MINN VA

093L/12
Bear Claim

821271

Minnova Inc.
3rd. Floor
311 Water Street
Vancouver, British Columbia
V6B 1B8
Telephone (604) 681-3771
Telecopier (604) 681-3360

September 17, 1991

Willard D. Thompson
P.O. Box 395
Smithers, B.C.
V0J 2N0

Dear Mr. Thompson:

Please find enclosed the report which you forwarded to Ian Pirie earlier this summer. Although there is abundant rust on your Bear claim, there is no mention of any showing with significant base or precious metal values. This, combined with the remote location, makes it hard for me to justify a surface visit at this time. Should you discover a showing with significant values, I would be happy to have another look.

Yours sincerely,

per: G. S. Wells
Sen. Project Geologist

GSW/gh

Encl.

WILLARD D. TOMPSON, M.Sc.
Consulting Geologist
P. O. Box 395
SMITHERS, BRITISH COLUMBIA V0J 2N0

TELEPHONE 847-2866

July 16, 1991

Mr. Ian Perry
Minnova Inc.
3rd Floor-311 Water St.
Vancouver, B.C. V6B 1B8

Dear Mr. Perry:

Pursuant to our phone conversation of this date, I am enclosing a copy of my report on the prospect area at Limonite Creek, Telkwa Pass area, B.C.

All of the snow is out of the prospect area now and it will be easy for Gary Wells to have a good look at the ground when he is here. The snow is just now gone as we had lots of it last winter and it was slow melting due to a cool spring.

I look foreward to hearing from you and/or Gary Wells in the near future.

Sincerely yours

Will Tompson

Willard D. Tompson

A Proposal to Discover the Sulfide Deposit

at

Limonite Creek

Telkwa Pass Area, British Columbia

NTS 93L/12

Lat. 54° 33'N., Long. 127° 48'W

Willard D. Tompson

October 4, 1990

Revised January 3, 1991

CONTENTS

ILLUSTRATIONS

Plates

Figures

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

A large, massive sulfide deposit which is not exposed at the surface and which lies near the divide between Limonite Creek and Many Bear Creek, is the probable source for the large exotic limonite deposits which occur at the headwaters of those drainages.

Host rocks are felsic to intermediate pyroclastic rocks of the Early to Middle Jurassic Telkwa Formation of the Hazelton group.

Geochemical testing for base metal and precious metal content of the limonite is inconclusive due to the fact that all water flowing through or over the limonite deposits is acidic, with pH of 2.2 - 4.9. Such an acid environment will preclude precipitation of copper and zinc compounds.

Geological and geochemical work, including detailed monitoring of the pH of the drainages, will provide the means of tracing the acidic solutions back to their source, and thus establish drill targets.

Pulse EM surveys are widely accepted techniques in the search for massive sulfide ore bodies, as they can easily target deposits to a depth of 500 meters. It is recommended that the target area be explored by Pulse EM techniques.

A diamond drill program of at least 4000 feet (1220 meters) should be utilized to test drill targets.

Cost of the exploration program as described herein, is $266,200.

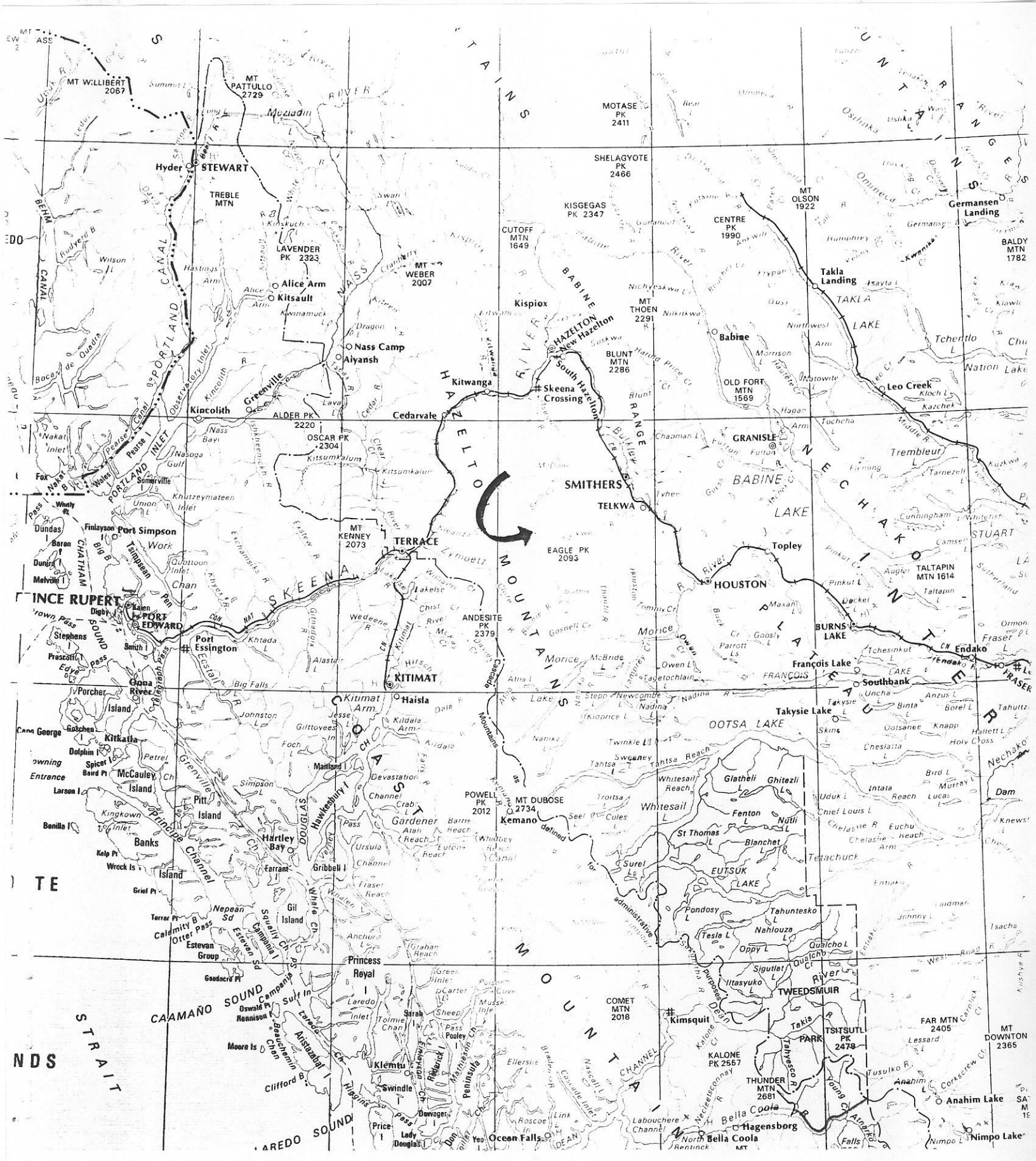
A Proposal to Discover the Sulfide Deposit at Limonite Creek, Telkwa Pass Area, British Columbia

PROPERTY AND LOCATION

Limonite Creek lies in Telkwa Pass, 52 kilometers west-southwest from Telkwa, B.C. (figures 1 and 2). The origin of Limonite Creek is at the outlet of Tauw Lake at elevation 815 meters, from whence it flows 13 kilometers southwesterly where it joins Zymoetz River.

A 500,000 volt transmission power line, which is owned by British Columbia Hydro and Power Authority traverses Telkwa Pass as does a 10 inch high pressure underground gas transmission pipeline which is owned by Pacific Northern Gas Ltd.

A good gravel logging road follows the route of the Telkwa River from the community of Telkwa to Milk Creek in Telkwa Pass. Westward from Milk Creek the road through Telkwa Pass was upgraded during the summer of 1990, as required for construction of a new pipeline by Pacific Northern Gas Ltd.



SCALE – 1 : 2 000 000

Kilometres 20 0 20 40 60 80 100 120 140 160 180 200 Kilometres

Figure 1.- Map showing location of Telkwa Pass area.

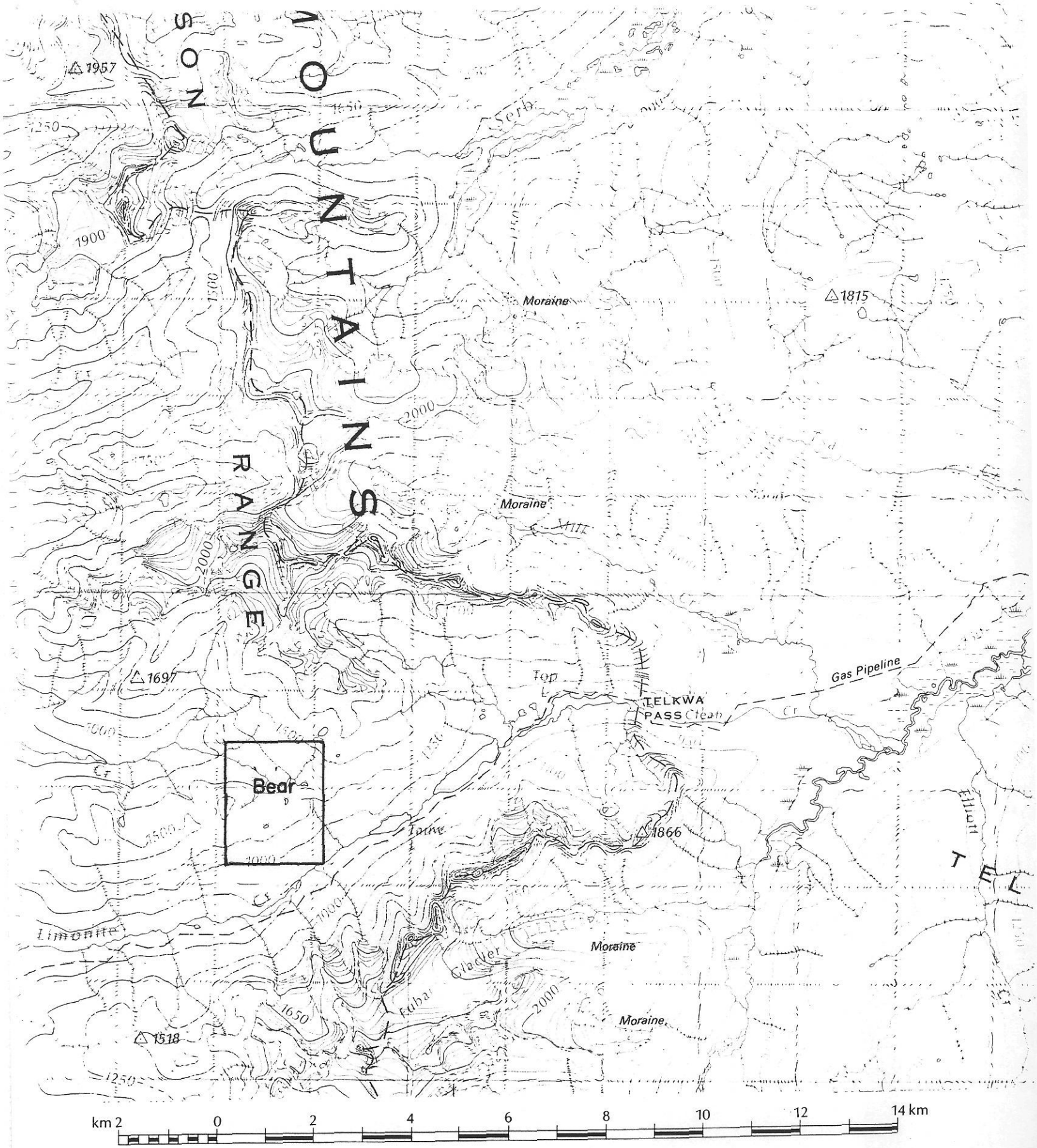


Figure 2.- Topographic Map of Telkwa Pass area.

HISTORY

First record of prospecting in the Limonite Creek area is reported in the B.C. Minister of Mines Annual Report for 1913. In 1914, the Annual Report noted that limonite ("iron ore") deposits were explored by open cuts and trenches. MacKenzie (1915), reporting in the Summary Report for the Geological Survey of Canada, presented a brief description of the geology of the limonite deposits. He noted that the limonite:

> " ... plainly has been derived from the decomposition of iron sulfides farther up the mountain side."

In 1957, (Smith, 1957) Shawano Iron Mines Ltd. drilled 27 holes in the limonite deposits, testing them as a source for iron ore. They noted thicknesses up to 22 feet (6.7 meters) of limonite. In 1963, Noranda Explorations Ltd. drilled a short hole north of the "upper gossan", but failed to find the sulfide zone. The hole was stopped at a depth of 37.5 meters because of loss of circulation. Chaplin and Woolverton (1969) reported on geological, geochemical, and geophysical surveys done by Evergreen Explorations Ltd. and Pacific Petroleums Ltd. during the summer of 1969.

Pacific Petroleums Ltd. drilled two BQ diamond drill holes during the summer of 1970 (plate I). Drill hole number I was drilled to a depth of about 500 feet and DDH 2, to a depth of 726 feet (221 meters). Both were drilled in propylitized dacite tuff and both encountered minor disseminated pyrite with sparse chalcopyrite and rare bornite. The logs of the drill holes are not available.

CLAIMS

One claim, comprised of 20 units, covers the area which is believed to include the source of the exotic limonite. This claim is the Bear, Record No. 11317 (figure 3). Owner of the Bear claim is W.D.Tompson, signator of this report.

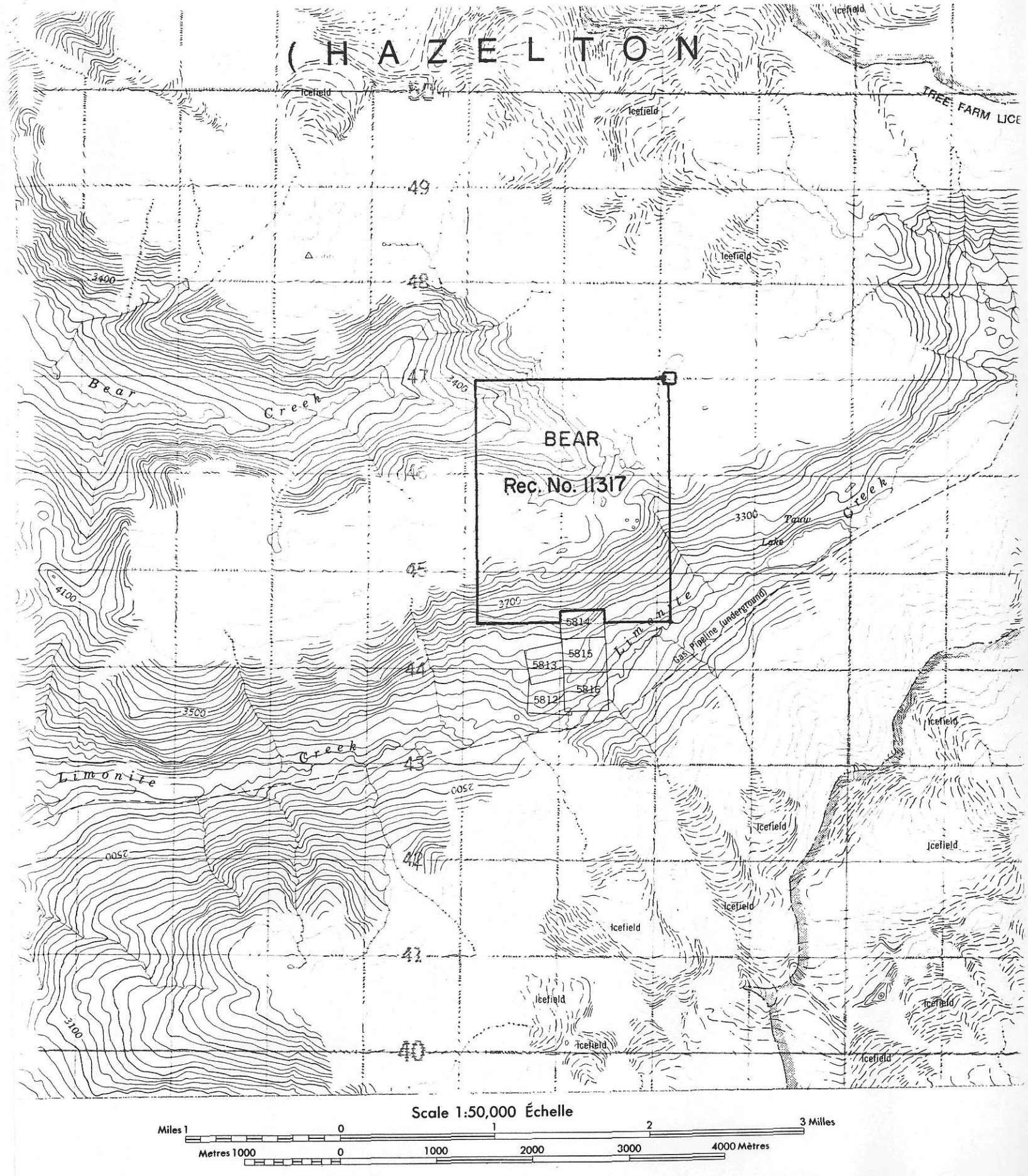


Figure 3.- Map of Bear claim, Limonite Creek area, British Columbia.

EXOTIC LIMONITE DEPOSITS

Blanchard (1968) in his treatise on leached outcrops defines exotic limonite as:

> " ...limonite that is precipitated from iron-bearing solutions which have moved so far from their source that the source no longer can be identified specifically."

There are three areas of exotic limonite accumulation at Limonite Creek and Many Bear Creek (plate I). The largest deposit lies on the south facing slope above Limonite Creek and was described by MacKenzie (1915) and in several reports for the B.C. Ministry of Mines. It covers about 50 acres (MacKenzie, p.67) and is up to 22 feet thick (Smith, 1957). The other two occurrences lie 1 1/2 to 2 kilometers north of the Limonite Creek occurence and are on the northern and eastern slopes of the mountain. The "middle deposit" (plate I) is on the divide between Limonite Creek and Many Bear Creek and another deposit is exposed on the south bank of Many Bear Creek.

The limonite occurs as an accumulation of scaly layers which lie parallel to the slope of the hill (plate 2). Limonite covers and replaces vegatation and is actively forming limonite sheets, layers, and terraces. The process is similar to the development of travertine terraces near hot springs.

Origin of the Limonite Deposits

Blanchard (1968) shows that under natural conditions pyrite is oxidized by oxygen in the presence of water to form sulfuric acid and ferrous sulfate. He also shows that a variable portion or ferrous iron may be expected to oxidize to the ferric state. As such, some of the iron may be exported as ferric sulfate.

Sulfide Deposit as Source of Limonite

In the case of the deposits at Limonite Creek and Many Bear Creek, a sulfide deposit - either massive sulfides or disseminated sulfides - occurs upslope from the limonite deposits. The sulfide deposit is oxidizing and limonite is being deposited from ferric sulfate solutions, down-slope to the north, south and east from their origins (plate 2). Precipitation is caused by dilution of the solutions and by reaction of the solutions with hydrocarbons in vegetation.

Other sulfide minerals, e.g. chalcopyrite, sphalerite, gelena and tetrahedrite may occur in the sulfide deposit. If so, they would be partially or wholly oxidized by the excess sulfuric acid which is produced by oxidation of pyrite and some of the metals may be exported in solution.

GEOLOGY

The general geology of the Limonite Creek - Zymoetz River area is shown by Rice (1948) and by Duffell and Souther (1964).

The area is underlain by andesitic flows and pyroclastic rocks of the Middle Jurassic Hazelton group which are intruded by Upper Cretaceous to Lower Tertiary granite and granodiorite plutons.

Prominent glacial striae on the mountains north of Limonite Creek, show that glacial movement was northeasterly. Remnants of glaciers survive from 500 to 1200 meters above the valley floor and hanging valleys attest to a thickness of 500 meters of ice in the valley of Limonite Creek during Recent glaciation.

Geology of the Prospect Area

The prospect area is underlain by dacitic lapilli tuff of the Hazelton group (plate I). The fresh rock is typically greyish to slightly purplish in colour, but broad areas are propyliticly altered and have a greenish colour.

Very fine grained fresh pyrite occurs locally in amounts from trace to 5 percent. Very fine grained magnetite is ubiquitous and occurs in trace amounts.

A zone of scricitized, silicified and pyritized tuff occurs 800 meters westerly from D.D.H. 70-2. The zone of alteration strikes easterly and is about 30 meters wide.

A small granodiorite stock occurs near the center of the prospect area. The granodiorite is fresh, possesses hypidiomorphic-granular texture and has nearly one percent glossy, euhedral to subhedral biotite books, which are up to 2mm in diameter.

A strong fault system strikes northerly through the prospect are (plate I) and its position is reflected by topographic lineaments, swamps and abrupt changes in attitudes of slope. The fault zone is partially occupied by a small group of mafic dikes (Dirom, 1964 and Chaplin and Woolverton, 1969).

Inferred Location of the Sulfide Deposit

It is estimated that about 1 million tons of limonite occur in the deposits. Additionally, an unknown amount of ferrous sulfate, ferric sulfate, and limonite undoubtedly has been removed by Limonite Creek and Many Bear Creek.

It is clear that none of the limonite was derived from rocks which are exposed at the surface.

Thus, in view of the fact that limonite deposits are still forming, the source probably lies buried in the mountain, upslope from and relatively near to the existing limonite deposits.

The limonite deposits are produced by acidic, iron-rich solutions which are derived from oxidizing sulfide deposits. The iron-rich solutions are discharged at the surface through unknown conduits such as rock contacts, a porous breccia unit, fault planes or some combination of these (plate 2).

Geochemistry of the Prospect Area

The pH of water flowing through and over the limonite deposits was measured in many places. Measurements were made in the field with an electronic pH detector and in the laboratory. All water flowing through or over the limonite deposits is acidic, ranging from pH 2.2 to 4.9 (figures 4 and 5).

Blanchard (1968, p.48) shows that if pyrite and chalcopyrite oxidize together, all of the copper from the chalcopyrite and all of the iron from both the pyrite and chalcopyrite are dissolved and exported, along with sulfuric acid.

During transport of the metallic ions, limonite (goethite) will precipitate upon slight dilution or reduction of the iron-bearing solutions. However, copper (and/or other base metals) will stay in solution and will not accumulate in the limonite where the environment is sufficiently acidic.

Therefore, due to the acidity of the water flowing through and over the limonite deposits, base metal values in the limonite are expected to be very low.

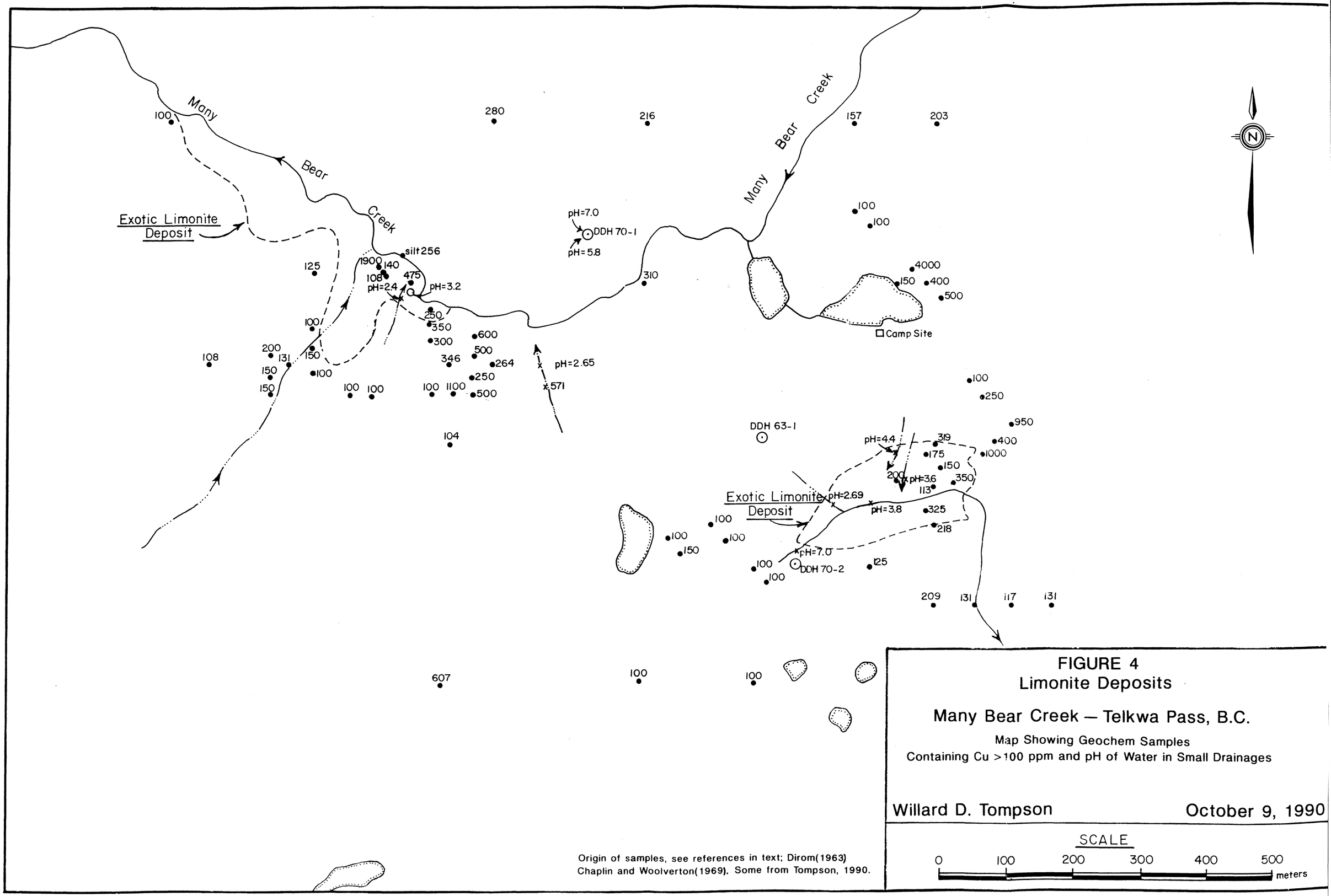
Consequently, anomalous concentrations of base metals in the limonite are more apt to disclose an accident of precipitation of base metal ions resulting from dilution or neutralization of the solutions, rather than reflect high or low concentrations of base metals in the sulfide source.

Geochemical Copper Values in the Exotic Limonite Deposits

Geochemical surveys by previous workers (Dirom, 1964 and Chaplin and Woolverton, 1969) found that copper values in the exotic limonite deposits are low (only the Many Bear Creek deposit and the middle deposit were tested) although a few limonite samples contain copper values from 100 to 1000 ppm.

Reconnaissance geochemical sampling of the exotic limonite deposits during the summer of 1990 produced copper values of 100 to 1900 ppm in 11 of 40 samples.

Geochemical samples having values greater than 100 ppm Cu are compiled on figures 4 and 5.



Origin of samples, see references in text; Dirom(1963) Chaplin and Woolverton(1969), Some from Tompson, 1990.

FIGURE 4
Limonite Deposits

Many Bear Creek — Telkwa Pass, B.C.

Map Showing Geochem Samples
Containing Cu >100 ppm and pH of Water in Small Drainages

Willard D. Tompson — October 9, 1990

SCALE

0 100 200 300 400 500 meters

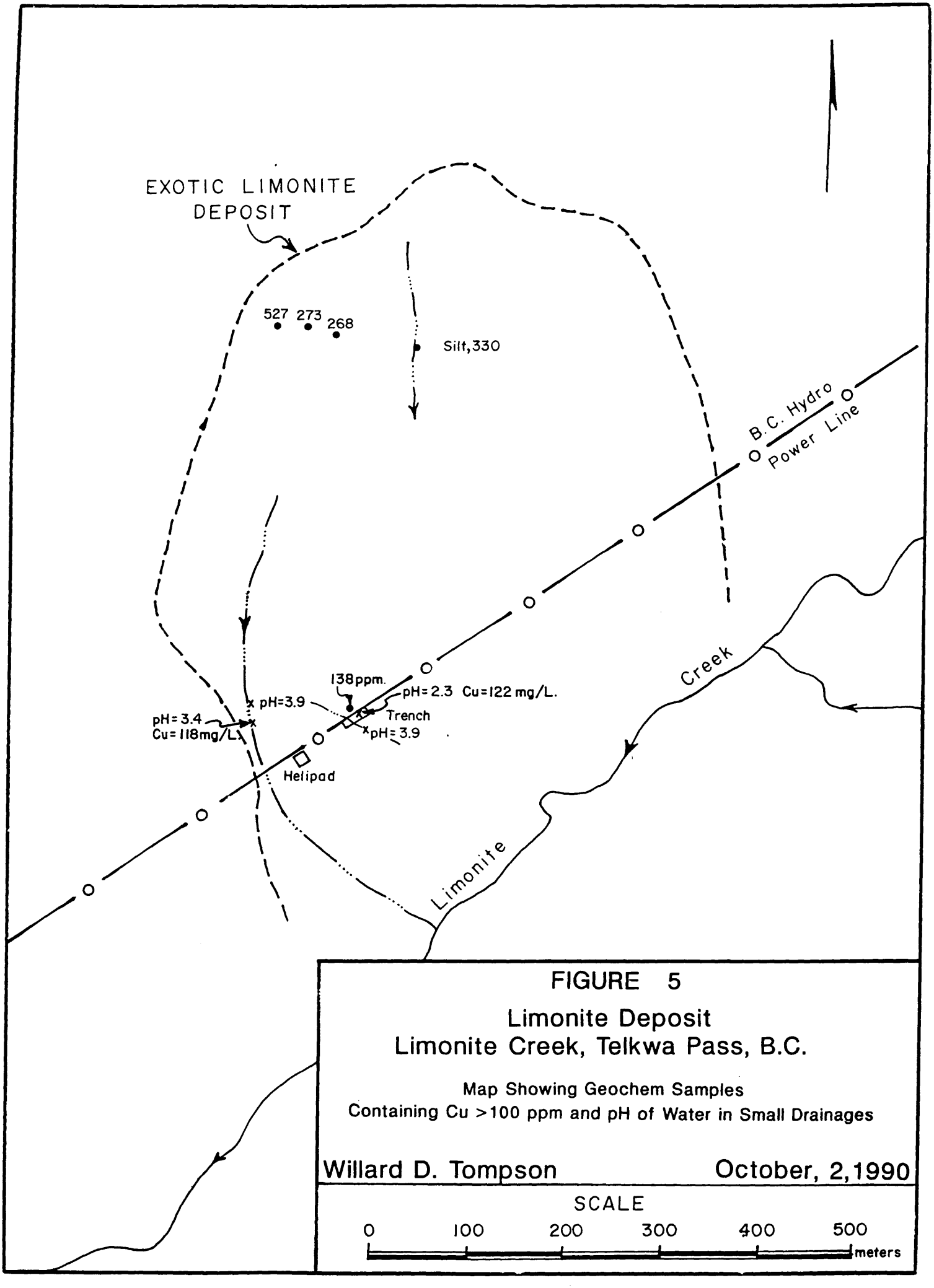


FIGURE 5

Limonite Deposit
Limonite Creek, Telkwa Pass, B.C.

Map Showing Geochem Samples
Containing Cu >100 ppm and pH of Water in Small Drainages

Willard D. Tompson — October, 2,1990

SCALE

0 100 200 300 400 500 meters

CONCLUSIONS

A large sulfide deposit containing pyrite as a major constituent is the probable source for the iron which forms the exotic limonite deposits at Limonite Creek and Many Bear Creek in the Telkwa Pass area, British Columbia.

The sulfide deposit occurs in pyroclastic rocks of the Middle Jurassic Hazelton group and lies between two major plutons; the Howson batholith and Kleanza Creek apophysis of the Coast Intrusions which are Upper Cretaceous to Lower Tertiary in age.

The sulfide body, which is believed to be the source of the iron in the limonite deposits, is buried and probably lies up-slope from the 3 areas of exotic limonite accumulation (plate 2).

Chalcopyrite, sphalerite and galena occur in several prospects in Telkwa Pass along with significant values in gold and silver. Thus it is expected that the sulfide deposit in the Limonite Creek - Many Bear Creek area may contain base metals and precious metals as well as pyrite.

RECOMMENDATIONS

A four-phase exploration program is recommended; geological mapping, geochemical surveys, Pulse EM survey and diamond drilling.

The objectives of geological mapping, in addition to establishing the distribution of rock types, rock alteration and structural features would include an attempt to identify conduits which transfer the acidic, iron-rich solutions to the surface. If that can be achieved, it may be possible to trace the solutions back to their origins and thus establish drill targets.

Geochemical silt and soil surveys should be used to try to identify areas in which base metals may have been precipitated with the limonite, or otherwise concentrated in soil or silt.

All streams should be tested for the pH of their water at several elevations throughout their courses. The concept being, that pH will be low (acidic) downslope from sites of discharge, but will return to near 7.0 (neutral) at locations which are topographically above the level at which the acidic water is being discharged.

Pulse EM surveys are widely accepted techniques in the search for massive sulfide ore bodies. They are a time-based electromagnetic system which can easily target massive sulfide deposits to a depth of 500 meters. The data are not greatly affected by topography. If required, surface surveys may be followed up by bore hole Pulse EM techniques. The orientation of a massive sulfide conductor can normally be interpreted from surface data.

It is proposed that specific targets be tested by diamond drilling. About 4000 feet (1220 meters) are recommended upon completion of geological, geochemical, and geophysical surveys.

ESTIMATE OF COST

In view of the fact that the exploration program must be supported by helicopter, it is advantageous to move personnel and equipment by truck to a staging site which is near the project area.

The road through Telkwa Pass was upgraded during the summer of 1990, during which time new pipeline was installed by Pacific Northern Gas Ltd. A large area is cleared at the east end of the middle lake between Top Lake and Tauw Lake. This cleared area is ideal for staging. It lies at elevation 853m (2800 feet) and is 4 kilometers from the proposed camp site.

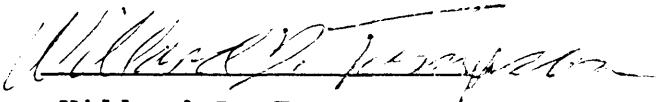
The following exploration cost estimate is based upon mobilization from the above described staging area to the site of the base camp which is near two small lakes, 2 kilometers northwest of Tauw Lake.

Limonite Creek - Many Bear Creek
Cost Estimate for Exploration Project

Camp operation		
Tents, frames, tools and supplies	$22 000	
Board, 300 man days @ $50	15 000	
Wages and fees	12 000	
		$ 49 000
Geological		
Photogrammetry, maps, supplies	5 500	
Wages and fees	12 500	
		18 000
Geochemical surveys		
Geochem analyses	18 000	
Sampling supplies	1 500	
Wages, linecutting, sampling	17 000	
		36 500
Geophysical surveys		
Pulse EM survey and report	9 000	
Mob and demob	2 500	
Cut lines, wages	5 000	
		16 500
Diamond drilling		
Contract, 4000 ft. @ $22.00	88 000	
Core assays	11 000	
Sampling supplies	1 500	
Construct set-ups (helicopter)	7 500	
D.D. field costs	10 000	
Set-ups, wages	1 700	
		119 700
Transportation		
Truck	2 000	
Helicopter	22 500	
		24 500
Communications		
Radios	1 000	
Telephone	1 000	
		2 000
Total		$266 200

Preparation of a final report, drafting of maps, petrographic studies and copies of maps and reports will cost approximately $25 000.

Respectfully submitted



Willard D. Tompson

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CERTIFICATE

I, Willard D. Tompson, of Smithers, British Columbia, do hereby certify:

1. THAT I am a consulting geologist residing at Van Gaalen Road, Smithers, British Columbia;

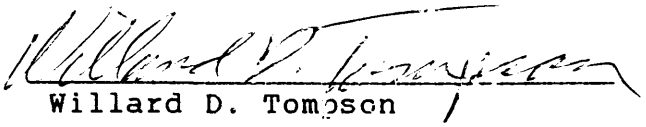
2. THAT I hold a Master of Science degree (Geology) from Montana State University;

3. THAT I am a Fellow of the Geological Association of Canada;

4. THAT I have practiced my profession for more than 30 years.

5. THAT I am owner of the Bear Claim, record number 11317 which is described herein.

Dated at Smithers, British Columbia this 4th day of October, 1990.



Willard D. Tompson

Consulting Geologist