		shipping rock & soil samples (bus)	79.00
			16,719.54
Report Prep.	(M. Waldner - 5 days + typing & copying) (B. Callaghan - 3 days)		1,455.00
		Total	18,174.54
		Grand total	$30,779.54

*N.B. Field work performed between August 1, 1982 and October 10, 1983. Interpretation of results, map preparation and report preparation done between November 1, 1982 and April 29, 1983.

APPENDIX IV

VLF - EM - FIELD NOTES

Line		(H)	(A)
14+00N	26+10E	-7	
North)	25+95	-9	5
	25+80	-10	1
	25+65	-11	-3
	25+50	-9	0
	25+35	-9	4
	25+20	-11	1
	25+05	-11	1
	24+90	-10	4
	24+75	-13	-2
	24+60	-12	-5
	24+45	-9	-1
	24+30	-11	-2
	24+15	-9	0
	24+00	-9	0
	23+85	-11	-6
creek	23+70	-7	-6
	23+55	-7	-4
	23+40	-5	0
	23+25	-5	4

Date: Oct 5/82
Weather: clear cold (snow on ground)
Claim: LP3

		(H)	(A)
14+00N	23+10	-7	2
(North)	22+95	-7	0
	22+80	-7	-2
	22+65	-7	-4
	22+50	-5	-3
	22+35	-5	-3
	22+20	-4	-2
	22+05	-3	6
	21+90	-4	9
creek	21+75	-9	1
	21+60	-7	-2
	21+45	-7	0
	21+30	-7	-2
	21+15	-3	-6
	21+00	-5	-8
	20+85	-3	-12
	20+70	-1	-14
	20+55	+5	-5
	20+40	-15	-3
	20+25	+4	-6
	20+10	+9	4

		H		A	
14+00N	19+95	+6	15		
	19+80	+3	15		
	19+65	-3	4		
	19+50	-3	2	-11	
	19+35	-1	8	-10	1
	19+20	-7	5	-11	1
	19+05	-5	2	-9	-4
	18+90	-8	2	-11	-6
	18+75	-6	4	-11	-1
	18+60	-9	3	-13	-5
	18+45	-9	-4	-13	-12
	18+30	-9	-14	-12	22
	18+15	-5	-12	-6	19
	18+00	+1	8	+3	-8
	17+85	-3	17	-2	-20
	17+70	-9	6	-9	-10
	17+55	-10	0	-10	-5
	17+40	-8	0	-11	-7
	17+25	-11	-3	-13	-4
	17+10	-7	-2	-15	3
	16+95	-9	-1	-13	3
	16+80	-7	-2	-12	2
	16+65	-8	-9	-13	10
	16+50	-6	-11	-10	19

		H		C	
14+00N	16+35	0	-4	-5	21
(North)	16+20	-3	-5	+1	8
Gully	16+05	+1	-5	+5	-7
N-S	15+90	+1	3	-1	-6
	15+75	+2	7	0	-4
	15+60	-3	3	-2	-5
	15+45	-1	3	-3	0
	15+30	-3	5	-4	3
	15+15	-4	3	-1	3
	15+00	-5	-1	-3	8
	14+85	-5	-4	+1	-2
	14+70	-3	-2	+3	-14
	14+55	-3	-1	-7	0
	14+40	-3	-5	-3	14
	14+25	-2	-3	-1	6
	14+10	+1	2	+5	-10
	13+95	-3	1	-3	-10
	13+80	0	2	-3	-4
	13+65	-3	4	-5	-2
	13+50	-2	5	-5	-2
	13+35	-5	3	-5	-4
	13+20	-5	1	-7	-1
	13+05	-5	1	-7	1
	12+90	-6	-1	-6	1

		(H)		(A)	
14+00N	12+75	-5	-5	-7	3
	12+60	-5	-4	-5	2
	12+45	-7	5	-5	-1
	12+30	-5	6	-5	0
	12+15	-6	4	-6	-1
	12+00	-6	7	-4	-7
	11+85	-9	0	-8	0
	11+70	-10	-5	-9	6
	11+55	-5	2	-3	-4
	11+40	-9	1	-5	-4
	11+25	-8	-7	-8	6
	11+10	-7	-8	-7	8
	10+95	-3	3	-3	-1
	10+80	-9	11	-9	-11
	10+65	-9	-12	-7	-10
	10+50	-9	-19	-11	1
	10+35	-8	12	-10	7
	10+20	-7	16	-7	2
	10+05	-6	5	-7	-3
	9+90	-9	5	-8	-3
	9+75	-9	6	-9	-3
	9+60	-11	6	-9	-2
	9+45	-13	-16	-11	0
	9+30	-13	-1	-9	-4

		(H)		(A)	
14+00N	9+15	-10	4	-11	-6
	9+00	-15	0	-13	-1
	8+85	-12	-3	-13	3
	8+70	-13	0	-12	1
	8+55	-11	3	-11	-1
	8+40	-14	-1	-13	2
	8+25	-13	-7	-11	3
	8+10	-11	-4	-11	0
	7+95	-9	-1	-10	1
	7+80	-11	-3	-12	3
	7+65	-8	2	-9	-3
	7+50	-9	8	-11	-3
	7+35	-12	4	-12	4
	7+20	-13	-2	-13	3
	7+05	-12	-3	-9	1
	6+90	-11	1	-10	-2
	6+75	-11	2	-8	-4
	6+60	-13	-2	-13	0
	6+45	-11	0	-9	-3
	6+30	-11	6	-12	-6
	6+15	-13	6	-13	-3
K-50	6+00	-15	1	-14	-2
	5+85	-15	-3	-14	0
	5+70	-14	-5	-15	5

		(1)		(A)	
14+00N	5+55	-13	-8	-13	10
	5+40	-11	-13	-11	12
	5+25	-8	-12	-7	12
	5+10	-3	-2	-5	6
	4+95	-4	5	-1	-6
	4+80	-5	7	-5	-10
creek	4+65	-7	4	-7	-4
	4+50	-9	-2	-9	0
	4+35	-7	2	-7	-2
	4+20	-7	10	-9	-6
	4+05	-11	7	-9	-6
	3+90	-13	-1	-13	-1
	3+75	-12	-1	-11	-1
	3+60	-11	0	-12	-4
	3+45	-13	-1	-13	1
	3+30	-10	1	-14	2
	3+15	-13	4	-10	-8
	3+00	-11	13	-15	-14
	2+85	-16	16	-17	-11
creek	2+70	-21	4	-22	-3
	2+55	-22	-11	-21	6
	2+40	-19	-15	-21	9
	2+25	-13	-6	-16	6
	2+10	-13	-1	-17	6
	1+95	-13	-4	-14	5

		(1-1)		(A)	
14+00N	1+80	-12	-8	-13	1
	1+65	-10	-9	-13	6
	1+50	-7	-4	-13	8
	1+35	-6	-3	-7	0
	1+20	-7	-5	-11	0
	1+05	-3	-2	-7	1
	0+90	-5	-2	-9	-1
	0+75	-3	-4	-10	7
	0+60	-3	-2	-9	5
	0+45	-1	4	-3	-9
	0+30	-3	8	-11	-9
	0+15	-5		-10	
	0+00	-7		-13	

		(L)		(A)	
20+00N	0+00	-9		-11	
(North)	0+15W	-9		-9	
	0+30W	-10	-3	-11	0
	0+45	-11	-2	-9	1
	0+60	-10	-2	-10	2
	0+75	-13	-4	-8	2
	0+90	-12	1	-9	2
	1+05	-10	7	-7	3
	1+20	-8	7	-7	3
	1+35	-7	4	-6	3
	1+50	-7	0	-3	5
	1+65	-8	-1	-3	4
	1+80	-7	1	-4	1
	1+95	-7	-1	-3	1
	2+10	-9	-2	-3	1
	2+25	-7	4	-3	0
	2+40	-5	6	-3	-2
	2+55	-5	-2	-5	-7
	2+70	-9	-9	-8	-10
	2+85	-10	-4	-10	-8
	3+00	-8	6	-11	0

Date: Oct 8/82
Weather: Clear
Claim: LP-3

		(L)		(A)
20+00N	3+15	-5	6	-7
(North)	3+30	-7	-1	-7
	3+45	-7	-5	-7
	3+60	-10	-6	-9
	3+75	-10	-2	-7
	3+90	-9	1	-8
	4+05	-10	-1	-10
	4+20	-10	-4	-11
creek	4+35	-13	-5	-10
	4+50	-12	-4	-11
	4+65	-15	-3	-17
	4+80	-13	2	-13
	4+95	-12	4	-15
	5+10	-12	4	-12
	5+25	-9	5	-9
	5+40	-10	0	-9
	5+55	-11	-1	-13
	5+70	-9	3	-11
	5+85	-7	2	-12
	6+00	-9	1	-11
	6+15	-8	1	-13

		H		A	
20+00N	6+30	-9	2	-11	0
	6+45	-6	0	-13	-4
	6+60	-11	-7	-15	-4
	6+75	-11	-3	-3	1
	6+90	-9	6	-14	5
	7+05	-7	9	-9	11
	7+20	-4	9	-7	11
	7+35	-3	5	-5	8
	7+50	-3	-1	-3	5
	7+65	-5	-2	-4	1
	7+80	-3	2	-5	1
	7+95	-3	4	-3	4
	8+10	-1	2	0	3
	8+25	-3	-2	-3	-3
	8+40	-3	-3	-3	-3
	8+55	-4	-3	-3	-2
	8+70	-5	-5	-5	-6
	8+85	-7	-5	-7	-6
	9+00	-7	0	-7	-2
	9+15	-5	2	-7	0
	9+30	-7	2	-7	0
	9+45	-3	2	-7	0
	9+60	-7	-7	-7	0

		HI		A	
20+00N	9+75	-10	-9	-12	-9
	9+90	-9	4	-11	-1
	10+05	-4	11	-9	5
	10+20	-4	8	-9	3
	10+35	-1	2	-8	5
	10+50	-5	-5	-5	6
	10+65	-5	-5	-6	-1
	10+80	-6	-3	-8	-6
	10+95	-7	-1	-9	0
	11+10	-5	3	-5	7
	11+25	-4	4	-5	5
	11+40	-3	2	-9	6
	11+55	-5	-6	-6	-6
	11+70	-9	-10	-9	-9
	11+85	-9	-4	-10	-3
	12+00	-9	0	-8	2
	12+15	-9	-2	-9	0
	12+30	-11	-2	-9	-2
	12+45	-9	0	-10	-4
	12+60	-11	-8	-12	-7
	12+75	-17	-13	-14	-2
	12+90	-16	-4	-10	3
Swamp	13+05	-16	4	-13	2

		(H)		(A)	
20+00N	13+20	-13	7	-9	4
	13+35	-12	6	-10	1
	13+50	-11	3	-11	-5
	13+65	-11	-2	-13	-3
	13+80	-14	-4	-11	3
	13+95	-12	6	-10	7
	14+10	-7	13	-7	7
	14+25	-6	8	-7	4
	14+40	-5	-1	-6	-3
	14+55	-9	-7	-1	-7
	14+70	-9	-3	-9	-1
	14+85	-8	3	-9	2
	15+00	-7	2	-9	2
	15+15	-9	0	-7	6
	15+30	-7	1	-5	6
	15+45	-7	1	-5	2
	15+60	-7	0	-5	-2
	15+75	-7	0	-7	-3
	15+90	-7	-1	-6	-1
	16+05	-8	-2	-7	1
	16+20	-8	-1	-5	1
	16+35	-8	-1	-7	-2
	16+50	-9	-2	-7	-4

		(H)		(A)	
20+00N	16+80	-9	1	-9	-1
	16+95	-7	6	-6	7
	17+10	-5	5	-3	9
	17+25	-6	1	-5	4
	17+40	-5	1	-2	1
	17+55	-5	1	-3	-1
	17+70	-5	-2	-3	-3
	17+85	-7	-3	-5	-6
	18+00	-6	-1	-7	-4
	18+15	-7	1	-5	0
	18+30	-5	1	-7	-1
	18+45	-7	-1	-6	1
	18+60	-6	-1	-5	3
	18+75	-7	0	-5	1
	18+90	-6	-1	-5	0
	19+05	-9	-1	-5	-2
	19+20	-6	1	-7	-6
	19+35	-7	0	-9	-4
	19+50	-7	-3	-7	0
	19+65	-9	-4	-9	-2
	19+80	-9	0	-9	-2
	19+95	-7	4	-9	1
Tie	20+10	-7	+1	-8	-2

✓		(H)		(A)	
20+00N	20+25	-8	-3	-12	-4
(North)	20+40	-9	-1	-9	1
	20+55	-7	5	-10	2
	20+70	-5	6	-9	1
	20+85	-5	2	-9	3
	21+00	-5	-2	-7	2
	21+15	-7	-2	-9	0
	21+30	-5	1	-7	2
	21+45	-6	-1	-7	3
	21+60	-7	3	-6	4
	21+75	-1	7	-4	2
	21+90	-5	0	-7	-4
	22+05	-3	2	-7	0
	22+20	-1	4	-9	5
	22+35	-3	0	-5	-1
	22+50	-1	0	-7	-6
	22+65	-3	1	-8	-1
	22+80	0	8	-5	4
	22+95	+4	11	-6	0
	23+10	+4	-3	-7	-7
	23+25	-3	-18	-11	-10
	23+40	-7	-17	-12	-7
	23+55	-9	-8	-13	-3
	23+70	-9	-2	-13	-1

✓		(H)		(A)	
20+00N	23+85	-9	-4	-13	-4
(North)	24+00	-13	-8	-17	-8
	24+15	-13	-2	-17	-1
	24+30	-11	4	-14	5
	24+45	-11	1	-15	2
	24+60	-12	-1	-14	1
	24+75	-11	3	-14	5
	24+90	-9		-10	
✓					
18+00N	0+45E	-8		-9	
	0+60	-9	-4	-9	-1
	0+75	-7	-7	-10	-7
	0+90	-5	-9	-7	-11
	1+05	-3	-11	-5	-10
	1+20	0	-17	-1	-11
	1+35	+3	-20	-1	-16
	1+50	+11	-7	+6	-8
	1+65	+12	2	+8	6
	1+80	+9	-2	+5	9
	1+95	+12	-2	+3	5
	2+10	+11	0	+1	1
	2+25	+12	5	+2	3
	2+40	+11	12	+1	7

		H		A	
18+00N	2+55E	+7	15	-1	8
(North)	2+70	+4	15	-3	4
	2+85	-1	11	-5	-1
	3+00	-3	4	-3	-1
	3+15	-5	-2	-4	1
	3+30	-3	-2	-3	5
	3+45	-3	4	-5	6
	3+60	-3	12	-7	3
(road	3+75	-7	8	-7	1
	3+90	-11	-12	-8	-3
	4+05	-7	-12	-7	-3
	4+20	+1	7	-5	2
	4+35	-7	8	-7	2
	4+50	-6	2	-7	-1
	4+65	-8	4	-7	2
	4+80	-7	7	-6	9
	4+95	-11	4	-10	7
	5+10	-11	-1	-12	0
	5+25	-11	-1	-11	1
K-50	5+40	-10	-1	-11	0
	5+55	-11	-4	-13	-6
	5+70	-9	-3	-9	-4
	5+85	-8	-1	-9	0
	6+00	-9	-2	-9	-2

		H		A	
8+00N	6+15E	-7	-2	-9	-3
	6+30	-8	-4	-7	-1
	6+45	-6	-6	-8	-3
	6+60	-5	-5	-7	-7
	6+75	-3	-4	-5	-6
	6+90	-3	-6	-3	0
	7+05	-1	-9	-3	-4
	7+20	+1	-9	-5	-19
	7+35	+4	-2	+3	-16
	7+50	+5	6	+8	7
	7+65	+2	5	+6	17
	7+80	+1	1	-2	10
	7+95	+1	8	-1	9
	8+10	+1	14	-5	8
	8+25	-7	0	-7	-2
	8+40	-5	-12	-7	-14
	8+55	-1	-8	-3	-14
	8+70	+1	-6	+3	-8
	8+85	+1	-4	+1	0
	9+00	+5	10	+7	16
	9+15	+1	18	-3	4
	9+30	-5	6	-5	-2
	9+45	-7	-9	-5	-8
	9+60	-3	-8	-1	-6

		H		A	
18+00N	9+75E	0	-6	-1	N +11
	9+90	-2	-10	+1	-4 9
	10+05	+3	-1	+3	8 -11
	10+20	+3	8	+1	8 -15
	10+35	+1	2	-3	6
	10+50	-1	-1	-3	0
	10+65	+3	7	-5	-6
	10+80	-2	7	-1	0
	10+95	-3	2	-1	8
	11+10	-3	1	-5	4
	11+25	-4	2	-5	2
	11+40	-3	4	-5	0
	11+55	-6	4	-7	-2
	11+70	-5	4	-3	2
	11+85	-8	3	-7	4
	12+00	-7	1	-5	6
	12+15	-9	-5	-9	5
	12+30	-7	-5	-9	1
	12+45	-4	4	-10	0
	12+60	-7	5	-9	-2
	12+75	-8	2	-10	-5
	12+90	-8	0	-7	6
	13+05	-9	-2	-12	4
	13+20	-7	1	-11	-4
	13+35	-8	-1	-12	-8

		H		A	
18+00N	13+50E	-9	-11	-7	-6
	13+65	-5	-15	-8	+11
	13+80	-1	-10	-5	-14
	13+95	+2	-5	+1	-8
	14+10	+2	-5	0	-7
	14+25	+4	0	+4	-2
	14+40	+5	11	+7	19
	14+55	+1	13	-1	24
	14+70	-3	8	-7	16
	14+85	-4	6	-11	9
	15+00	-6	4	-13	5
	15+15	-7	1	-14	3
	15+30	-7	2	-15	3
	15+45	-7	5	-15	0
	15+60	-9	-3	-17	-8
	15+75	-10	-14	-13	-13
	15+90	-3	-10	-11	-14
	16+05	-2	-5	-6	-10
	16+20	-1	1	-4	0
	16+35	+1	8	-3	7
	16+50	-5	2	-7	4
	16+65	-3	-6	-7	-4
	16+80	-3	-7	-7	-6
	16+95	+1	-1	-3	-2

		H		A	
18+00N	17+10E	0	5	-5	4
	17+25	-1	2	-3	8
	17+40	-3	-1	-9	5
	17+55	0	6	-7	1
	17+70	-3	9	-10	1
	17+85	-5	3	-7	3
	18+00	-6	1	-11	2
	18+15	-6	-2	-9	2
	18+30	-7	-9	-11	0
	18+45	-3	-12	-11	-15
	19+60	-1	-14	-9	-19
	18+75	+3	-12	+2	1
	18+90	+7	-2	-3	5
	19+05	+7	9	-5	-3
	19+20	+5	11	-1	1
	19+35	0	7	-4	4
	19+50	+1	7	-3	7
	19+65	-3	6	-6	8
	19+80	-3	5	-8	6
	19+95	-5	7	-9	10
	20+10	-6	9	-11	12
	20+25	-9	6	-16	7
	20+40	-11	-1	-16	-1
	20+55	-10	-7	-14	-10

		H		A	
18+00N	20+20E	-9	-7	-13	-7
	20+85	-5	2	-11	2
	21+00	-7	6	-13	2
	21+15	-9	0	-13	3
	21+30	-9	-3	-13	3
	21+45	-7	2	-16	1
	21+60	-8	4	-13	3
Swamp	21+75	-10	0	-17	-2
	21+90	-9	-1	-15	-7
	22+05	-9	-1	-13	-5
	22+20	-9	-5	-12	-6
	22+35	-8	-7	-11	-8
	22+50	-5	-1	-8	-3
	22+65	-5	5	-7	5
	22+80	-7	3	-9	4
	22+95	-9	-1	-11	-4
	23+10	-7	-3	-9	-4
	23+25	-7	-4	-7	4
	23+40	-5	0	-9	4
	23+55	-5	3	-11	0
	23+70	-7	0	-9	0
	23+85	-6		-11	
	24+00	-6		-9	
	24+15				

F.O.L 24+00

	(H)	(A)
18+00N 24+40		
24+55		
24+70		
24+85		
25+00		

Date: Oct 9/82
Weather: Clouds and Sun Snow on ground!!
Chain: LP-3

		(H)		(A)	
14+00NFO+00W		-7		-9	
Follow-up	0+15	-7		-9	
	0+30	-7	0	-6	7
	0+45	-7	2	-5	5
	0+60	-5	6	-5	3
	0+75	-3	7	-3	6
	0+90	-2	4	-1	8
	1+05	-2	2	+1	10
	1+20	-1	7	+5	18
creek	1+35	+4	14	+13	21.0
	1+50	+7	7	+14	7
	1+65	+3	0	+11	-5
	1+80	+8	9	+11	1
	1+95	+11	15	+15	9
	2+10	+15	9	+16	7
	2+25	+13	0	+17	-2
	2+40	+13	-8	+12	-10
	2+55	+7	-14	+11	-7
	2+70	+5	-8	+11	-1
	2+85	+7	4	+11	2

		(H)		(A)	
14+00N	3+00W	+9	11	+3	6
	3+15W	+14	15	+15	8
	3+30W	+17	1	+17	0
	3+45	+7	-20	+11	-20
	3+60	+4	-20	+1	-29
	3+75	0	-12	-2	-20
	3+90	-1	-10	-6	-12
	4+05	-5	-9	-7	8
	4+20	-5	-5	-7	12
	4+35	-6	-2	-8	-15
	4+50	-6	-2	-7	-16
	4+65	-7	-1	-10	-5
	4+80	-6	0	-10	-4
	4+95	-7	-1	-11	2
	5+10	-7	-1	-7	4
	5+25	-7	0	-10	1
	5+40	-7	1	-7	2
	5+55	-6	3	-8	0
	5+70	-5	3	-9	-4
	5+85	-5	3	-10	0
	6+00	-3	6	-7	6
	6+15	-1	14	-6	14
	6+30	+7	18	+3	18

	(H)		(A)	
6+45	+7	3	+2	2
6+60	+2	-15	-3	-15
6+75	-3	-16	-7	-12
6+90	-4	-9	-6	-3
7+05	-6	-4	-7	-1
7+20	-5	-1	-7	-2
7+35	-6	-2	-8	1
7+50	-7		-5	
7+65				
7+80		S.F.H.		
7+95				

see next page

		(H)		(A)	
8+00N					
North	19+65E	-3	1	-5	-1
	19+80	-5	2	-5	-3
	19+95	-4	4	-4	-1
	20+10	-6	4	-3	4
	20+25	-7	1	-5	4
	20+40	-7	-2	-6	-1
	20+55	-7	-3	-6	-3
	20+70	-5	-3	-4	-2
	20+85	-6	-4	-5	-3
	21+00	-3	-2	-3	-2
	21+15	-4	-1	-3	1
	21+30	-3	1	-3	0
	21+45	-3	2	-4	-2
	21+60	-5	-2	-2	0
	21+75	-3	-4	-3	-2
	21+90	-3	-6	-3	-7
	22+05	-1	-4	0	-8
	22+20	+1	0	+1	-5
	22+35	-1	-2	+4	2

Date: Oct 10/82
Weather: Sun
Claim: LP3

		(H)		(A)	
8+00N	22+50E	+1	-4	+2	2
	22+65	+1	-6	+1	2
	22+80	+3	-4	+3	5
	22+95	+5	6	-2	3
	23+10	+3	12	+1	5
	23+25	-1	5	-3	2
	23+40	-3	1	-3	2
	23+55	0	9	-1	13
	23+70	-5	8	-7	9
	23+85	-7	-2	-10	-5
	24+00	-6	-3	-7	-6
	24+15	-4	1	-5	-1
	24+30	-6	-1	-6	-1
	24+45	-5	-4	-5	-1
	24+60	-4	-3	-7	-6
	24+75	-3	-1	-3	-4
	24+90	-3	-4	-3	-6
	25+05	-3	-4	-3	-11
	25+20	+1	1	+3	-1
	25+35	+3	3	+2	13
	25+50	0	16	-1	15
	25+65	-5	10	-7	5

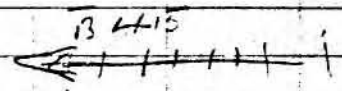
	* Start line Here *				
		(H)		(A)	
8+00N	18+45	-9		-1	
	18+60	+3	-16	-3	-5
	18+75	+5	0	-2	6
Rd	18+90	+5	8	-5	4
	19+05	+3	13	-6	-3
	19+20	-1	11	-5	-3
	19+35	-4	3	-3	2
	19+50	-5	-1	-5	2
	25+80	-8		-7	
	25+95	-7		-6	

Line		(H)		(A)	
6+00N	0+00	-9		-7	
Nad 83	0+15W	-8		-7	
	0+30W	-7	3	-5	2
	0+45W	-7	1	-7	0
	0+60	-7	2	-5	0
	0+75	-5	4	-7	-3
	0+90	-5	3	-8	1
	1+05	-4	1	-3	5
	1+20	-5	-2	-7	-2
	1+35	-6	-3	-6	-3
	1+50	-6	-4	-7	1
	1+65	-9	6	-5	1
	1+80	-3	12	-7	-2
	1+95	-6	0	-7	2
	2+10	0	4	-3	9
	2+25	+1	9	-2	3
	2+40	+2	2	-5	-7
	2+55	+1	-3	-7	-6
	2+70	-1	-7	-6	1
	2+85	-3	-4	-5	5
	3+00	-1	4	-3	3

		(I)		(II)	
6+00N gully	3+15	+1	10	-5	3
	3+30	+5	4	0	5
	3+45	-1	-4	-3	2
	3+60	+3	0	0	4
	3+75	+1	-4	+1	7
	3+90	-3	-7	+3	3
	4+05	0	5	+1	0
	4+20	+3	11	+3	0
	4+35	+5	3	+1	0
	4+50	+1	-8	+3	-1
	4+65	-1	-10	0	-7
	4+80	-3	-3	-3	-6
	4+95	0	2	0	0
	5+10	2	-3	-3	-3
	5+25	-4	-3	-3	2
	5+40	-1	6	+2	11
	5+55	+1	9	+3	5
	5+70	+3	2	+1	-4
	5+85	-1	-4	0	-3
	6+00	+1	-1	+1	1
	6+15	0	2 2	+1	8 8
RK	6+30	+2	8 8	+8	13 13
	6+45	+7	15 15	-7	11
	6+60	+10	16 16	+13	12

		(H)		(A)	
6+00N creek bank	6+75	+15	15 15	+14	9
	6+90	+17	4 4	+15	3
	7+05	+2	-13 13	+15 +4	-10
	7+20	+7			
	7+35				
	7+50				
	7+65				
	7+80				

S.F.H



		H	S.F.H	A	
4+00N	19+50E	+1		+4	
	19+65	-1	-8	+1	10
	19+80	-5	0	-3	-2
	19+95	-3	-4	-2	-6
	20+10	-3	-6	+2	0
	20+25	-1	0	-1	5
	20+40	+1	9	+1	8
	20+55	-5	1	-5	4
	20+70	-4	-3	-3	0
	20+85	-1	5	-5	0
	21+00	-5	2	-3	1
	21+15	-5	-6	-5	-3
	21+30	-3	-3	-4	-5
	21+45	-1	1	-1	2
	21+60	-4	-1	-3	1
	21+75	-1	-2	-4	-5
	21+90	-3	1	-1	-1
	22+05	0	5	-3	5
	22+20	-5	0	-3	1
	22+35	-3	-6	-4	-5
	22+50	-2	-2	-1	-2
grid	22+65	0	-1	-1	2
	22+80	-3	-6	-2	-3
	22+95	+2	-2	-2	-1

		H		A	
	23+10	+1	6	+2	11
	23+25	0	7	-5	9
	23+40	-3	3	-6	0
	23+55	-3	2	-6	0
	23+70	-3	6	-5	1
	23+85	-5	2	-7	-1
	24+00	-7	-5	-5	-1
	24+15	-3	-3	-6	-2
	24+30	-4	-1	-5	-5
	24+45	-3	-3	-4	-6
	24+60	-3	-2	-2	-2
	24+75	-1	2	-1	3
	24+90	-3	5	-3	6
	25+05	-3	5	-3	8
	25+20	-6	-3	-7	1
	25+35	-5	-8	-7	-4
	25+50	-1	0	-4	0
	25+65	-2		-6	
	25+80	-4		-5	

		SF.H		
	(H)		(I)	
2+00N	23+70E −2	—	−3	
	23+55 −1	0	−1	1
	23+40 −3	−3	−2	2
	23+25 0	−1	−3	0
	23+10 −1	1	−2	1
	22+95 −3	1	−3	2
	22+80 −1	2	−3	3
	22+65 −3	2	−4	3
	22+50 −3	−3	−5	−5
	22+35 −3	−3	−5	−8
	22+20 0	3	+1	3
	22+05 −3	3	−3	5
	21+90 −3	0	−4	1
	21+75 −3	0	−3	1
	21+60 −3	−1	−5	0
	21+45 −3	0	−3	2
	21+30 −2	4	−5	0
	21+15 −4	2	−5	−2
	21+00 −5	−3	−3	4
	20+85 −3	−2	−5	6
	20+70 −3	2	−7	0
	20+55 −3	4	−7	−6
	20+40 −5	1	−5	−4

		(H)		(A)	
2+00N	20+25	-5	-1	-3	2
	20+10	-4	3	-5	2
	19+95	-5	3	-5	0
	19+80	-7	-2	-5	1
	19+65	-5	-2	-4	2
	19+50	-5	2	-6	0
	19+35	-5	4	-6	1
	19+20	-7	2	-5	5
	19+05	-7	1	-8	4
	18+90	-7	0	-8	-2
	18+75	-8	0	-9	-5
	18+60	-6	-2	-5	-4
	18+45	-9	-5	-7	1
	18+30	-3	6	-3	11
	18+15	-7	14	-10	8
	18+00	-11	5	-11	2
Creek	17+85	-13	-5	-10	3
	17+70	-10	-5	-13	1
	17+55	-9	-1	-11	-1
	17+40	-7	-2	-13	-3
	17+25	-9	-6	-10	-2
	17+10	-7	-5	-11	-6
	16+95	-5	1	-10	-7

		(H)		(A)	
2+00N	16+80	-6	3	-5	1
	16+65	-7	-1	-9	0
	16+50	-7	-4	-7	-3
	16+35	-5	-6	-7	-3
	16+20	-5	-13	-6	-12
	16+05	-1	-9	-5	-18
	15+90	+4	5	+1	-5
	15+75	-1	9	+3	12
Rd.	15+60	-1	11	+1	17
	15+45	-5		-6	
	15+30	-8		-7	

392,400 E

20+00N
19+00N-F
18+00N
17+00N
16+00N
15+00N-F
14+00N
12+00N
10+00N
8+00N
6+00N
4+00N
2+00N
0+00N

18+25N
15+00N
14+00F
13+00N
11+00N
7+00N
5+50N

5,530,000 N

WATERLOO RD.
PAYDAY RD.

392,400E

SCALE 1:5000

200m 100 0 100 200 300 400 500m

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

LEGEND

TERTIARY

CENOZOIC — KAMLOOPS GROUP
Basalt, olivine basalt, minor rhyolitic lava, and breccia.

CRETACEOUS

MESOZOIC — COAST INTRUSIONS
Valhalla intrusions granite, porphyritic granite
Nelson intrusions granodiorite, porphyritic granite, diorite, monzonite, quartz monzonite.

PERMIAN

ANACHIST GROUP
Greenstone, graywacke, paragneiss, andesitic lava, breccia, recrystallized limy tuffs.

PALEOZOIC — Limestone.

ROAD
NO VEGETATION
SLIDE AREA
GEOCHEM SOIL TRAVERSE 10+00N
GEOCHEM SILT TRAVERSE
MARSH
ROCK GEOCHEM. SAMPLE .9999
DIRECTION OF GLACIATION

FAULT (approximate) (inferred)
CONTACT (approximate) (inferred)
BEDDING (inclined, vertical, unknown)
FOLIATION (inclined, vertical, unknown)
FRACTURES (inclined, vertical, unknown)
TRENCH
PIT
OUTCROP

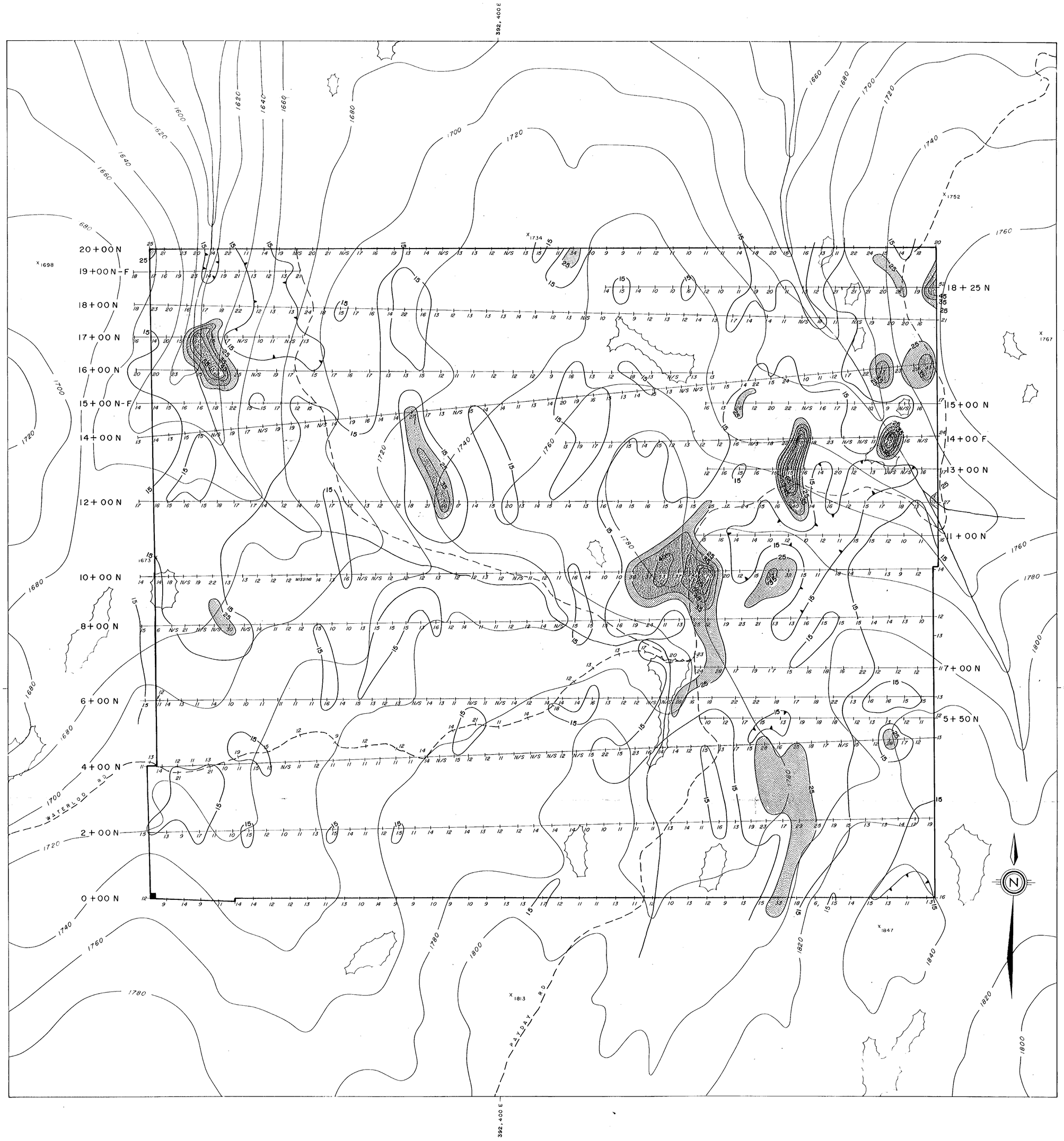
Qz	QUARTZ
Peg	PEGMATITE
Grt	GARNET
Apl	APLITE
Calc	CALCITE
Hem	HEMATITE
Mag	MAGNETITE
Pyrr	PYRRHOTITE
Sph	SPHALERITE
Ga	GALENA
Br	BORNITE
Cpy	CHALCOPYRITE
Py	PYRITE
Arg Alt	ARGILLIC ALTERATION
Prop Alt	PROPYLITIC ALTERATION

MOHAWK OIL COMPANY LTD.
LIGHTNING PEAK PROJECT

LP 3

GEOLOGY

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 1



SCALE 1:5000

200m 100 0 100 200 300 400 500m

LEGEND

SUBANOMALOUS	ANARCHIST GROUP INTRUSIVES	SOIL SAMPLE GRID LINE (values in ppm)	6 9 2
ANOMALOUS	ANARCHIST GROUP INTRUSIVES	CONTOUR LINE (ppm)	—60—
2ND ORDER ANOMALY	ANARCHIST GROUP INTRUSIVES	TOPOGRAPHIC CONTOUR	—1620—
		ROAD	– – – –

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

L P 3

LEAD SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 2

392,400 E

5,530,000 N

20+00N
19+00N-F
18+00N
17+00N
16+00N
15+00N-F
14+00N
12+00N
10+00N
8+00N
6+00N
4+00N
2+00N
0+00N

18+25N
15+00N
14+00F
13+00N
11+00N
7+00N
5+50N

WATERLOO RD.
PALDAY RD.

SCALE 1:5000

200m 100 0 100 200 300 400 500m

LEGEND

SUBANOMALOUS — ANARCHIST GROUP INTRUSIVES

ANOMALOUS — ANARCHIST GROUP INTRUSIVES

2ND ORDER ANOMALY — ANARCHIST GROUP INTRUSIVES

SOIL SAMPLE GRID LINE (values in ppm)

CONTOUR LINE (ppm) —60—

TOPOGRAPHIC CONTOUR —1620—

ROAD

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

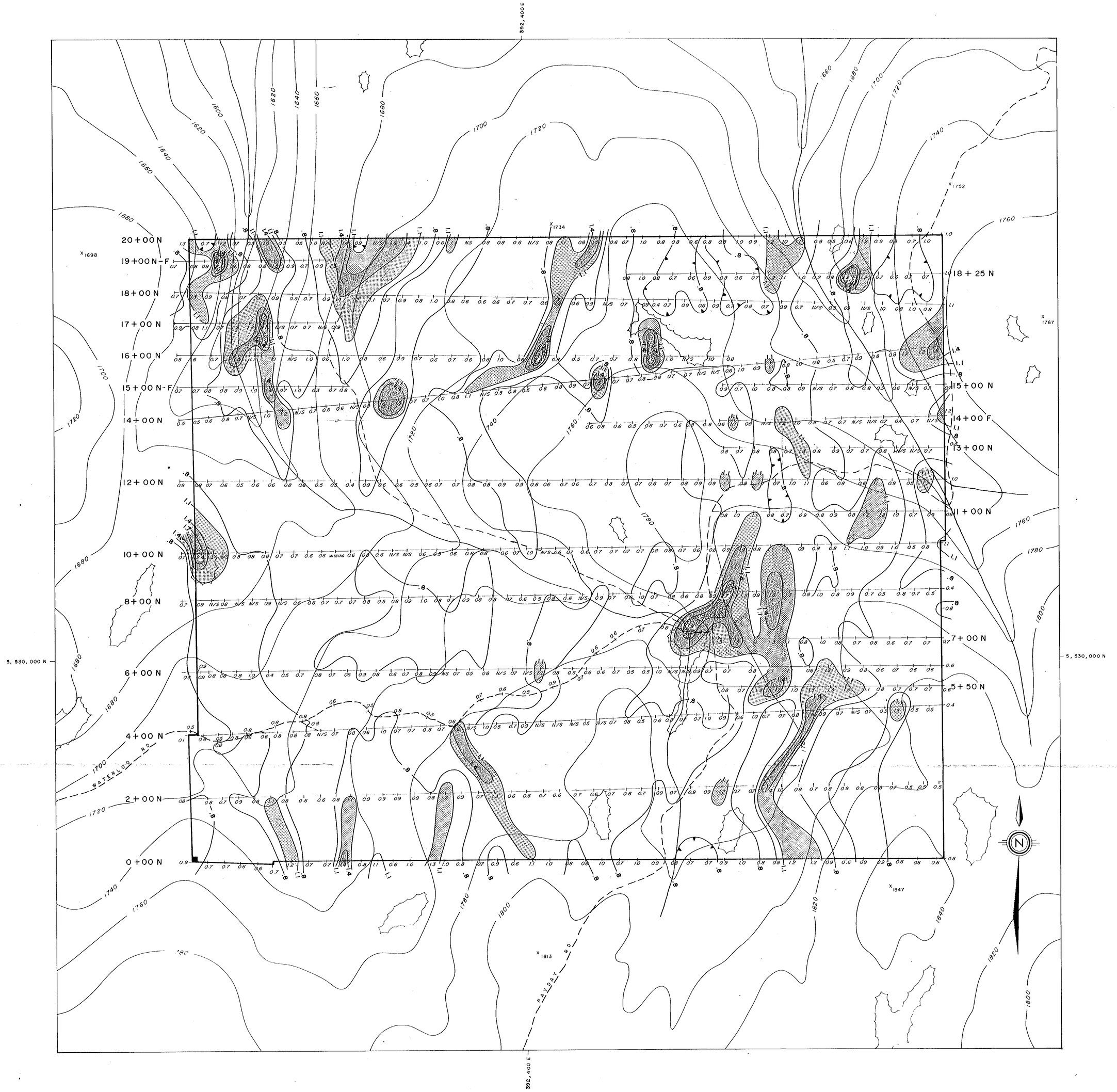
MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

LP 3

ZINC SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 3



SCALE 1:5000

200m 100 0 100 200 300 400 500 m

LEGEND

SUBANOMALOUS	ANARCHIST GROUP INTRUSIVES	SOIL SAMPLE GRID LINE (values in ppm) — 6 9 2
ANOMALOUS	ANARCHIST GROUP INTRUSIVES	CONTOUR LINE (ppm) — 60
2ND ORDER ANOMALY	ANARCHIST GROUP INTRUSIVES	TOPOGRAPHIC CONTOUR — 1620
		ROAD

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

L P 3

SILVER SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 4.

392, 400 E

5, 530, 000 N

20+00N
19+00N-F
18+00N
17+00N
16+00N
15+00N-F
14+00N
12+00N
10+00N
8+00N
6+00N
4+00N
2+00N
0+00N

18+25N
15+00N
14+00F
13+00N
11+00N
7+00N
5+50N

WATERLOO RD
PAYDAY RD

SCALE 1:5000

200m 100 0 100 200 300 400 500m

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

LEGEND

SUBANOMALOUS — ANARCHIST GROUP INTRUSIVES

ANOMALOUS — ANARCHIST GROUP INTRUSIVES

2ND ORDER ANOMALY — ANARCHIST GROUP INTRUSIVES

SOIL SAMPLE GRID LINE (values in ppm) — 6 9 2

CONTOUR LINE (ppm) — 60

TOPOGRAPHIC CONTOUR — 1620

ROAD

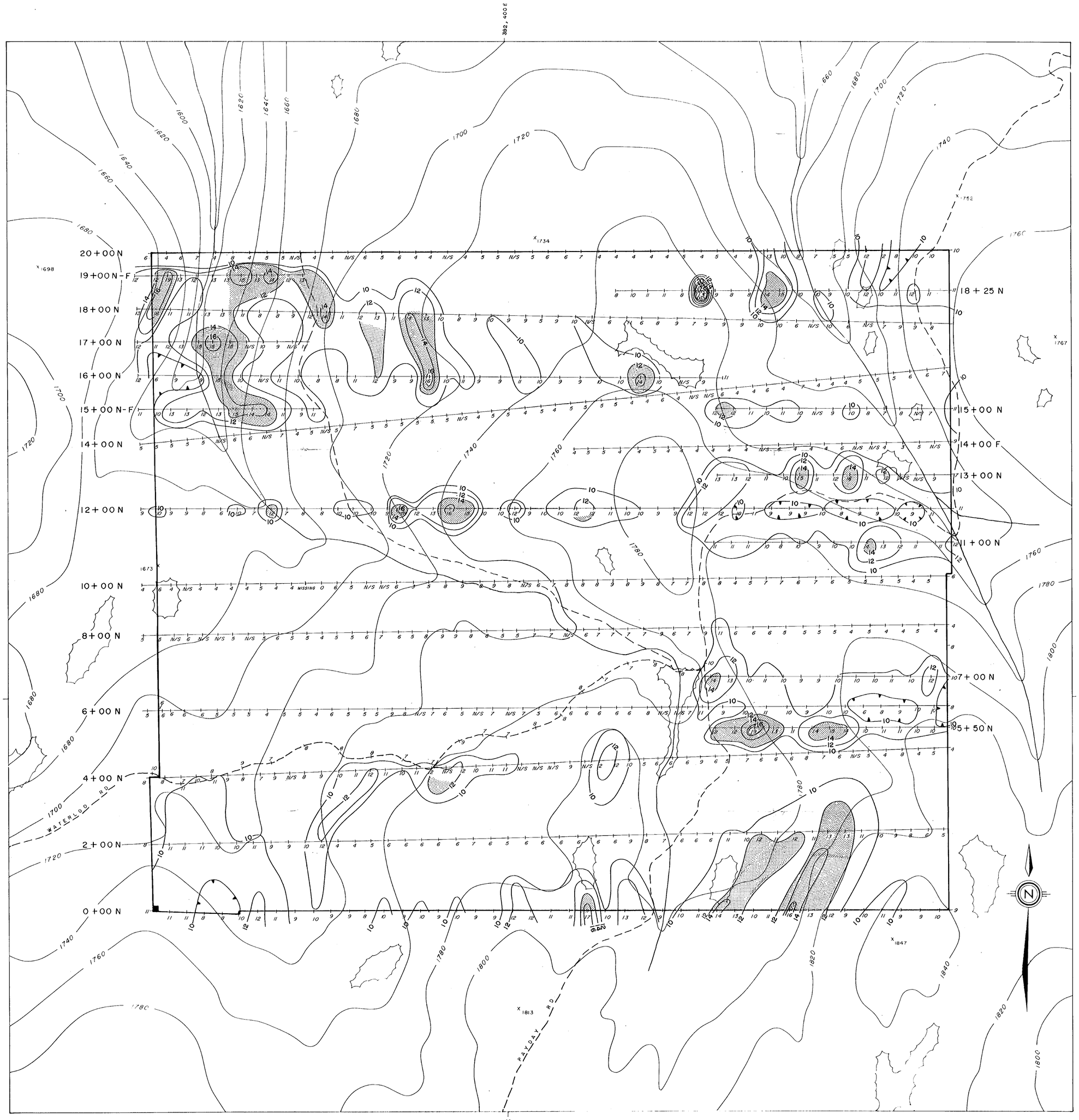
MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

LP 3

ARSENIC SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 5



SCALE 1:5000

200m 100 0 100 200 300 400 500 m

LEGEND

SUBANOMALOUS	ANARCHIST GROUP INTRUSIVES	SOIL SAMPLE GRID LINE (values in ppm)	6 9 2
ANOMALOUS	ANARCHIST GROUP INTRUSIVES	CONTOUR LINE (ppm)	60
2ND ORDER ANOMALY	ANARCHIST GROUP INTRUSIVES	TOPOGRAPHIC CONTOUR	1620
		ROAD	

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

LP 3

ANTIMONY SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO
M. LETILLY	1:5000	APRIL, 1983	NO. 6

392, 400 E

20+00N
19+00N-F
18+00N
17+00N
16+00N
15+00N-F
14+00N
12+00N
10+00N
8+00N
6+00N
4+00N
2+00N
0+00N

18+25N
15+00N
14+00F
13+00N
11+00N
7+00N
5+50N

5, 530, 000 N

WATERLOO R.D.

PAYDAY RD.

392, 400 E

SCALE 1:5000

200m 100 0 100 200 300 400 500m

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

LEGEND

SUBANOMALOUS — ANARCHIST GROUP INTRUSIVES

ANOMALOUS — ANARCHIST GROUP INTRUSIVES

2ND ORDER ANOMALY — ANARCHIST GROUP INTRUSIVES

SOIL SAMPLE GRID LINE (values in ppm)

CONTOUR LINE (ppm)

TOPOGRAPHIC CONTOUR

ROAD

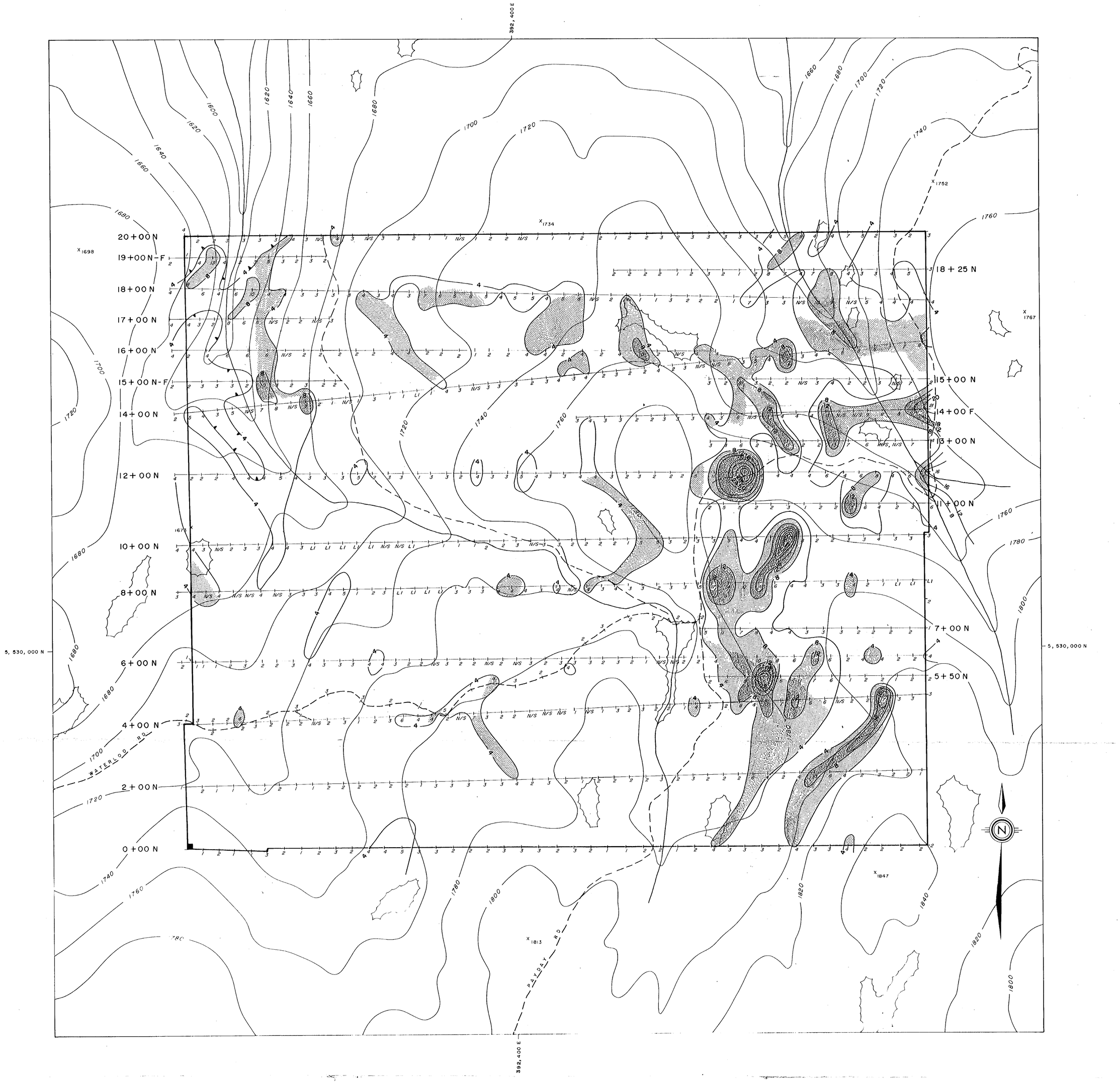
MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

LP 3

COPPER SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 7



SCALE 1:5000

200m 100 0 100 200 300 400 500m

LEGEND

SUBANOMALOUS	ANARCHIST GROUP INTRUSIVES	SOIL SAMPLE GRID LINE (values in ppm)
ANOMALOUS	ANARCHIST GROUP INTRUSIVES	CONTOUR LINE (ppm)
2ND ORDER ANOMALY	ANARCHIST GROUP INTRUSIVES	TOPOGRAPHIC CONTOUR
		ROAD

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

L P 3

MOLYBDENUM SOIL GEOCHEM

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 8

392,400 E

20+00 N
19+00 N-F
18+00 N
17+00 N
16+00 N
15+00 N-F
14+00 N
12+00 N
10+00 N
8+00 N
6+00 N
4+00 N
2+00 N
0+00 N

18+25 N
15+00 N
14+00 F
13+00 N
11+00 N
7+00 N
5+50 N

5,530,000 N

WATERLOO RD.

PAYDAY RD.

X1698 X1734 X1752 X1760 X1767 X1673 X1847 X1813

1600 1620 1640 1660 1680 1700 1720 1740 1760 1780 1800 1820 1840

392,400 E

N

SCALE 1:5000

200m 100 0 100 200 300 400 500m

LEGEND

DIP ANGLE PROFILE 1 CM. = 5°

FILTERED READINGS

+5 −5

ANNAPOLIS FREQUENCY 21.4 KH_z

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

L P 3

VLF-EM DIP ANGLES

ANNAPOLIS

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 9.

392,400 E

20+00 N
19+00 N-F
18+00 N
17+00 N
16+00 N
15+00 N-F
14+00 N
12+00 N
10+00 N
8+00 N
6+00 N
4+00 N
2+00 N
0+00 N

18+25 N
15+00 N
14+00 F
13+00 N
11+00 N
7+00 N
5+50 N

5,530,000 N

WATERLOO RD.
PAYDAY RD.

1673
1698
1734
1752
1767
1813
1847

SCALE 1:5000

200m 100 0 100 200 300 400 500m

LEGEND

DIP ANGLE PROFILE: 1 CM. = 5°

FILTERED READINGS

+5
-5

HAWAII FREQUENCY 23.4 KHz

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

L P 3

VLF - EM DIP ANGLES

HAWAII

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1:5000	APRIL, 1983	NO. 10

392,400 E

5,530,000 N

20+00N
19+00N-F
18+00N
17+00N
16+00N
15+00N-F
14+00N
12+00N
10+00N
8+00N
6+00N
4+00N
2+00N
0+00N

18+25N
15+00N
14+00F
13+00N
11+00N
7+00N
5+50N

WATERLOO RD.
TRAIL
PAYPAY RD.

X1698 X1673 X1752 X1767 X1813 X1841

SCALE 1: 2000

SCALE 1: 5000

200m 100 0 100 200 300 400 500m

LEGEND

Magnetic Contour —58000—

Magnetic Grid Reading (Gammas)

Topographical Contour (Meters A.S.L.) —1540—

Road

Clearing or Swamp

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,247

MOHAWK OIL COMPANY LTD.

LIGHTNING PEAK PROJECT

L P 3

MAGNETIC SURVEY

DRAWN BY	SCALE	DATE	DRAWING NO.
M. LETILLY	1: 5000	APRIL, 1983	NO. 11