

EXPLORATION PROGRAMME ON
THE BENNETT LAKE PROPERTY
DISTRICT OF RAINY RIVER

ONTARIO

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1989

MINING LANDS SECTION

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INTRODUCTION

The Bennett Lake property is owned by Royal Crest Resources Ltd. It consists of 14-contiguous, unpatented mining claims and one isolated unpatented mining claim in the Calm Lake area in the District of Rainy River, Ontario.

The following report describes the history, geology and mineralization of the Bennett Lake property and the immediate vicinity and a magnetometer survey, VLF-EM survey, Induced Polarization survey and geological survey done on the property in 1988.

The claim numbers listed below are 100% owned by Royal Crest Resources Ltd. and are recorded on the Bennett Township and Bennett Lake area claim maps;

Claim Numbers	Area (Hectares)
989655	16
989656	16
989657	16
1005061	16
1011228	4
1011229	16
1011230	18
1011231	16
1011232	16
1011233	16
1011234	16
1011235	16
1011236	16
1011237	16
1040118	16

The shaft of the Independence Mine lies on the north boundary of claim 1005061 and the Red Cedar gold occurrence was found on claim 989656.

The Bennett Lake property is located within Bennett Township and the Bennett Lake area, about 30 kilometers east of Mine Centre and about 0.5 kilometers north of Bennett Lake (latitude 48 47', longitude 92 16'). Access is via Highway 11, one kilometre north and by boat across Bennett Lake and by foot trail across the claims. Most services are available in Atikokan or Thunder Bay to the east or Mine Centre to the west.

HISTORY AND RESULTS OF PREVIOUS WORK

The history of the Bennett Lake property began in 1896 when several test pits and a shaft were sunk by the Independence Mining and Development company Limited. The shaft was sunk to a depth of 75 feet with 20 feet of drifting and 13 feet of cross-cutting at the 45-foot level. A five stamp mill was erected in 1898 through which 125 tons of ore were milled from which 121 ounces of gold were produced for an average grade of 0.97 ounces of gold per ton. Bow (1899) reported gold values of 0.39 oz/ton in the host rock adjacent to the main quartz vein which was found to contain gold mineralization up to 7.76 oz/ton gold.

In 1936, G. H. Miles worked in the vicinity of the Cedar gold showing for Cedar Lake Gold Mines Limited. describes the work done as follows; "On Mining Claim F.F. 2497, fourteen trenches have been made in the strike of the Independence main working, and the same vein material found. Gold was found in panning in most of the trenches. mineralized zone has not been trenched for the whole width of the zone. The mineral found by panning and which can be seen in the ore, is copper pyrites, galena, zinc, iron pyrites and gold." In Burke's report of 1940 for Sylvanite Gold Mines Limited, assay values are included for samples taken by Miles in this area. Gold values as high as 0.15 oz/ton over 3 feet were obtained from these trenches near the east boundary of claim F.F. 2497 (present claim 1011228) and 0.03 oz/ton over 9 feet near the west boundary of claim F.F. 2497 (present claim 1011230). If this zone is continuous as suggested by Miles it represents a minimum strike length of 2000 feet.

Miles's report continues with a description of claim F.F. 2697 (present claim 1011237), "Mining Claim 2697, 234 feet west of number one post of this claim along the boundary are a number of quartz veins, in all 10 feet in width. outcropping of quartz has been trenched on for 50 feet. vein is in contact with quartz porphyry. Both walls are loose from the quartz and schistic wall rock. The veins and rock alongside the vein shows copper and iron pyrites. This vein was not panned. To the south 154 feet is a quartz vein of 3 feet in width with a small amount of work, the quartz looks waxy. No panning sample was taken. About 650 feet or 700 feet to the southwest in felsite is an outcropping of quartz from one foot to six feet in width. The quartz is in lens form and can be traced for about 100 feet. No work was done on it and no sample taken for panning."

The report by Miles describes the main showing on claims 2495 and 2486 (present day claim 989656), "The Main Workings are on F.F. 2495 and F.F. 2486, 144 feet north of the south boundary of these claims is a shearing of hornblende schist, highly altered into magnetite, very fine in grain. Through this hornblende shearing are quartz veins and veinlets for 22 feet south from the north contact. quartz has a width of two to ten feet, is irregular but can be seen in each trench along the shear zone for a distance Ten trenches crossing the shearing and quartz of 1546 feet. veins from south to north and are from 50 to 340 feet in length. Samples were taken for panning over the width where quartz vein appears in the ore body. Each sample was a 3 foot sample across the strike of the ore body and sampling was done on the north side of the trench for a distance of 85 feet. On the south side of the working trench we got 21 feet of samples where each sample gave gold in panning and the north side in the same trench we got 21 feet of panning showing in each sample a good tailing. Samples for an assay were taken on the north side of the main trench every other three feet. Nine samples of 3 feet each and one sample of 10 feet. Each sample was a channel out 3 inches in width 1/2 inch deep and three feet long. This covered a distance of 60 feet, or a known gold bearing ore body of 85 feet in width, giving an average value of \$5.28 (0.15 oz/ton).

On the south side of the main trench, gold was found by panning as stated before for a distance of 21 feet. Sampling for assays were taken every other 3 feet, each assay sample being a 3 foot channel sample. One sample was 16 feet in width. This gives a width of 58 feet of gold bearing ore, of an average value of \$3.85 (0.11 oz/ton)"

A 138 foot drill hole was drilled beside the main trench in July, 1937 by the Cedar Lake Gold Syndicate.

In 1940, D. K. Burke examined the Red Cedar property for Sylvanite Gold Mines Limited.

Jacobus Mining Corporation drilled three short diamond drill holes in the vicinity of the main trench of the Red Cedar property presumably to test the previously reported gold mineralization. These holes with a total length of 305 m intersected narrow units of alternating quartzite, graywacke and magnetite ironstone which are intruded by a porphyry. Sulphide mineralization (pyrite, pyrrhotite, chalcopyrite, and sphalerite) was disseminated throughout the core with localized concentrations of pyrite and pyrrhotite, and veins of pyrrhotite in the banded ironstone. No assay results were reported.

Turbenn Minerals Limited carried out a ground magnetometer survey over the western part of the Red Cedar occurrence in 1960. Two small anomalies less than 250 meters in length were detected in the vicinity of the main trenching.

E. J. Rivers collected chip samples from trenches 1 and 2 in 1973. In June, 1974, P. Huxhold resampled the same trenches for A. C. A. Howe International Limited. Sampling of a rusty shear zone with quartz veining in trench 2 by Rivers yielded 0.06 oz/ton gold over 27 feet. Sampling of the same zone by Huxhold revealed 0.03 oz/ton gold over 30 feet.

In 1975, A. C. A. Howe, conducted a ground electromagnetic and magnetic survey over the property. The magnetic survey resulted in six magnetic anomalies, four of which were sufficiently interesting to warrant further investigation. The electromagnetic survey outlined eight anomalous areas, four of which were coincident with magnetic anomalies.

In 1981 the area was mapped by S. Fumerton (1985) for the Ontario Geological survey. The following nine selected grab samples were taken from the Independence Mine dump.

Gold(oz/ton)	Description
0.07	In situ quartz vein.
0.19	Quartz vein with minor carbonate.
tr	Barren host rock.
0.96	Stockwork of quartz veins up to 2 cm thick in host rock.
tr	Thin stringers (lmm) with pyrite and chalcopyrite in host rock.
0.04	Sparsely disseminated pyrite in host rock.
0.01	Fine network of quartz veins (1cm) in host rock.
tr	Coarse grained quartz vein with trace of pyrite.
0.21	Quartz vein heavily mineralized with granular pyrite.

Argor Explorations Limited geologically mapped the property in 1984.

Lynx-Canada Explorations Limited conducted geophysics, geological mapping, geochemical sampling and trenching in the 1983-1984 field season on 65 claims including the Independence portion of the property in this report. The results are summarized in a report by Peter Mordaunt (1984); "A soil geochemical survey completed in the 1983 field season revealed an extremely high sample result (ie. 0.05 oz/ton Au, 35 ppb considered anomalous) at location 25+00W, 0+25N. Follow-up prospecting (in 1984) lead to a major trenching effort just south of this location (baseline) which resulted in a showing with extremely high values. The economic significance of this zone is yet undetermined, however, the geological environment has been established as a unique setting."

"A highly weathered ("lateritized") iron formation of significant width (ie. 10 meters) was uncovered with the aid of a bulldozer and backhoe. Bedrock within this zone was not detected to a depth of approximately 15 feet. High gold and silver values were sampled at the contact between banded sediments and mafic volcanics (ie. wallrock). wallrock, quartz veins sulphides and plus telluride mineralization are identified. This zone is coupled with a good magnetic response indicative of magnetite. VLF-EM conductor couples the magnetic anomaly and is thought to be a response to sulphide and possibly pyrrhotite mineralization."

Three samples taken by the author and assistant Rick Angove from the Lynx trenching on September 5, 1987 gave the following results;

Gold(oz/ton)	Silver(oz/ton)	Description
0.03	0.10	Quartz vein in sheared sediment, pyrite and chalcopyrite.
0.04	0.10	Quartz vein in sediment, 3% disseminated pyrite.
0.30	4.18	Strongly sheared, 1% pyrite and chalcopyrite.

In 1984 the area west of the property and a small portion of the west end of the property was flown by Aerodat Limited on behalf of Morrison Petroleum Limited. Equipment operated included a 3-frequency electromagnetic system, a magnetometer and a VLF-EM system. A total of fourteen electromagnetic conductors were deemed to be of interest as bedrock zones however due to the cut-up nature of the survey submitted for assessment work the conductors could not be traced for any distance on the Bennett Lake property.

REGIONAL GEOLOGY

The Bennett Lake property occurs in the Quetico sub-province of the Superior Province. The former extends from Rainy Lake eastward for approximately 500 miles to Kapuskasing and exhibits a maximum width of 60 miles.

The rocks are highly metamorphosed sediments, migmatites, granitized gneisses, and gneissic or massive granitic rocks of approximate granodiorite composition. In the western belt, sediments and their οf the metamorphic equivalents are referred to as Couchiching, a name given by A. C. Lawson in 1888 to metamorphosed sediments below the Keewatin lavas in the Rainy Lake area. In the vicinity of the property, west of Atikokan, Couchiching-type rocks occur stratigraphically below and conformable with, basic and acidic lavas and appear to be the lowest unit of the Keewatin group.

Structure in the Quetico sub-province exhibits east-west trending folds conformable between the Keewatin-type lavas and sediments and Couchiching-type sediments. Faults are marked by wide shear zones containing chlorite and carbonate in volcanics and mylonite in more siliceous rocks and occur mainly between Couchiching-type sediments and Keewatin-type basic volcanics.

PROPERTY GEOLOGY AND MINERALOGY

The property geology was derived from Mordaunt (1984).

The geology of the Bennett Lake property may be subdivided into the following rock types from oldest to youngest; mafic volcanics, intermediate volcanics, felsic volcanics, metasediments and banded iron formation.

Mafic volcanics are the most abundant lithology on the property. most of the mafic volcanics appear to be undefined and are massive to weakly foliated. Grain size varies from ash to a more medium grained, tuffaceous rock.

There are two distinct intermediate volcanic lithologies. The first type is a discontinuous lithology that is comprised of tuffaceous volcanics. Structurally they appear in lenses that are stringy and thin with a fine to medium grained texture. Foliated to weakly foliated these rocks are conformable to other geological units. The second intermediate lithology is an intermediate tuff with blue quartz eyes.

The felsic volcanics occur as small discontinuous bands. They occur as tuffs to crystal tuffs, fine to medium grained with a great deal of silicification. Banding within the crystal tuffs is common with most felsics revealing foliation. The felsic volcanics are conformable and quite similar in size and structure to the intermediate volcanics with which they are often associated.

The sediments consist of alternating bands of wacke, siltstone and argillite. The fine grained sediments are in some zones contorted and carbonatized. The sediments lie conformable to regional strike.

The banded iron formations occur within the sediments. These cherty units contain varying amounts of sulphides and are associated with oxidation weathering. The units are relatively thin (0.5 to 10 meters) in width and are conformable with other geological units.

The geology and mineralogy of the Bennett Lake property was described in more detail by Miles (1936); "The formation consists of Keewatin schist, felsite, sericite, greenstone, volcanic lavas, hornblende and other greenstones that are generally found in the Keewatin rocks. Three dykes of later porphyry have broken through the Keewatin rocks, and the quartz veins are near or in the porphyry. The contact of the porphyry and the Keewatin schist is generally the bed of quartz veins. In the northern part of the claims shearing of hornblende schist, approximately 700 feet in This shearing and altered hornblende can be traced from the east side of the Independence Mine to the west side of this block of claims for a distance of 2 miles. Near the south contact of this break is the Independence shaft, and here the shearing holds quartz in lenses and kidneys for a four to eight feet. The lenses can be followed in width of to claim F.F. 2497 (present claims 1011228 and 1011230) and have been traced by trenching across the claim. Toward the west this shearing becomes narrower with a slight bend toward the south, and at the west boundary of the claims (present claim 1040118) is 175 feet in width. to the north of this shearing on claim F.F. 2697 (present claim 1011237) is a contact between Keewatin schist and porphyry. contact is bedded a quartz vein four to six feet in width and it has been trenched on for 50 feet. 150 feet toward the south is an eight foot wide quartz vein blue in colour. Both veins are well mineralized with copper and iron 700 feet to the southwest is a quartz vein in pyrites. The quartz appears in lenses from 1 foot to 6 feet wide and can be traced for 100 feet. 2486 (present claim

On claim F.F. 1011229) is a large shearing in hornblende schist altered and sheared for a 1000 feet. Through this shearing is considerable magnetic iron and hornblende, the magnetite has not been found in solid or concentrated form. Through this width of the shearing are a great number of quartz veins and at places from six inches to twelve feet in width. quartz outcroppings form the contact between the greenstone schist and the magnetic hornblende schist. To the south the is with quartz porphyry. Here the quartz is embedded in a stockwork of veins in the porphyry.

The third break occurs 750 feet north from the landing at Cedar Lake (Bennett Lake) on Claim F.F. 2489 (south of the present claim group). It is a porphyry dyke 250 feet in width in which is a lamprophyre dyke very irregular and sandwiched in between the porphyry. Between the porphyry and lamprophyre is a quartz vein of 2 feet in width and in places this quartz is almost or nearly all mineral consisting of iron, copper pyrites and zinc. The lamprophyre carried a small amount of iron pyrites.

EXPLORATION PROGRAM 1988

A total of 27 kilometers of line were cut in a direction of 90 degrees on the Bennett Lake property in 1988. A Magnetometer survey, VLF-EM survey, Induced Polarization survey and geological mapping were done on the cut lines in 1988.

MAGNETOMETER SURVEY

An east-west trending baseline with cross-lines spaced at 100 meters were cut over the entire property. A total of 27.6 km of lines were cut on the property in August of 1988.

Total field magnetic measurements were made with a Scintrex MP-2 proton magnetometer at 25 meter intervals along the grid lines. Diurnal variations were determined by a base station check at regular intervals of about 2 hours. Results of the survey are contoured on the accompanying maps.

The magnetometer survey outlined 2 anomalous zones that are likely due to iron formation. The first occurs from L16E, 0+50N to L7E, 0+25N and has a high of about 65,000 gammas. The second anomaly occurs from L18E, 5+25N to L9E, 2+25N and has a high of about 64,000 gammas. A series of spot highs of 61,000 gammas occur in the north part of claim 1005061 and may be the eastward extension of the previously mentioned anomaly.

ELECTROMAGNETIC SURVEY

The in-phase and out of phase component of the local electromagnetic field generated by low frequency radio transmissions from Cutler, Maine were measured at 25 meter intervals using a Geonics VLF-EM.

The following valid anomalies were detected;

ANOMALY	FROM-TO	COMMENTS
A	L16E, 0+75S L5E, 2+00S	Follows a gossaned, non-magnetic iron formation
В	L15E, 1+50N L20E, 0+50N	May be eastward extension of Anomaly A. If so then it is offset about 200 meters to the north.
С	L7E, 2+00N L11E, 2+00N	No outcrop, possibly overburden effect. Magnetic association of 64,500 gammas on L10E.
D	L10E, 3+00N L12E, 3+50N	No outcrop but good magnetic signature
E	L13E, 5+00N L16E, 5+50N	Felsic outcrop with sulphide facies iron formation to east and swampy ground to west. Weak magnetic signature on east end.

INDUCED POLARIZATION SURVEY

The results of the Induced Polarization survey are presented in Appendix \mathbf{A} .

GEOLOGICAL MAPPING

The geology of the Bennett Lake property can be divided into two principle groups. The entire western potion of the survey grid is underlain by metasedimentary rocks, in the of guartz biotite schists (meta-arkose). These metasediments host at least three bands of sulphide (+/minor amounts of oxide) facies iron formation. The eastern portion of the grid contains metavolcanic rocks which become felsic to the east. This sequence progressively more contains mafic flows and tuffs, a zone of intercalated rocks (mafic to felsic volcanics and banded oxide facies iron formation), and a more felsic unit containing quartz eyes and magnetite. The sequence is tightly folded and contains at least one closure (to the west). Work by Fumerton (1981) suggests that the rocks are folded about a synclinal axis.

Metasediments

The sequence of quartz biotite schists often contains variations including; quartz feldspar schist, pelitic schist, muscovite schist, and amphibolitic schist. The rocks locally contain cordierite, fragmental sections, crossbedding, quartz eye lenses and chert. Evidence of locally higher metamorphic grades includes the presence of garnets and migmatitic sections. However, the most important features of the metasedimentary rocks are the three bands of sulphide facies iron formation.

These bands are located as follows;

L10+50 to L12+50E, near the baseline (Red Cedar Occurrence) L6 to L16E, from 1+75S to 0+40N L13 to L15E, from 2+25 to 1+50S

The Red Cedar occurrance was resampled in detail and assays reached a maximum value of 812 ppb (0.023 oz/ton). No significant copper, zinc or tellurium assays were reported.

The second and most extensive band of iron formation yielded some very interesting gold assays. On L9E at 1+25S, an initial sample contained 1772 to 2178 ppb gold. Follow up work at the same location, resulted in an assay of 7198 ppb (0.210 oz/ton) gold over a two meter width. The host rock is a quartz biotite schist (with pelitic sections), containing finely laminated beds of recrystallized chert and biotite. It contains <1% pyrite locally, which results in a strong gossan/stain.

The third band of sulphide facies iron formation contains magnetite and did not yield any significant assays for gold, copper, zinc or tellurium.

Metavolcanics

The metavolcanics of the property vary from mafic to felsic in composition, but seemingly become more felsic to the east. Mafic flows and tuffs are often amphibolitized. Intermediate tuffs may likewise be altered (to a quartz biotite amphibolite schist), contain quartz eyes and may be weakly magnetic. Felsic rocks tend to have a rhyolitic composition and may contain quartz eyes, mafic bands, chert, feldspar phenocrysts and magnetite.

The band of mafic flows and tuffs contains a small lense of sulphide facies iron formation, a sample of which (L18E, 0+75S) assayed 303 ppb gold.

The next band of intercalated felsic and mafic (to intermediate) metavolcanics contains thin lenses (bands) of oxide facies iron formation in the northern portion of the property. No significant assay results were obtained.

Lastly, a peculiar unit of intermediate to felsic quartz eye tuff (flows) hosts two anomalous areas. This tuff is magnetic, particularly in the areas surrounding the old Independance mine and the Lynx Canada "Z" trench.

The area around the Independance mine was examined and a sample from a pit just east of the shaft (L25E, 5+35N) contained 10030 to 10921 ppb gold (0.292 to 0.318 oz/ton). The sample contained quartz vein material and anomalous amounts of Cu (however, it should be noted that the area is outside of claim #1005061).

The "Z" trench was sampled in detail and assays as high as 2870 ppb (0.084 oz/ton) were obtained from the samples. A significant number of samples contained 200-500 ppb gold. Zinc assays reached a maximum in the northern part of the trench (957 ppm), while erratic but anomalous values for tellurium were obtained in nearly all samples from the trench. A sample from the southern portion of the trench (GL-88-118) assayed 2.2% tellurium and several native tellurium crystals were observed.

Porphy y fallestives

Porphyry dikes crossscut all the units locally. They vary in texture from medium to coarse grained. Phenocryst composition varies from quartz to quartz plus feldspar to just feldspar. They may be significant in terms of local mobilization/concentration of gold. Evidence for this occurs at L9E (1+25S), where a quartz feldspar porphyry is in close proximity to the sulphide facies iron formation.

RESULTS OF THE DIAMOND DRILLING

The Bennett Lake property located in Bennett Township, west of Atikokan (40-50km), Northwestern Ontario, is a property owned by Royal Crest Resources. The property was drilled between October 20 and 30, 1988. Five holes (Refer to Table I) were drilled and they totalled 2242 feet of BQ size core. These were testing geophysical anomalies and surface trenching.

Hole RC-88-3, drilled near the Lynx trenches (L22E/4+50N), was testing the gold telluride mineralization observed at surface. The hole intersected a series of andesites and quartz andesites (intermediate volcanics) deformed to quartz eyed biotite schists with some porphyritic intermediate tuffs. These were mineralized with 1-4% fine and dessiminated pyrite in sections cut with <10% quartz and carbonate veinlets, and some silicification. There were a few gold values ranging between 473 and 593 ppb at 41.4, 323.7, and 354.1'. One gold assay of 1036 ppb was obtained at 356.5' (Refer to Table II).

Hole RC-88-4 (L18+17E/1+50S) was testing the extension of a gold bearing magnetic anomaly. It was found to be an interbanded magnetic iron formation and a garnetiferous mafic metavolcanic or garnet biotite chlorite feldspar schist that were both highly deformed and gave anomalous gold values. These units were mineralized with 1pyrite, 1-3% pyrrhotite, and traces of chalcopyrite, sphalerite and magnetite. The best mineralized sections were from 25.2 to 60.6' (Refer to Table II) assaying between 300 and 1012 ppb gold, and at 119.6 to 128.8' assaying between 200 and 558 ppb gold in mainly garnetiferous magnetic sections with <6% pyrite and <4% pyrrhotite. underlying intermediate to felsic meta-volcanics yielded low gold values.

Hole RC-88-5 on L14E at 0+75S was also testing a geophysical anomaly of the same type as that at hole RC-88-4. A series of garnetiferous mafic metavolcanics-garnet chlorite feldspar schists and biotite feldspar amphibole/chlorite schists which were strongly deformed(folded and contorted), and a series of interlayered metasediments (pelitic) and meta-tuffs were mineralized with 1-10% pyrrhotite, 1-4% pyrite and traces of chalcopyrite with moderate amounts of magnetite (<10%). Only one anomalous gold value of 362 ppb was obtained at 91.7'.

Hole RC-88-2 on Lll+50E at 1+00S was also testing a magnetic geophysical anomaly within a mineralized quartz biotite schist to quartz biotite feldspar schist, and garnetiferous mafic metavolcanic. These were mineralized with 1-10% pyrrhotite, 1-7% pyrite, traces of chalcopyrite and locally moderately magnetic (103-124'). Two assays were anomalous, one at 58.7' gave 1460 ppb gold and at 117.1' gave 433 ppb gold.

The last hole RC-88-1 on the west side of the property at L9E and 1+95S, had a short section of garnetiferous quartz biotite schist (65-102'). Generally mineralization consisted of 1-2% pyrite, 2-3% pyrrhotite and traces of chalcopyrite. Only one assay was anomalous at 398.9' giving a value of 582 ppb gold.

DIAMOND DRILLING ON THE BENNETT LAKE PROPERTY

Hole #	Location Line/Station	Depth	Direction	Date Drilled
RC-88-1	9+00E/1+95S	456'	360/-50	Oct.27/88
RC-88-2	11+50E/1+00S	456'	360/-50	Oct.25/88
RC-88-3	22+00E/4+50N	398'	360/-50	Oct.20/88
RC-88-4	18+17E/1+50S	426'	360/-50	Oct.29/88
RC-88-5	14+00E/0+75S	506'	360/-50	Oct.23/88
	/	2902		

ANOMALOUS ASSAY RESULTS

Hole #	Sample #	Depth	Gold(ppb)
RC-88-1	137562	398.9-402.5	582
RC-88-2	137577	58.7-60.5	1.460
	137589	117.1-118.7	433
	137625	227.6-229.4	275
RC-88-3	130886	41.4-42.7	473
	130910	323.7-326.8	480
	130914	354.1-356.5	593
	130915	356.5-359.3	1036
RC-88-4	130920	14.3-17.0	281
	130922	25.2-27.3	614
	130923	28.1-31.3	647
	130924	31.3-36.0	338
	130925	36.0-40.0	396
	130926	40.0-44.7	951
	130927	47.7-50.3	551
	130928	50.3-54.4	1012
	130929	57.5-60.6	300
	130932	114.9-116.0	299
	130934	119.6-122.1	357
	130936	124.5-126.6	372
	130937	126.6-128.8	558
	130941	137.6-139.8	613
	130942	142.3-145.8	480
	130956	203.9-206.2	708
RC-88-5	137510	91.7-93.7	362
	137529	392.3-394.8	286

CONCLUSIONS AND RECOMMENDATIONS

The Bennett Lake property encompasses at least two gold bearing horizons.

The first horizon lies on strike with the Independence Mine the workings of which were located on the north boundary of claim 1005061. Here gold values have been reported from a total strike length of 3300 feet of which at least 2000 feet occurs entirely on the Bennett Lake property. Grab sample values as high as 0.30 oz/ton gold have been reported from the Lynx trench on claim 1005061 about 1000 feet west along strike from the Independence Mine. Chip sample values as high as 0.15 oz/ton gold over 3 feet were reported 1600 feet west along strike from the Independence Mine on claim 1011228 and 0.03 oz/ton gold over 9 feet, 3300 feet west along strike from the Independence Mine on claim 1011230.

The second horizon about 0.30 miles to the south has been traced along strike for 1546 feet (Miles, 1936). Here gold values in chip samples as high as 0.29 oz/ton/3 ft (Miles, 1936), 0.36 oz/ton/2 ft (Burke, 1940), 0.10 oz/ton/5 ft (Rivers, 1973) and 0.04 oz/ton/10 ft (Huxhold, 1974) have been reported. Miles (1936) outlined two gold bearing zones with significant assay values, the north zone was found to be 85 feet wide and the south zone was found to be 58 feet wide. Diamond drilling on the north zone returned gold values of 0.15 oz/ton over 6.5 feet including a sample that assayed 0.20 over 4.5 feet. (see Table II)

The magnetometer survey did not appear to be useful in delineating gold-bearing zones, however, it may be useful in interpreting the geological mapping.

The VLF-EM survey detected a sulphide facies iron formation that upon sampling gave gold values as high as 0.21 oz/ton gold over a 2 meter chip sample.

The results of the mapping and sampling program indicate that further work is merited. Thus, the following recommendations are made, to guide future exploration efforts.

- 1) Additional staking should be done to the south of the Red Cedar occurrance and the geology of the new claims should be examined for extensions of the three bands of iron formation.
- 2) An examination of the economics of tellurium is merited. This would help to establish whether or not the potential for an economic deposit of tellurium exists at the "Z" trench.
- 3) Stripping, outcrop washing, trenching, and blasting should take place;
 - a) at L9E, 1+25S
 - b) between L11E and L12E, near the baseline to fully expose the Red Cedar occurrance.
 - c) near the "Z" trench

It was observed that the anomalous gold values were intersected in the drilling within magnetic garnetiferous mafic metavolcanics and biotite chlorite feldspar schists. These were mineralized with pyrite (<7%), pyrrhotite (<10%), traces of chalcopyrite and some magnetite. Gold assays as high as 951, 1012 and 1460 ppb gold were intersected in these units.

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Young, W. L.

1960: Geology of the Bennett-Tanner Area, Ontario Department of Mines, Volume LXIX, Part 4, 17 p.

CERTIFICATE

- I, Wayne E. Holmstead, of the City of Kingston in the Province of Ontario, DO HEREBY CERTIFY THAT:
- 1. I am a Consulting Geologist with address at 1074 Dillingham Street, Kingston, Ontario, Canada.
- 2. I graduated from the University of Toronto with a Bachelor of Science in Geology in 1976 and have been practicing my profession since.
- 3. I am a fellow in good standing of the Geological Association of Canada.
- 4. I have no interest, directly or indirectly, nor do I expect to receive any interest, directly or indirectly, in the mining property described in this report or in the securities of Royal Crest Resources Ltd.
- 5. This report is based upon the sources listed above and personal supervision of the exploration program described above.
- 6. I permit Royal Crest Resources Ltd. to use this report or portions of this report in the prospectus or other documents of the company.

Dated at Kingston, Ontario, this 12th day of December, 1988.

Wayne E. Holmstead, B.Sc., F.G.A.C.

2.5787

APPENDIX A INDUCED POLARIZATION SURVEY

INTERPRETATION REPORT

ON AN

INDUCED POLARIZATION AND GRADIENT ARRAY SURVEY

ON THE

BENNETT LAKE PROPERTY

FOR

ROYAL CREST RESOURCES LTD.

Prepared by: R. J. Meikle Exsics Exploration Ltd. February, 1989

Introduction

A "Gradient Array" Induced Polarization survey was conducted on a group of 14 contiguous claims and one isolated unpatented claim in the Calm Lake area, District of Rainy River, Ontario.

The survey was performed by Exsics Exploration Limited under contract to Geocom Geological Consulting Services.

The I.P. survey was carried out over most of the property covering 21.9 km of grid lines. The purpose of the survey was to investigate the entire property for the possibility of disseminated sulphides which would not necessarily have been picked up by previous Magnetometer and VLF - EM surveys.

This report deals with the results of the I.P. survey only. It is the understanding of the author that a detailed compilation of the Geological Mapping, Magnetometer Survey, VLF - EM survey and current I.P. survey will form the main report encompassing this I.P. interpretation.

Survey Parameters

A "Gradient Array" I.P. survey was chosen to get optimum coverage of the entire property.

This array provides a good reconnaisance coverage with good horizontal resolution. Because of the relatively shallow overburden it is felt that the gradient results can be drilled as is. Certain anomalies may warrant closer spaced lines and some "dipole-dipole" arrary follow-up.

A description of the "Gradient Array" and procedures is as follows:

Gradient Survey:

The gradient array method involves placing two infinite or remote electrodes (A-B) a fixed distance apart, three times the length of and parallel to the lines to be surveyed.

A potential is applied across A-B using a motor generator powered transmitter capable of producing in this case 2500 watts maximum output. This potential is applied continuously using a 2 second on, 2 second off, square wave direct current. The middle one-third of A-B surveyed from this set-up as well as parallel lines either side until the signal decreases at which time another A-B set-up is required further along the geological strike. A single receiving dipole (P1-P2) consisting of two porous pots a fixed distance of 25m apart, was moved along the survey lines. A single reading was recorded every 25 m with the reading plotting between P1-P2. The following two parameters were recorded at each station:

Chargeability - The potential across P1-P2 was recorded during the two second off cycle. The potential was an integration over a selected window width (time in milleseconds), a fixed delay time after the current shut off. This reading is usually expressed in millivolts per volt or milliseconds.

Primary Voltage: The potential across P1-P2 was recorded during the 2 second on time. This potential is a direct result of the AB output current (amperes), the distance of the P1-P2 dipole from AB, and the true resistivity of the measured medium which is a combination of the geological rock units within the influence of the measuring P1-P2 dipole as well as the overburden. Thus "ohm's law" is used to compute the apparent resistivity of the measured medium beneath P1-P2 with a constant of 'K' factor applied. The 'K' factor is used to compensate for the Geometric Factor which is the relative positions between AB and P1-P2. The resultant value is called "Apparent Resistivity" as it is not the true resistivity of the bedrock but rather a combination of the overburden as well. The following parameters were used:

Electrode Array - Gradient

Dipole Spacing - 25 meters

Method - Time Domain

Receiver - EDA IP-2

Transmitter - Huntec 2.5 kva

Pulse Time - 2 second on, 2 second off, square wave

Delay Time - 500 milliseconds

Integration Time-420 milliseconds

Parameters Measured A: Chargeability (millivolts per volt or milliseconds) presented in plan contoured form, 1:2500. B: Apparent Resistivity (ohm-meters) presented in plan contoured for, 1:2500. - 3 -

Survey Results

The Gradient I.P. survey outlined several anomalous chargeability highs throughout the property. There are several areas where a combination of insufficient signal and poor ground contact (frozen) resulted in no readings.

There are several parallel E-W zones. An attempt will

technical problems it was decided to not spend too much time on the survey but rather more detail should be done after break-up when better ground contacts are possible.

A. This appears to be a continuous zone running from L6E/BL to L19E/050N. The strongest responses are on L12E/112N, L16E/50N, L19E/62N. The chargeability is generally 3-4 times background. The mineralization appears to pinch and swell but more detail is needed to properly define this zone. Most of the chargeability highs are coincident with a resistivity low suggesting a more massive or greater concentration of sulphides in these areas.

B. This zone is parallel to and 200m north of 'A'. It is very poorly defined due to insufficient coverage. There are several chargeability highs which may or may not be contiguous on L8E/350N, L9E/250N, L12E/312N, L14E/262N.

1 :

C. This is a chargeable zone 100 m south of and parallel to 'A'. It could be part of 'A' but there is insufficient coverage to determine this.

The two highest spots are on L10E/37S and L12E/125N. It appears to be moderately conductive. It could be related to an area flanking on the south where there are no readings due to the conductive nature of the rocks. This would include the area in the vicinity of the L18E/87S where the chargeability is high with low resistivities. More I.P. (Dipole-Dipole) is needed in this area to better define the mineralization.

Several other chargeability highs were indicated but need additional coverage to deliniate the zones. Some of these are L22E/537N, L22E/362N, L17E/687N, L17E/562N, L14E450N, L14E/550N, L10E/7N area, L4E/612N. These are all chargeability highs coincident with resistivity lows. More detailed I.P. is needed to deliniate these zones, in particular the northern section of Lines 10E-16E where we were unable to obtain readings with the gradient array.

1 1

Conclusions and Recommendations

The I.P. survey outlines numerous "sulphide type" anomalies, all of which should be followed up. The conductivity of some of the conductors make it very difficult to obtain readings using the "Gradient Array" method. This accounts for only every other line being read as well as large areas of no readings.

It is strongly recommended that a "Dipole-Dipole" array I.P. survey be carried out over the anomalous zones if not the entire grid. A correlation with the property geology and recent VLF/Mag survey must be done. The I.P. method works quite well on the known sulphide occurences such as the trenches along the baseline in the vicinity of L16E. A battery powered transmitter is suggested for future work using a dipole dipole electrode array reading N=1,2,3 and an 'a' spacing of 25 m.

Respectfully submitted,

R. J. Meikle

Exsics Exploration Ltd.

CERTIFICATION

- I, Raymond Meikle of Timmins, Ontario hereby certify that:
 - 1. I hold a three year Technologist Diploma from the Haileybury School of Mines, Haileybury, Ontario obtained in 1975.
 - I have been practising my profession since 1973 in Ontario, Quebec, NWT, Manitoba, New Brunswick, Nova Scotia for Teck Exploration Ltd., Metallgeslischaft Canada Ltd., Rayan Exploration., Sabina Industries Ltd., and most recently Exsics Exploration Ltd.
 - 3. I have based conclusions and recommendations contained in this report on knowledge of the area, my previous experience, and on the results of the field work conducted on the property which was carried out under my overall supervision.
 - 4. I hold no interest, directly or indirectly in this property other than professional fees, nor do I expect to receive any interest in the BENNET LAKE PROPERTY for ROYAL CREST RESOURCES LTD. or any of it's subsidiary companies.

Dated this 28th day of Feb, 1989 at Timmins, Ontario

R.J. Meikle

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Report of Work

(Geophysical, Geological, Geochemical and Expenditures





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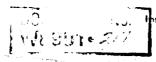
I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report it true.



Ministry of Northern Affairs and Mines ;

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)



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.

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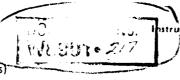
I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work



Ministry of Northern Affairs and Mines

Report of Work

(Geophysical, Geological, Geochemical and Expenditures



Note: -

Mining Act

Please type or print.
If number of mining claims traversed
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Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines Mining Lands Section 880 Bay Street, 3rd Floor Toronto, Ontario M5S 1Z8

Telephone: (416) 965-4888

March 4, 1990

Mining Recorder
Ministry of Northern Development and Mines
808 Robertson Street
P.O. Box 5200
Kenora, Ontario
P8N 3X9

ONTARIO OFCLOCIDAL SURVEY

Your File:

Our File:

APR 2 ^ 1990

CE

Dear Sir:

Re:

Notice of Intent dated February 2, 1990 for Geophysical and Geological surveys submitted on Mining claims K 989655 et al in Bennett Lake Area.

The assessment work credits, as listed with the above-mentioned Notice of Intent have been approved as of the above date.

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

Yours sincerely,

W.R. Cowan

Provincial Manager, Mining Lands

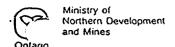
Mines & Minerals Division

DM:pt Enclosure

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

Royal Crest Resources Toronto, Ontario

Holmstead and Associates Kingston, Ontario Resident Geologist Kenora, Ontario

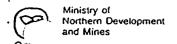


Technical Assessment Work Credits

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Feb 2/1990	\"\\\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

Recorded Holder	
Royal Crest Resources	
Bennett Lake Area	
Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagneticdays	K 989655, 989656
Magnetometer days	1005061,1040118 1011228,1011229
Radiometricdays	1011232-237 incl.
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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; Geologocal -40; Geochemical -40; Section 77(19) -60.

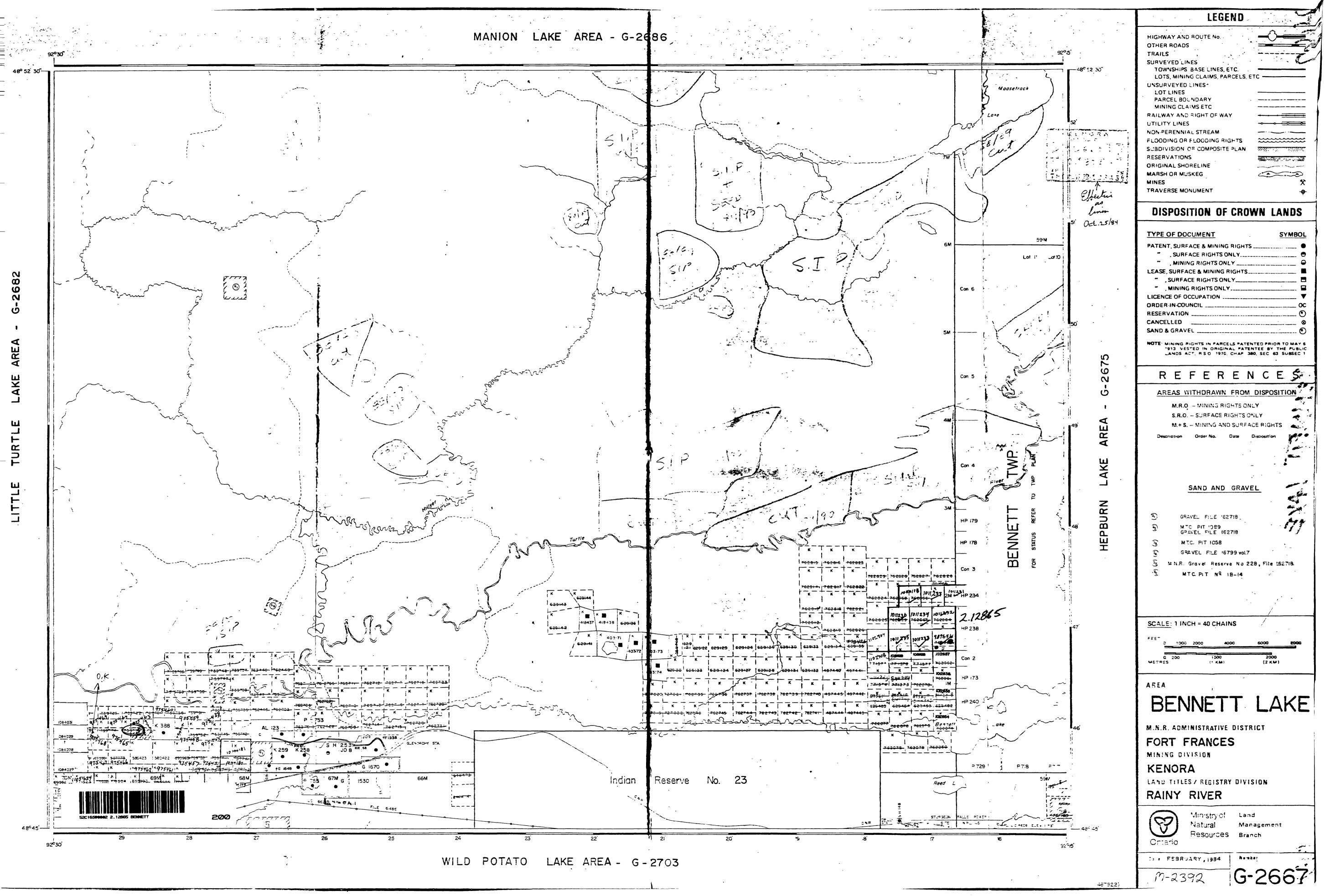


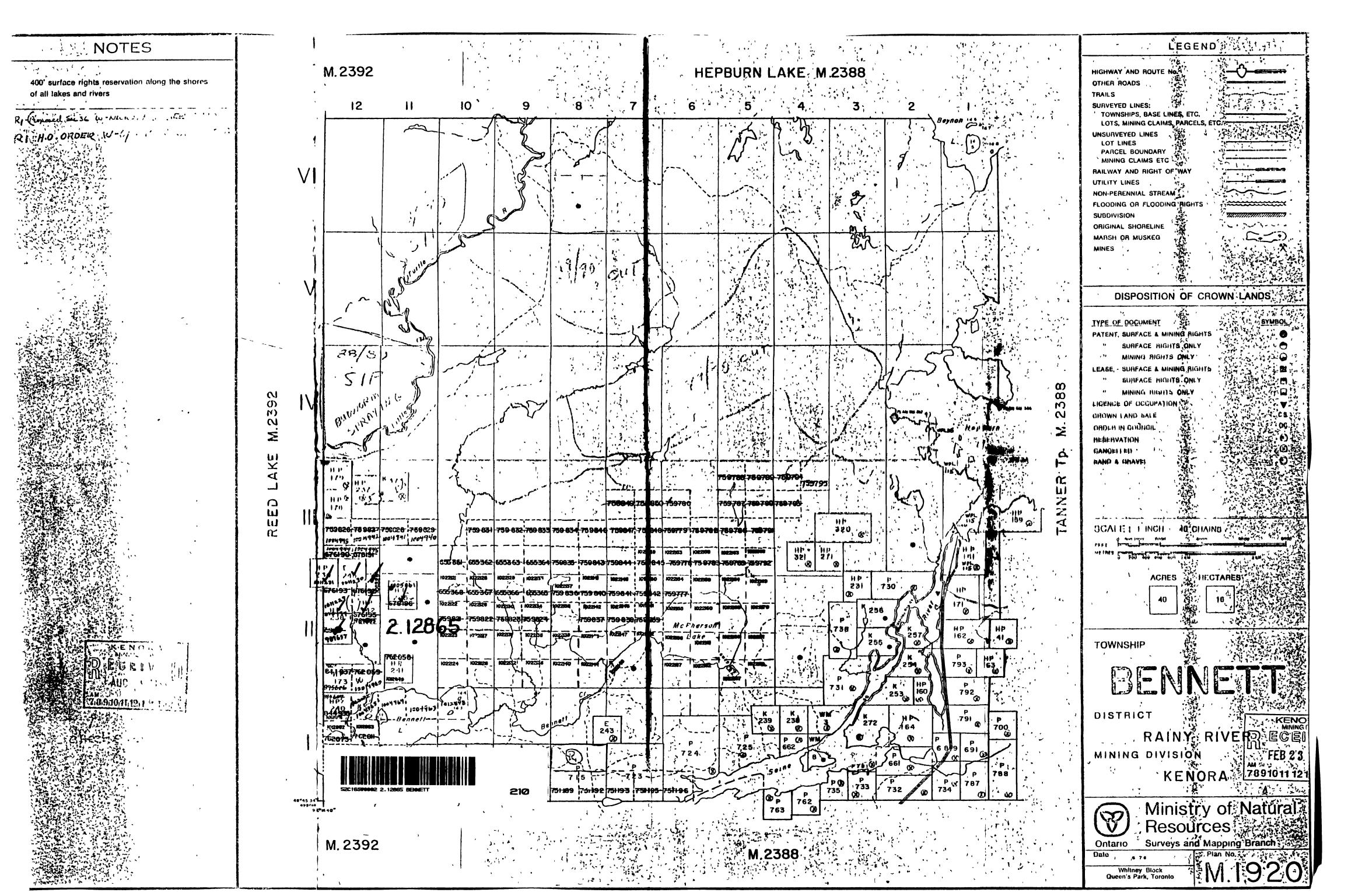
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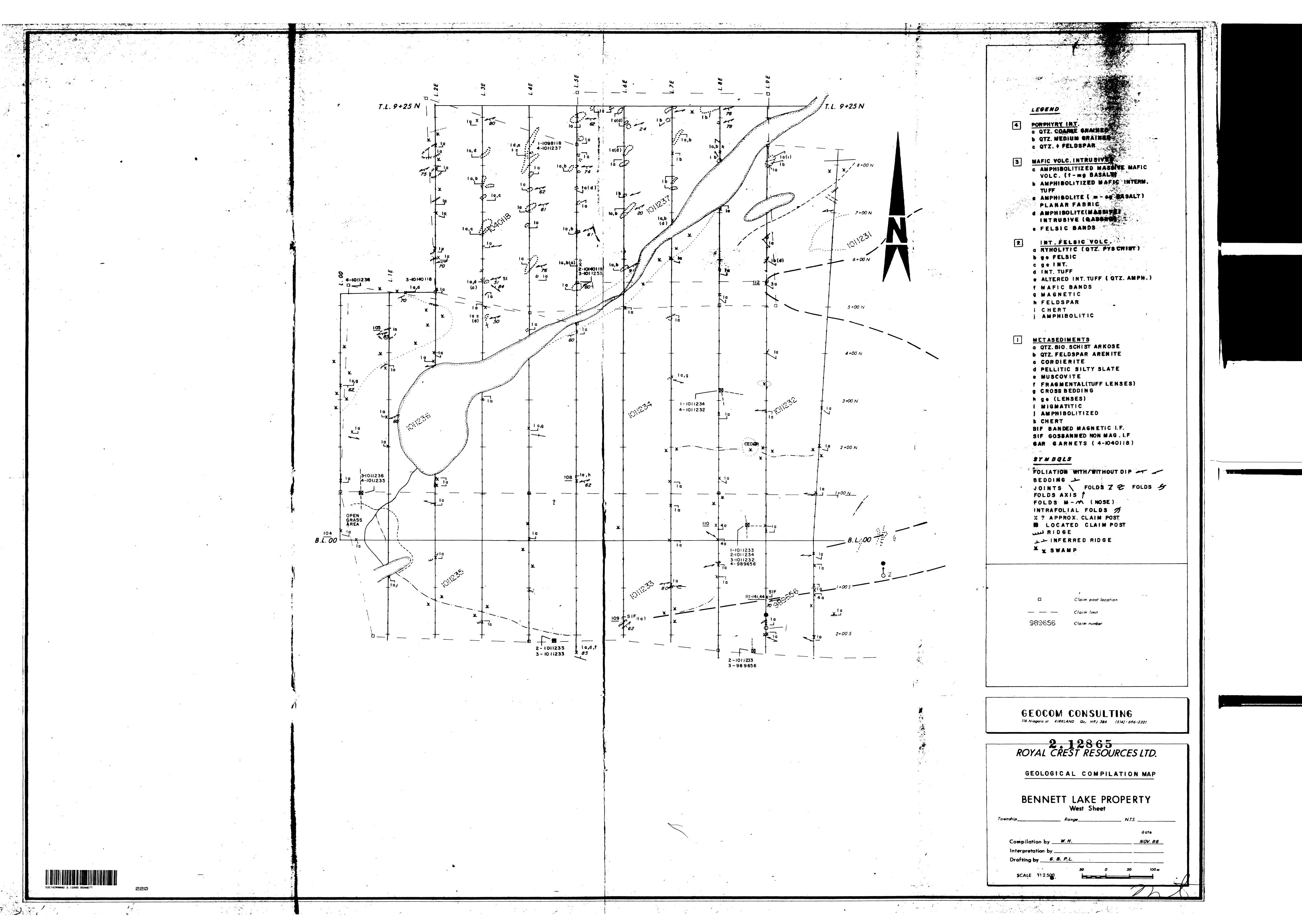
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Radiometric days		
Induced polarizationdays	•	
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Man days Airborne	••	
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Credits have been reduced because of partial coverage of claims.		
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credits have been allowed for the following mining cla		
not sufficiently covered by the survey	insufficient technical data filed	

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; Geologocal -40; Geochemical -40; Section 77(19) -60.







1 NO.1 - 101 1231 12 4 - 1011 230 12 NO.1-1011230 T. L. 8+00 N MAFIC VOLC. INTRUSIVE AMPHIBOLITE ED MASIVE MAFIC VOLC. [1-00 BASAT) AMPHIBOLITIZED MATIC INTERM. CAMPHIBOLITE (m teg BASALT) PLANAR FABRIC & AMPHIBOLITE(MASSIVE) INTRUSIVE (GABBRO) . FELSIC BANDS HT. FELSIC VOLC. la(d) b ge FELS 40,2d, 80 70 20,b(la,d) 3a(1d) TRAIL ALTERED MT. TUFF (QTZ. AMPH.) # MAREC BANBS 100,101,118,¹ 120, 122 165, 178 . MACKETIE h FELDSPAR CHERT AMPHIBOLITIC 2g,i (lk) EQUIVALENT TO L25W, 125S 2e, g, f 3 2d,h METASEDIMENTS
G QTZ. BIO SCHIST ARKOSE 2d (i a,a) 123 K BIF (10) ON LYNX GND 4+00 N b QTZ FELDSPAR ARENITE X-7 4+00,N c CORDIERITE d PELLETIC SILTY SLATE

• MUSEOVITE

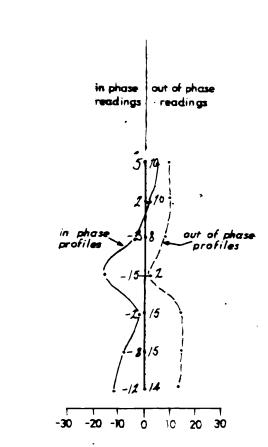
• FRAGMENTAL(TUFF LENSES)

• CROSS BEDDING 3 c(e) 3b(la,j) 3a 2e(1a) X 3 b 1-1011232 4-1011229 1a NO.1 - 1011229 h ge (LENSES) 3+00 N I MIGMATITIC J AMPHIBOLITIZED k CHETT BIF BANDED MAGNETIC I.F.
SIF GESANNED NON MAG. I.F
GAR GARNETS (4-1040118) ¥ 2+00 N SYMBOLS FOLIATION WITHPWITHOUT BIP S1 70% 10 BEDDige 1 JOINTA FOLDS Z & FOLDS & -1+00 N---137 0 3a NO.2-1011250 3a, e FOLD M-M (NOSE) INTRAFOLIAL FOLDS NO.-2 - 1005061 (SHOULD BE NO.3) X ? APPROX. CLAIM POST ELOCATED CLAIM POST X 1-1011233 X 1a 2-1011233 3-1011232 3b,c = 3a,b = 3a,b WINTER ROAD ルル INFERRED RIDG NO.1-989657 NO.2-1011229 S-BIF B.L. 00 1-9896561 2-1011282 3-1011229 125 4-989657 B-SIF Y SWAMP 1+005 Claim post location Claim limit 1005061 2+005 2 -989656 3 - 9**896**57 GEOCOM CONSULTING
116 Niagara st., KIRKLAND, Gc. H9J 386 (514)-696-2321 2.12865 ROYAL CREST RESOURCES LTD. GEOLOGICAL COMPILATION MAP BENNETT LAKE PROPERTY
East Sheet Drafting by 6.8. P.L. The state of the s

BASIC VALUE IS 59000 GAMMAS HIGH VALUE CONTOUR LOW VALUE CONTOUR GEOCOM CONSULTING
116 Niagara St. KIRKLAND Qc, H9J 3B6 (514) - 696-2321 ROYAL CREST RESOURCES LTD. 2.12865 MAGNETIC CONTOURS 0m87-362 BENNETT LAKE PROPERTY
West Sheet d ate Compilation by <u>Geocomy Consulting</u>
Interpretation by <u>Wayne Holmstead</u>
Drafting by <u>Georges Brunel</u> Oct. 1388 Nov. 1988 SCALE 1: 2500

BASIC VALUE IS 59000 GAMMAS HIGH VALUE CONTOUR LOW VALUE CONTOUR Claim post location GEOCOM CONSULTING
116 Niagara st., KIRKLAND, Qc H9J 386 (514)-696-2321 ROYAL CREST RESOURCES LTD. 2.12865 MAGNETIC CONTOURS 0m87-362. BENNETT LAKE PROPERTY
East Sheet Compilation by Geocom Consulting Interpretation by Wayne Holmstead Drafting by Georges Brune!

2+00 N



Claim post loc
Claim limit
CS3656 Claim number

GEOCOM CONSULTING

2.12865 ROYAL CREST RESOURCES LTD. VLF-EM

SURVEY PROFILES

BENNETT LAKE PROPERTY

West Sheet

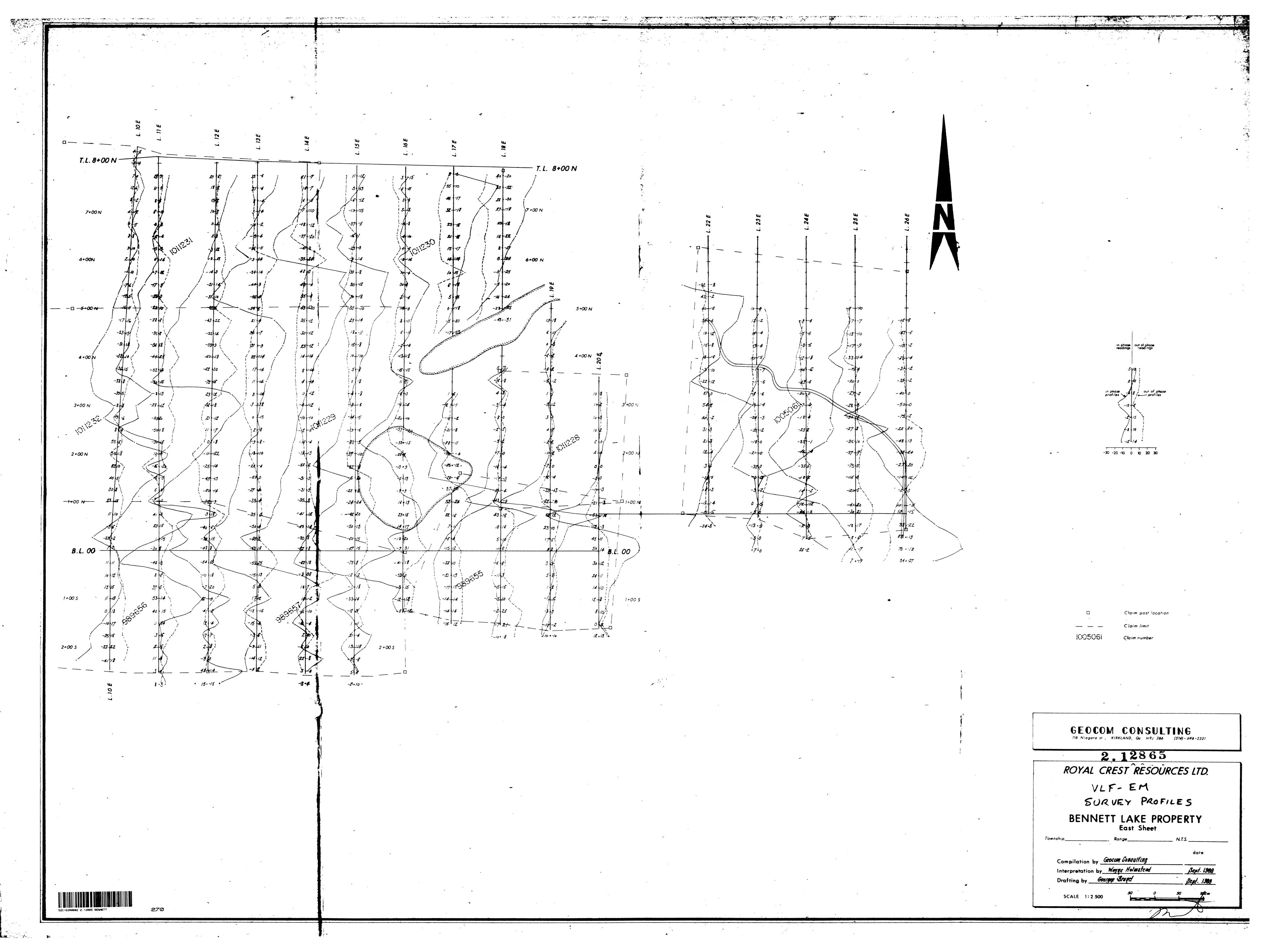
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Interpretation by Wayre Holmstead Sept. 188

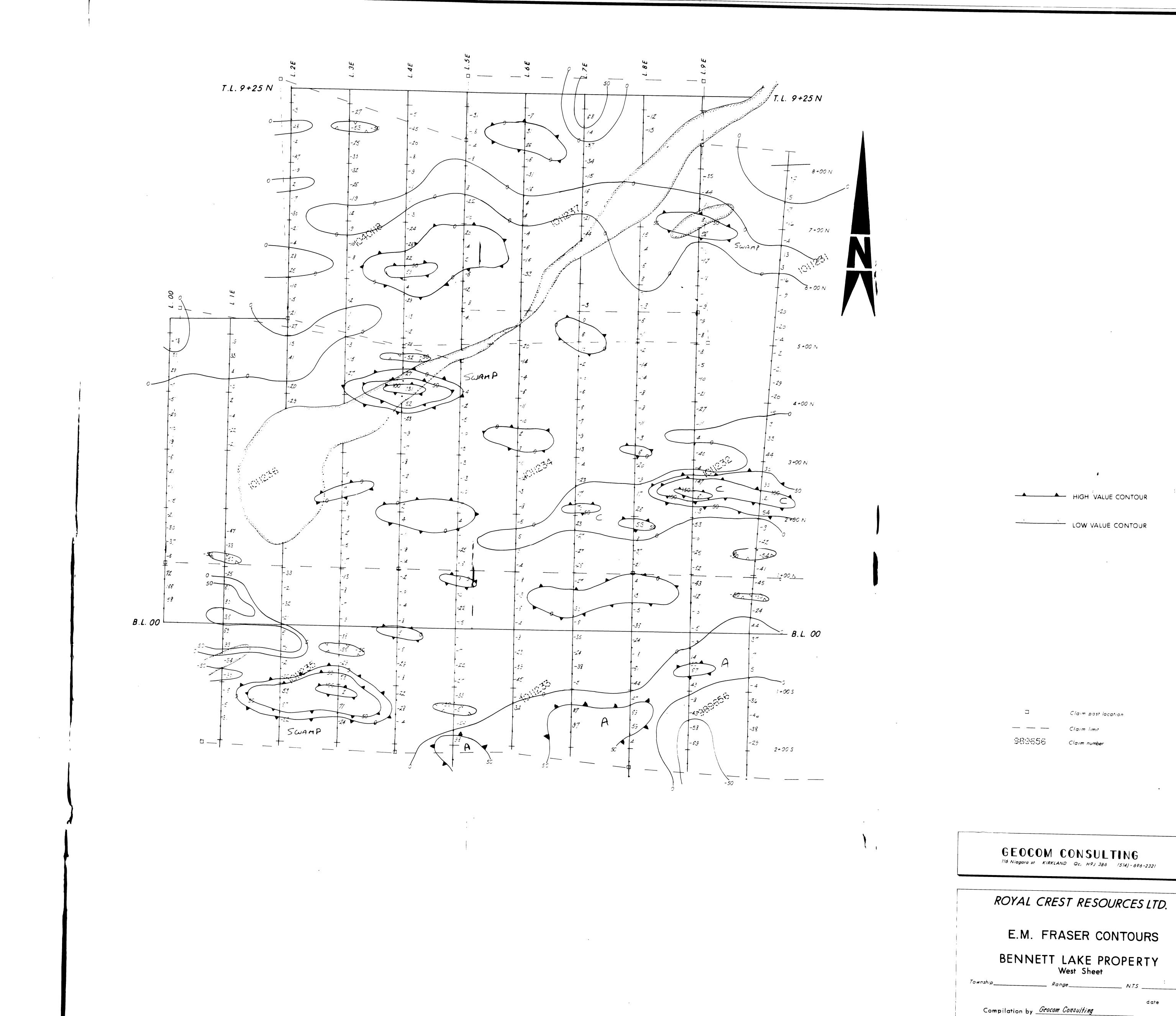
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Interpretation by Wayne Holmstead

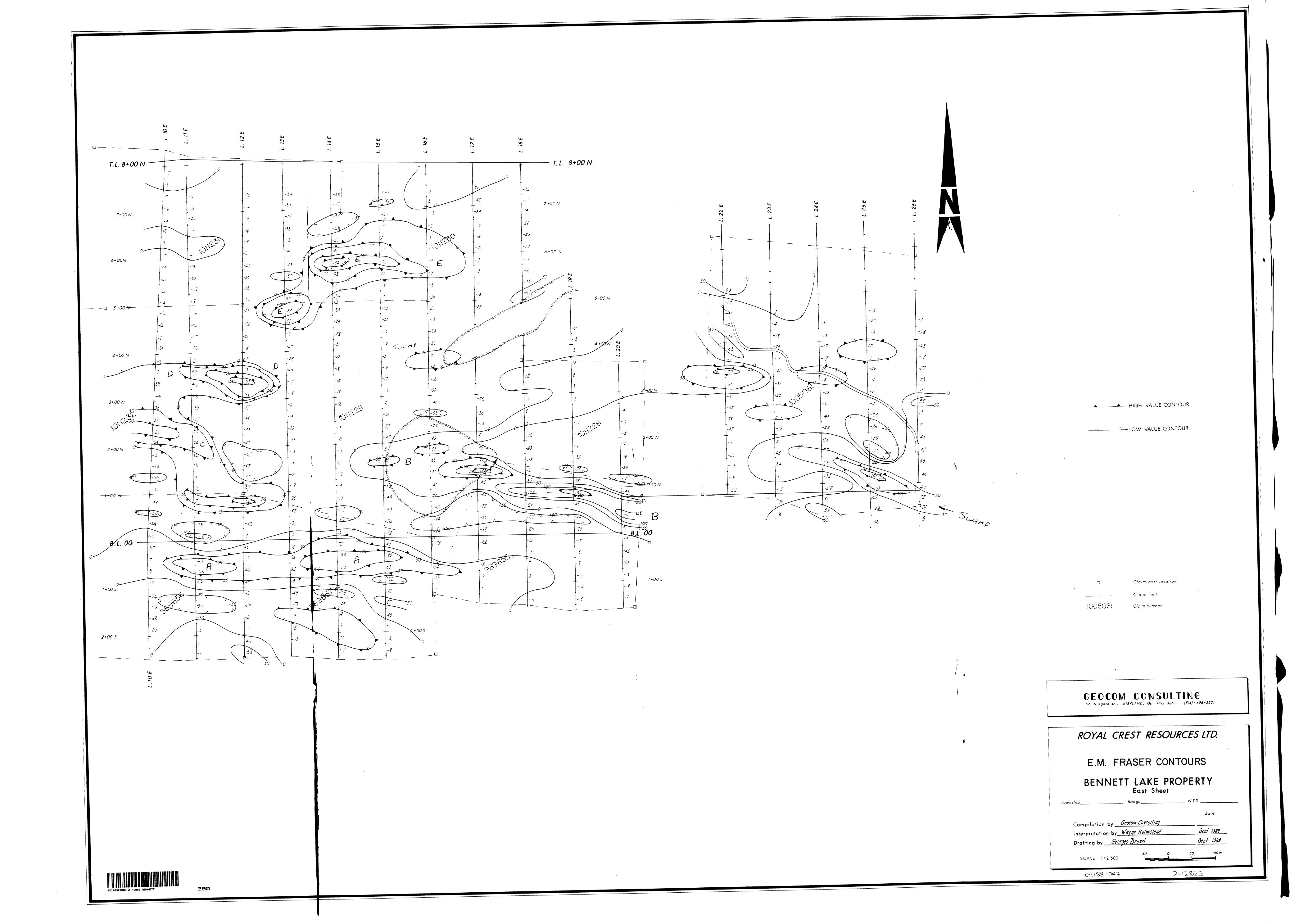
Drafting by Georges Brunel

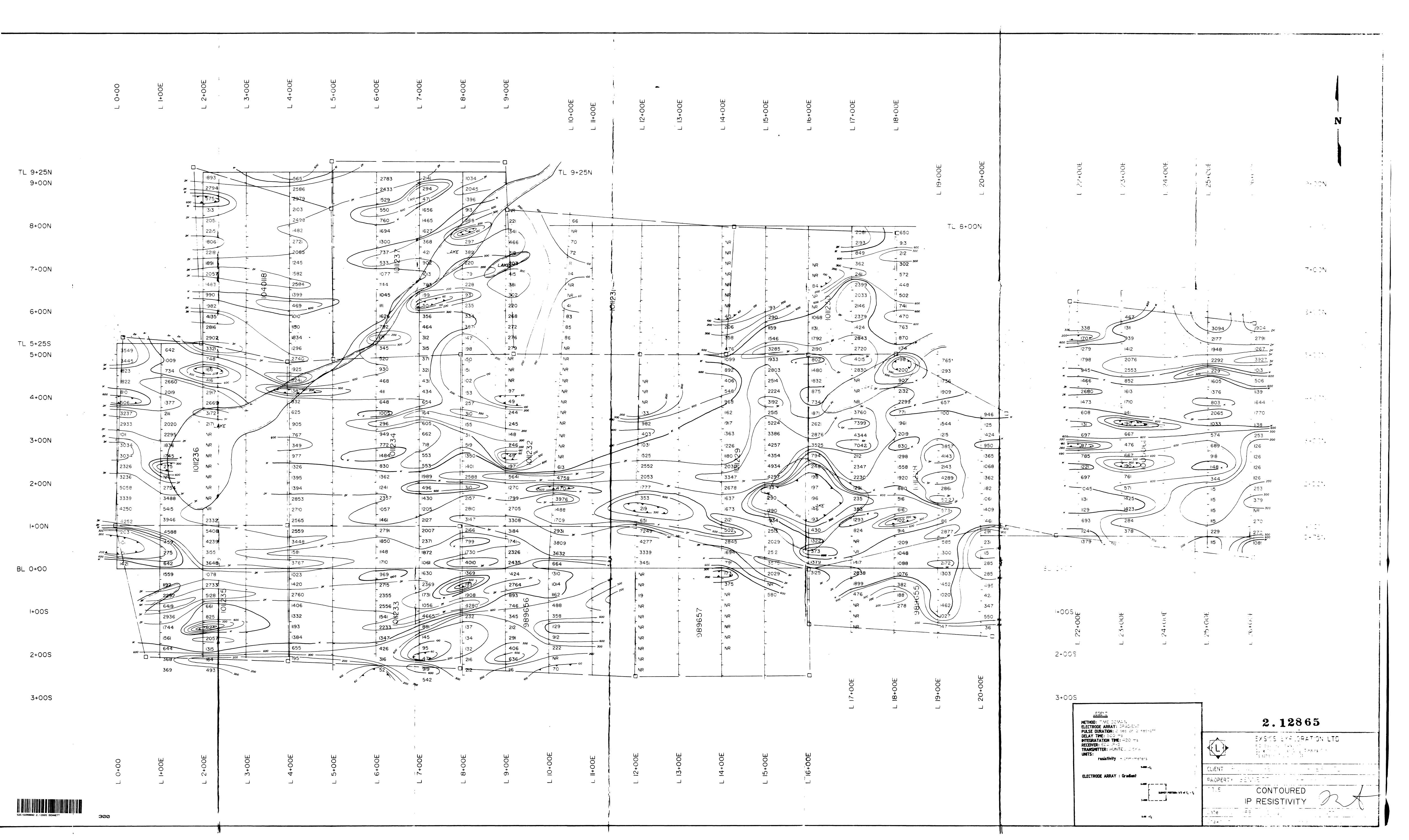
SCALE 1: 2500

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30





5 20 25 2.12865 METHOD: TIME DOMAIN
ELECTRODE ARRAY: GRADIENT
PULSE DURATION: 2 sector. 2 sectoff
DELAY TIME: 500ms
INTEGRATATION TIME: 420ms
RECEIVER: EDA IP-2
TRANSMITTER: HUNTED 2.5KW
UNITS: chargeability- milliseconds ELECTRODE ARRAY : Gradient CONTOURED P CHARGEABILITY SURVEY PORTIONS LYD of Cq - C 3-000 L_____ 9-60 •C₂

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