



41069W0887 63.4494 GARNET

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GEOLOGICAL REPORT  
ON THE  
GARNET LAKE PROPERTY  
GARNET TOWNSHIP"  
DISTRICT OF SUDBURY  
ONTARIO  
FOR  
WESTERN PACIFIC ENERGY CORPORATION

L.D.S. Winter  
B.A.Sc., M.Sc., F.G.A.C.  
May 15, 1984

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## 1. INTRODUCTION

The Garnet Lake property of Western Pacific Energy Corporation is located in east-central Garnet township in the southern part of the Swayze greenstone belt of northeastern Ontario (Figure 1). This area was first prospected for iron in the early 1900's and then base metals in the 1920's. During the 1930's attention shifted to gold and, the Swayze belt was the scene of considerable prospecting, exploration and development for precious metals. There has been virtually no exploration activity for gold in this area from the 1940's until the past few years when much of the area was restaked. Active exploration for gold is once again taking place in the region. Along strike to the west in the adjacent townships a number of companies such as International Rhodes Resources, Inco Limited, Dejours Mines Limited, Noranda Mines Ltd. and many others are presently actively exploring this favourable greenstone belt for gold.

The writer was requested by the company to assess the potential of the property for gold mineralization. The following report describes the property, outlines the features of economic interest and presents an exploration program to evaluate the potential of the claim group.

## 2. SUMMARY AND RECOMMENDATIONS

The Garnet Lake property consists of 133 unpatented, contiguous mining claims in east-central Garnet township held by Western Pacific Energy Corporation. These claims are on the southern arm of the Swayze greenstone belt of northeastern Ontario that was actively prospected for gold in the 1930's .

The Garnet Lake claim group is underlain by mafic metavolcanic flows containing a zone of intercalated chemical-clastic sediments trending west-northwest across the property. Quartz porphyry flows or intrusives are

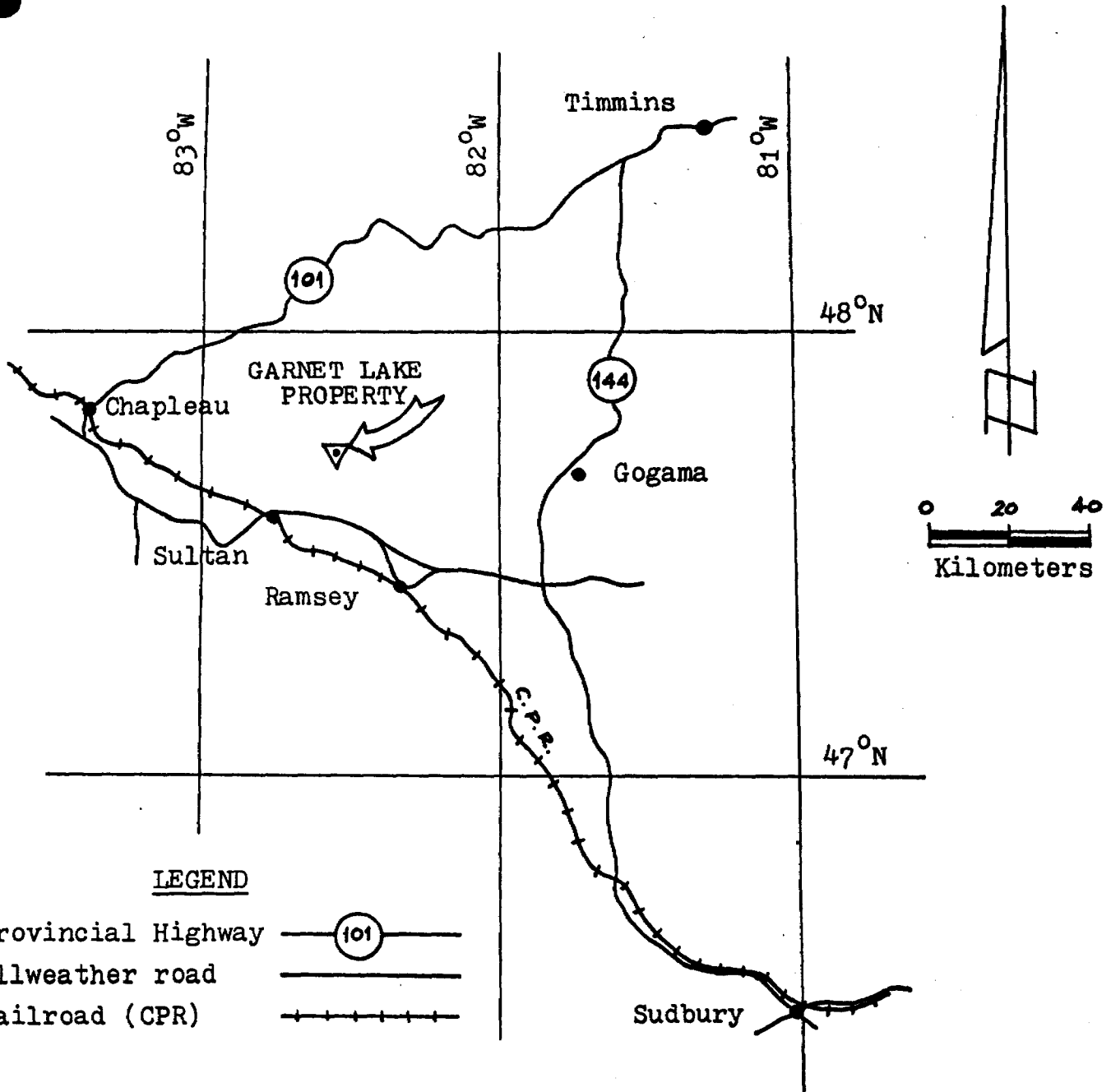


FIGURE 1

GENERAL LOCATION MAP  
 GARNET LAKE PROPERTY  
 DISTRICT OF SUDBURY  
 ONTARIO

To accompany the report for  
 WESTERN PACIFIC ENERGY CORPORATION



MAY 14:84

present in the northeast part of the claim group and all units have been intruded by a mafic intrusive sill-like body.

A significant number of important gold deposits on a worldwide basis are hosted by chemical sediments. As well, recent studies have indicated that gold mineralization in the Canadian Shield is usually associated with mafic volcanic sequences at their contacts with clastic and/or exhalative chemical sediments. Other features of importance are zones of carbonate alteration and/or carbonate to sulphide-rich metasediments and small quartz-rich felsic intrusives or extrusives. From a comparison of these features with those on the Garnet Lake property it is considered that the property contains a very favourable geological environment for the localization of gold mineralization, with the chemical sediment horizon being the area of prime interest. The property is also located between the Jerome Gold Mines property to the east and the area to the west, along the same geologic belt, where gold mineralization is being encountered by a number of companies. Because of these advantageous features the property is considered to have a very good potential for the discovery of gold mineralization and a program of exploration is recommended to assess this potential.

An initial exploration program with a total expenditure of \$ 98,835 is recommended with a second phase to be implemented if the results of the first phase are sufficiently encouraging.

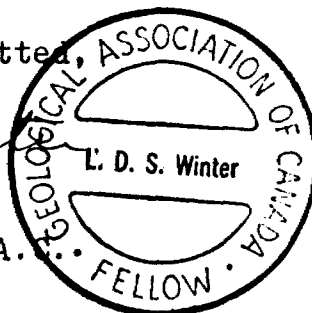
Respectfully submitted,

*L.D.S. Winter*

L.D.S. Winter

B.A.Sc., M.Sc., F.G.A.

May 15, 1984



3. PROPERTY

3.1 CLAIM GROUP AND OWNERSHIP

The Garnet Lake property of Western Pacific Energy Corporation consists of 133 unpatented, contiguous mining claims in good standing held by the company. The claim group, which is illustrated in Figure 2, is located in central and east-central Garnet township as shown on Plan. M.829, Garnet Township, issued by the Surveys and Mapping Branch of the Ontario Ministry of Natural Resources. The claim numbers are as follows:

<u>Claim Numbers</u>		<u>No</u>
P.797501 to P. 797575	inclusive	75
P.798029 to P. 798048	inclusive	20
P.798055 to P. 798072	inclusive	18
P.798080 to P. 798099	inclusive	20
	Total	<u>133</u>

3.2 LOCATION AND ACCESS

Garnet township is located in the District of Sudbury, Porcupine Mining Division of northeastern Ontario at 47°-43' N latitude, 82°-30' W longitude (figure 1) approximately 125 km southwest of Timmins.

A good gravel road crosses the property and leads south and west a distance of 43 km to Sultan on the transcontinental line of the Canadian Pacific Railway. Highways 667 and 129 connect Sultan to Chapleau, 68 km to the northwest.

3.3 TOPOGRAPHY, VEGETATION AND CLIMATE

The main topographic feature of the area is the Wakami River which trends from the northwestern part to the southeastern corner of the claims.

Much of the south-central part of the property is overburden covered with no outcropping of bedrock. A similar situation is present in the northwestern part of the property. Much of the eastern and southeastern part of the claim group is swampy with scattered patches of outcrop.

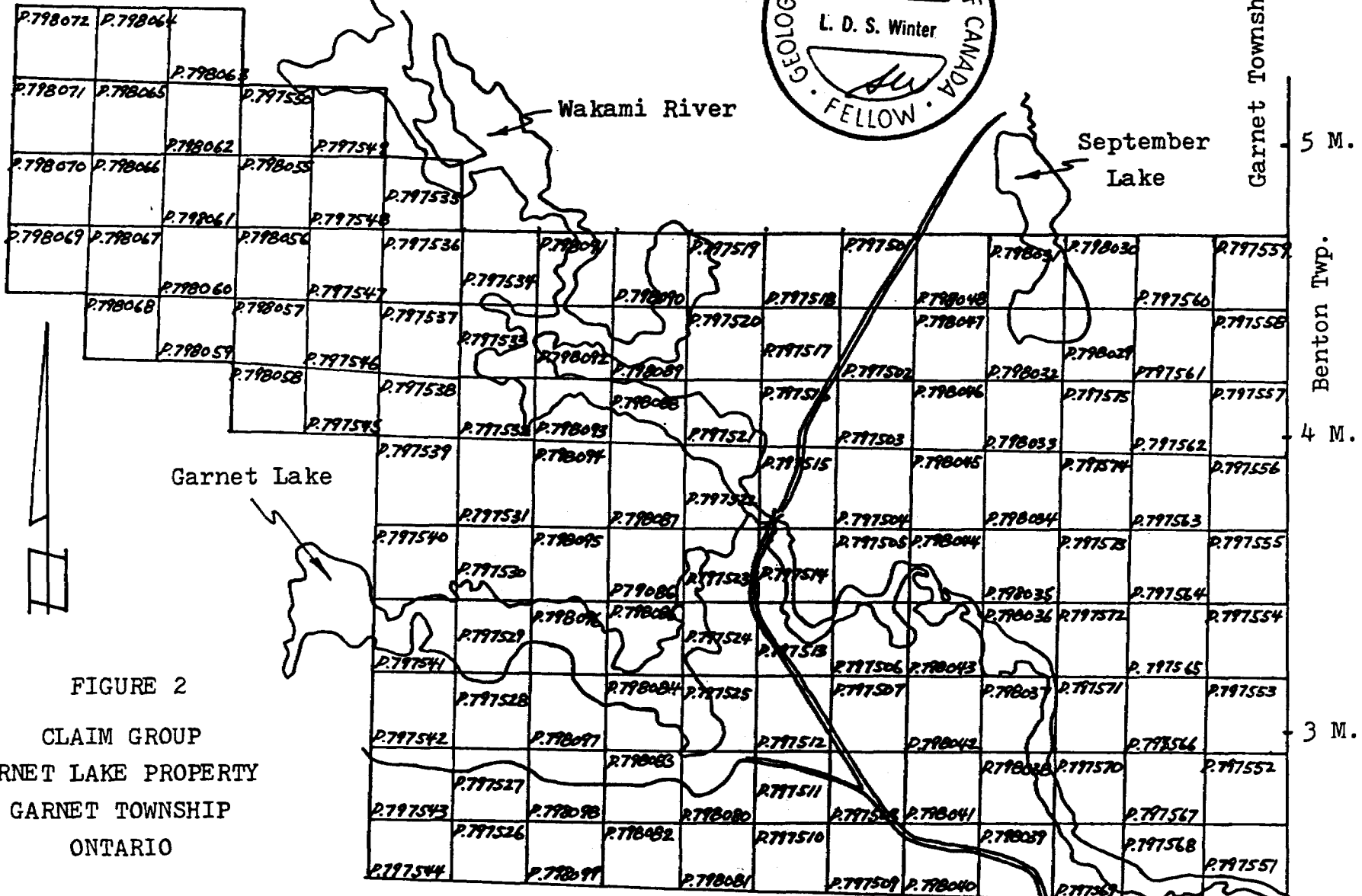
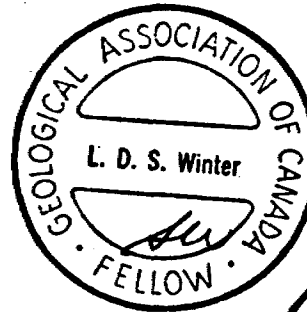


FIGURE 2  
CLAIM GROUP  
GARNET LAKE PROPERTY  
GARNET TOWNSHIP  
ONTARIO

To accompany the report for  
WESTERN PACIFIC ENERGY CORPORATION

Scale: 1:31 680

To Sultan

May 14:84

The area was burned over about 1900 and is now forested with second growth jackpine, spruce, poplar and birch.

The climate is typical of the Canadian Shield with cold winters and cool summers with a temperature range between +30°C and -40°C in average.

#### 3.4 SERVICES

Sultan on the C.P.R. is 43 km by road to the southwest of the property and Chapleau, the closest source of supplies is an additional 68 km to the west. Men, equipment and services could be obtained in Timmins, 125 km to the northeast, or in Sudbury, 150 km to the southeast.

At present, electrical power is not available in the general area of the property.

#### 4. PREVIOUS AND CURRENT WORK IN THE AREA

Interest in the area was originally due to the discovery of iron formation shortly after 1900 with some claims being staked but the grade was too low and the claims were allowed to lapse. In the 1920's claims were staked in Cunningham township to the west for lead-zinc-copper mineralization associated with the iron formation. In the 1930's a few claims were staked for gold in both northern and southern parts of Garnet township but there appears to have been little additional work done at that time or in subsequent years. 14 scattered drill holes were drilled in the township between 1957 and 1971, apparently in the search for base metals. An airborne magnetometer survey was carried out along the northern edge of Garnet township and adjacent areas in 1976 by Union Miniere Explorations and Mining Corporation Limited (UMEX). During 1982 and 1983 exploration consisting of geophysics, geological mapping and some limited drilling directed towards the discovery of gold mineralization has occurred in the township. Most recently there has been considerable claim staking in the area.



V.B. Meen mapped the area for the Ontario Department of Mine in 1941 and in 1977 it was remapped by Siragusa of the Ontario Geological Survey.

## 5. GEOLOGY

### 5.1 REGIONAL GEOLOGY

Garnet township is located in the south-central section of the Swayze greenstone belt which is an arcuate zone extending from Kukatush, southwest of Timmins, southwest to Tooms township with a southern arm extending east and east-southeast to Gogama. Through Garnet and Cunningham townships the formations are considered to face north suggesting this may be the southern limb of a major synclorium outlined by the greenstone belt. The greenstone belt is surrounded on all sides by rocks of granitoid composition.

The southern arm of the Swayze greenstone belt extends for a strike length of at least 100 km and consists of metamorphosed tholeiitic basalts, clastic metasediments and chemical sediments represented by chert and iron formation. Mafic intrusive rocks are commonly found spatially associated with the metavolcanics and locally bodies of serpentized periodotite are also present. Some small plutons of granitoid rocks intrude the greenstones and lamprophyre dikes have been reported.

The dominant rock type on the southern limb of this metavolcanic belt is metamorphosed tholeiitic basalt which trends east-southeast across the area. These metavolcanics are locally pillowed, vesicular or amygdaloidal and have been metamorphosed to greenschist rank. Thin layers of intermediate to acidic crystal tuffs are interbedded with the flows.

Cycles of chemical and clastic sedimentation occurred during the development of the volcanic pile and resulted in the deposition of chert and chert-iron formation carrying as much as 60% magnetite. Sulfide-rich exhalative

units are also present within the chemical sediments. Deformation and fracturing has resulted in the development of chert-breccia in some sections.

Spatially, closely associated with the main chert units are relatively small bodies of feldspar porphyry which are considered to be sub-volcanic felsic intrusives.

The metasediments which appear to be more extensive in the eastern and western parts of the belt consist of polymictic conglomerate, and minor arkosic sandstone and minor slate.

The mafic intrusives occur in the central part of the belt associated with the mafic metavolcanics. The composition of these rocks varies from diorite to gabbro, with gabbro being dominant. The peridotite bodies are massive, variably serpentized bodies that may or may not be associated with the gabbroic intrusives.

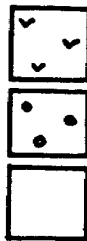
The metamorphic foliation in the area trends west-northwest to northwest and dips vertically to sub-vertically. There may be faulting parallel to the regional foliation but the most apparent direction of faulting is north-northwest as indicated by observed offsets, displacement of units and airphoto lineaments. Some east-northeast zones of shearing are also reported.

## 5.2 PROPERTY GEOLOGY

The Garnet Lake property of Western Pacific Energy Corporation in east-central Garnet township is underlain by a west-northwest trending and steeply dipping sequence of tholeiitic metabasalts that are massive to porphyritic in texture. (Figure 3) These metavolcanics are dark green in colour, range from fine to medium grained and, when porphyritic contain white phenocrysts of plagioclase. Pillowed varieties are present in both the northeastern and southwestern parts of the claim group.

Two narrow bands of ferruginous chert to magnetite iron formation with associated graphite occur in the north-western part of the property and trend east-southeasterly across the claims. The International Nickel Company of

LEGEND



Mafic intrusive

Quartz porphyry

Mafic metavolcanics



Iron Formation Zone



Foliation

All rock types are of Archean age.

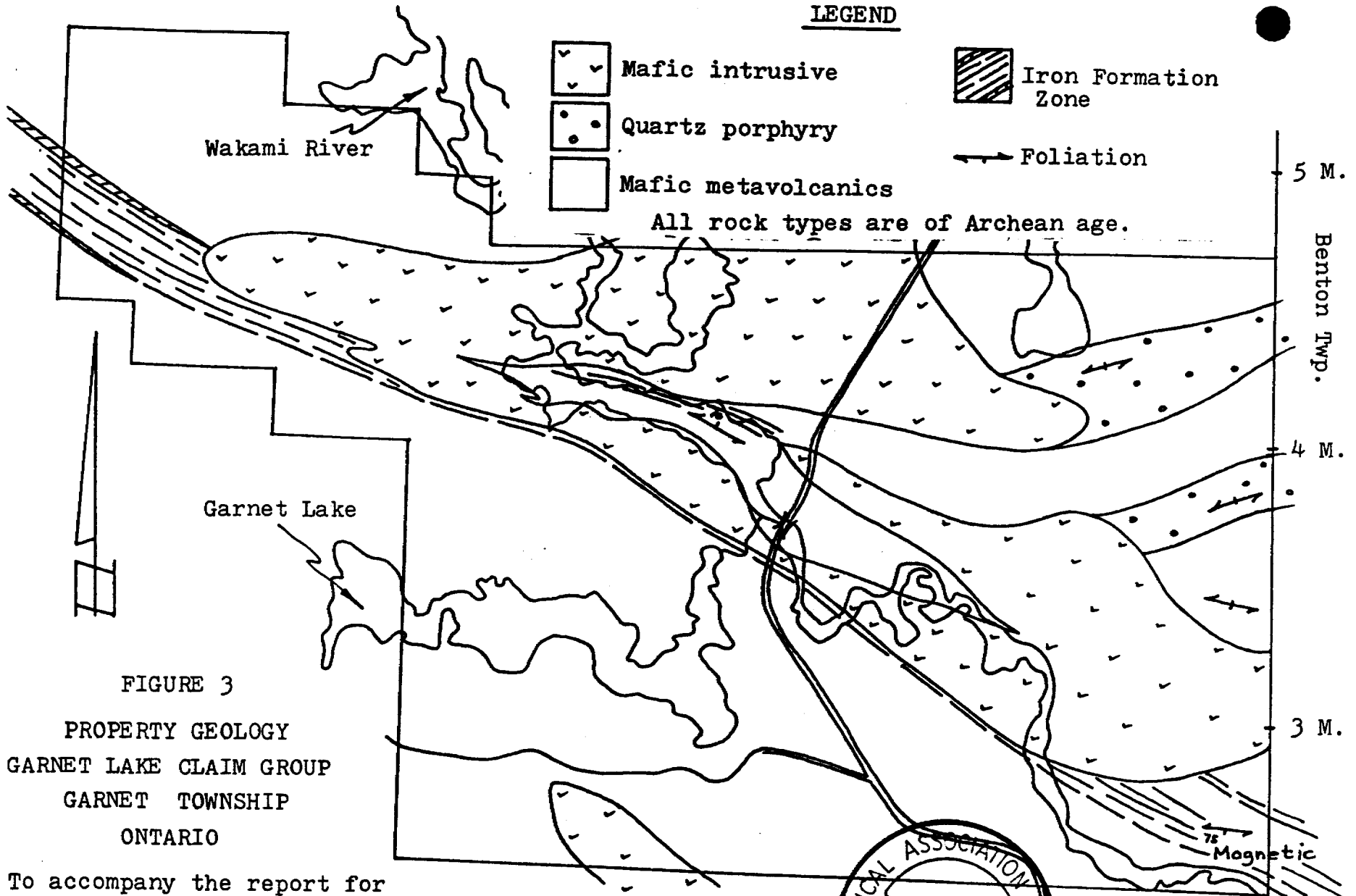
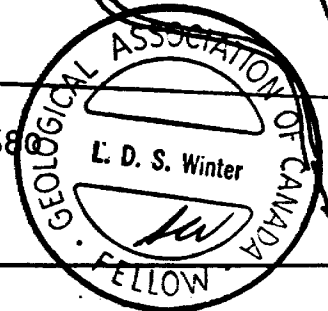


FIGURE 3

PROPERTY GEOLOGY  
GARNET LAKE CLAIM GROUP  
GARNET TOWNSHIP  
ONTARIO

To accompany the report for  
WESTERN PACIFIC ENERGY CORPORATION

Scale: 1: 31 680



To Sultan

May 14:84

Canada drilled two widely spaced drill holes on the eastern extension of this zone in the central and eastern part of the present property in 1966. A "carbonate and graphite" shear zone was reported from one hole and three graphitic zones were reported from the second hole. A small outcrop of ferruginous chert containing minor magnetite and 4% pyrite was reported from the north shore of the Wakami River along the southeasterly extension of the iron formation in the central part of the property. A strong magnetic attraction in the southeastern part of the claims may be the further continuation of this zone.

In the eastern part of the claim group two bands, 300 to 400 meters wide, of porphyritic (quartz) felsic metavolcanics trend approximately east-west and dip steeply south. These units trend at an angle to the main volcanic stratigraphy and may be sub-volcanic intrusives.

In the central and eastern part of the property a sill-like to somewhat irregular body of mafic composition has intruded the zone of iron formation and associated units as well as the metavolcanics to the north. This intrusive is gabbroic to dioritic in composition, massive and with a diabasic texture. A smaller mass of this material also occurs in the southwest corner of the property.

In summary, the property consists of a sequence of west-northwest trending metavolcanics containing a zone of intercalated iron formation and associated units across the central region of the claims. Two bodies of porphyritic felsic metavolcanics, possibly sub-volcanic intrusives, occur in the eastern part of the claims and a sill-like body of gabbro and diorite has intruded the sequence, in the central and eastern part of the claims, in the region of the iron formation horizon.

## 6. ECONOMIC POTENTIAL

It is becoming quite apparent that Precambrian iron formation is a very favourable geological environment for

the localization of economically important gold mineralization. Gold deposits located in iron formation include the Golden Rose property, those at Pickle Lake and Geraldton as well as the more recent discoveries by Dome Mines and associates south of Pickle Lake and at Opapimiskan Lake in Ontario, near Contwoyto Lake in the Northwest Territories, the Homestake Mine in South Dakota, several mines in the Minas Gerais District, Brazil and deposits in Zimbabwe and Western Australia. This mineralization is stratabound and some observers have suggested the gold was deposited from submarine hot springs or sea-floor volcanic exhalations that also deposited the iron and chert-rich horizons. Others have proposed that these deposits are due to epigenetic mineralization that was deposited in the iron formation that had previously been chemically and structurally altered. Regardless of the mode of origin the iron formation units are considered to be very favourable areas for gold mineralization.

Recent studies of gold deposits in the Canadian Shield have indicated that in general, gold mineralization is concentrated in the upper parts of mafic-ultramafic volcanic sequences and especially at the contact zones of these sequences with clastic and/or exhalative chemical sedimentary rock sequences. Within this general environment the presence of volcanic and sedimentary units, zones of carbonate alteration and/or carbonate or sulphide-rich chemical sediments and small quartz-rich felsic intrusives or extrusives are favourable indicators for the occurrence of gold mineralization.

In considering the Garnet Lake property of Western Pacific Energy Corporation it can be seen that the property contains most of the characteristics considered to be favourable for gold mineralization. A major feature of the property is the zone of cherty to iron-rich chemical sediments trending northwesterly across the property. Where drilled for iron in the past, widths of up to 70 meters

have been intersected containing chert, jasper, argillite magnetite, hematite and lenses of pyrite and pyrrhotite with trace amounts of chalcopyrite. As well, the surface showing on the northeast shore of the Wakami River shows exhalative pyritic chert containing some magnetite.

In the eastern part of the property drilling has shown the presence of graphitic and carbonate-rich sediments at the same stratigraphic horizon as the iron formation to the west, suggesting a possible facies change in the central part of the property. These drill holes also suggest evidence of carbonate alteration of the metavolcanics. Both features are considered to be geologically favourable for gold mineralization. The porphyritic (quartz) felsic metavolcanics in the eastern part of the property are favourable rock units often associated with gold mineralization and it is considered that this is another positive feature of the property.

To summarize, it is considered that the property contains many of the features associated with economically important gold mineralization; iron formation, including exhalative pyritic units, at the contact of mafic metavolcanics, a possible facies change within the chemical-clastic sedimentary unit, carbonate sediments and/or carbonate alteration and quartz-rich felsic volcanic units. Because of these favourable features in a meta-volcanic belt known for its many gold prospects, the property is well recommended for a program of exploration to assess its economic potential.

## 7. PROPOSED EXPLORATION PROGRAM AND BUDGET

Much of the property is covered by overburden and due to that feature the proposed exploration program is designed to rely heavily on geophysics and overburden sampling techniques. The magnetic survey is designed to outline the iron formation unit as well as the volcanic stratigraphy with other geophysical methods in selected areas to detect areas of sulphide mineralization.

Basal till sampling has been used throughout the region and has been found to be quite successful in outlining areas of gold mineralization. The initial phase of the proposed exploration program is as follows.

PHASE I

1. Line cutting, including all base lines and cross lines @ 400 ft. spacing 70 line-miles @ \$250 per mile	\$ 17,500
2. Proton Magnetometer survey 70 line-miles @ \$150 per mile	10,500
3. Self Potential survey 50 line-miles @ \$150 per mile	7,500
4. Induced Polarization survey in selected areas 20 line-miles @ \$1000 per mile	20,000
5. Geological mapping	12,950
6. Sampling and assaying costs	3,200
7. Basal Till sampling including assaying	10,000
8. Supervision, compilation of results, maps, reports and assessment submissions	5,000
9. Logistics; vehicle expense, canoes, camps etc.	3,200
10. Contingency 10%	8,985
	<hr/>
TOTAL PHASE I	\$ 98,835
	<hr/>

After successful completion of Phase I and, if the results warrant continuing exploration work then, a second phase of work is recommended.

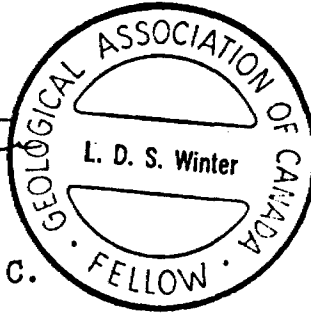
PHASE II

1. Trenching, sampling and assaying	\$ 5,600
2. Diamond drilling, including logging, splitting core, sampling, assaying supervision etc. 5000 ft. @ \$25 per ft.	125,000

3. Supervision, reports, maps, assessment submissions & contingency :(15%)	\$ 19,590
TOTAL PHASE II	<u>\$ 150,190</u>
TOTAL ESTIMATED BUDGET	<u><u>\$ 249,025</u></u>

*L.D.S. Winter*

L.D.S. Winter  
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May 15, 1984





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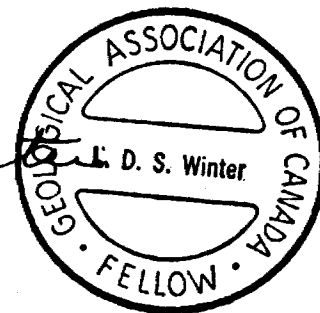
CERTIFICATE OF QUALIFICATION

I, Lionel Donald Stewart Winter do hereby certify:

1. that I am a geologist and reside at 1849 Oriole Drive, Sudbury, Ontario, P3E 2W5,
2. that I am a Fellow of the Geological Association of Canada,
3. that I graduated from the University of Toronto in Mining Engineering in 1957 with a Bachelor of Applied Science and from McGill University, Montreal in 1961 with a Master of Science (Applied) in Geology,
4. that I have practised my profession continuously for 25 years,
5. that my report on the Garnet Lake property, Garnet township, Ontario, is based on my personal knowledge of the geology of the area, a property visit and on a review of published and unpublished information on the property and surrounding area,
6. that I have no personal, direct or indirect interest in the Garnet Lake property, Garnet township, District of Sudbury, Ontario or any adjacent properties, nor do I hold or intend to hold any shares of Western Pacific Energy Corporation, and I have written this report as a totally independent consultant.

L.D.S. Winter  
B.A.Sc., M.Sc., F.G.A.C.  
May 15, 1984

*L.D.S. Winter* L. D. S. Winter





# BELL - WHITE ANALYTICAL LABORATORIES LTD.

P.O. BOX 187.

HAILEYBURY, ONTARIO

TEL: 672-3107

## Certificate of Analysis

NO. B1423-84

DATE: December 5, 1984

SAMPLE(S) OF: Rock (12)

RECEIVED: December 3, 1984

SAMPLE(S) FROM: L.D.S. Winter  
D. G. Innes and Associates Ltd.

<u>Sample No.</u>	<u>Gold ppb</u>
101	14
114	53
115	7
122	7
140	8
141	44
143	44
144	33
145	30
153A	3
153B	36
161	12

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

BELL-WHITE ANALYTICAL LABORATORIES LTD.

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

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41060NW0067 63.4494 GARNET

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REPORT  
OF  
PROPERTY EVALUATION  
GARNET LAKE PROPERTY  
GARNET TOWNSHIP  
ONTARIO

L.D.S. Winter  
B.A.Sc., K.S.C., F.G.A.C.  
December 2, 1984



41000N0087 63.4194 GARNET

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## 1. INTRODUCTION

During the middle of November 1984, the author and R. Poulin spent 7 days on the Garnet Lake property evaluating the potential of the property for gold mineralization and prospecting the claim block. The results of this work are presented in the accompanying map and in the following report. The objectives of the field work were:

1. Prospect and evaluate the porphyry bodies in the northeast and eastern part of the property,
2. Investigate the area of "chemical sediments" in the east-central part of the claim block.
3. Evaluate the quartz porphyry and old pits in the southeast corner of the property.
4. Prospect the areas down ice from the old reported drill holes south of the Wakami River.
5. Evaluate the iron formation along the Wakami River just west of the main road.
6. Prospect and evaluate the area of iron formation in the northwest corner of the property. Also, in this area collect humus samples of geochemical analysis.
7. Prospect and evaluate any other areas of potential interest on the property.

While working on the property the weather turned very cold and all the lakes froze as well as the Wakami River about  $\frac{1}{4}$  mile west of the main road. This significantly limited access to the northwestern part of the claims with the result that objective 6 - evaluation of the iron formation in that area and the humus sampling, was not carried out. Apart from this, the balance of the work was done.

The results of the work are discussed below and the areas considered to be of economic interest are shown on the accompanying map by a number. Rock sample locations are also shown on the map by a number, eg., G115.

2. SUMMARY

The Garnet Lake property was prospected and evaluated during a 7 day field program. During this time one boulder and 4 areas considered to have economic potential were located. As well, 2 additional areas of economic interest could not be evaluated and still represent targets of interest. Of particular interest are the following area shown and numbered on the enclosed map.

1. Silicified, carbonatized, pyritized metavolcanic boulder,
2. Sheared, sericitized, carbonatized quartz porphyry with some quartz veining and pyrite.
3. Sheared, silicified, carbonatized and pyritized meta-volcanic with quartz veining.
4. Sheared sericitized, carbonatized quartz porphyry with Quartz veining and pyrite.
5. Pervasively carbonatized meta-agglomerate and/or volcanoclastic conglomerate and tuff carrying disseminated pyrite.

Area 6 could not be reached due to freeze up of the Wakami River and Area 7 is covered by approximately 70 ft. of sand and gravel.

The only recorded assessment work in the area of the claim block is that relating to 5 drill holes drilled by Inco Limited in the 1960's during their search for base metals.

In summary, it is considered that there are 7 areas of potential interest for gold mineralization that are



recommended for further exploration to assess their economic potential.

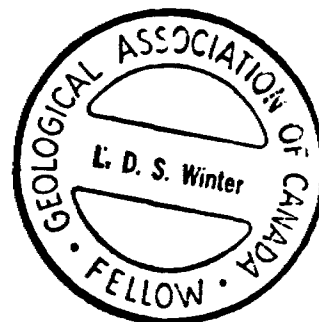
Respectfully submitted,

*L.D.S. Winter*

L.D.S. Winter

B.A.Sc., M.Sc., F.G.A.C.

December 2, 1984



3. PROPERTY, LOCATION AND ACCESS

CLAIM GROUP

The Garnet Lake property consists of 133 unpatented, contiguous mining claims. The claim group, is located in central and east-central Garnet township as shown on Plan M.829, Garnet Township, issued by the Surveys and Mapping Branch of the Ontario Ministry of Natural Resources. The claim numbers are as follows:

<u>Claim Numbers</u>		<u>No</u>
P.797501 to P.797575	inclusive	75
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P.798080 to P.798099	inclusive	<u>20</u>
	Total	<u>133</u>

Garnet township is located in the District of Sudbury, Porcupine Mining Division of northeastern Ontario at 47°-43' N latitude, 82°-30' W longitude approximately 125 km southwest of Timmins.

A good gravel road crosses the property and leads south and west a distance of 15 km to the Eddy Forest Products road between Ramsey and Sultan on the trans-continental line of the Canadian Pacific Railway. Highways 667 and 129 connect Sultan to Chapleau, 68 km to the northwest.

4. PROPERTY GEOLOGY

The Garnet Lake property in east-central Garnet township is underlain by a west-northwest trending and steeply dipping sequence of metavolcanics that range from massive to porphyritic flows to tuffs and agglomerates. These metavolcanics are generally green to dark green in colour, range from fine to medium grained and when porphyritic contain phenocrysts of white plagioclase or quartz. Pillowed

varieties are present in both the east-central and southwestern parts of the claim group. The composition appears to range from intermediate to mafic.

Two bands of ferruginous chert to magnetite iron formation with associated graphite occur in the northwestern part of the property and trend east-southeasterly across the claims. The Internation Nickel Company of Canada drilled two widely spaced drill holes on the eastern extension of this zone in the central and eastern part of the present property in 1966. A "carbonate and graphite" shear zone was reported from one hole and three graphitic zones were reported from the second hole.

In the eastern part of the claim group possibly three units, each approximately 1000 feet wide, of porphyritic felsic metavolcanics trend approximately east-west and dip steeply south. One unit is a feldspar porphyry and two units are quartz porphyries. These units trend at an angle to the main volcanic stratigraphy and may be sub-volcanic intrusives.

In the central and eastern part of the property a sill-like to somewhat discordant body of mafic composition has intruded the metavolcanics and associated metasediments. This intrusive is gabbroic to dioritic in composition, massive and with a diabasic texture. A small nose of this material also occurs in the southwestern corner of the property.

Outcrops of agglomerate or volcanoclastic conglomerate and associated finer grained units trending at  $110^{\circ}$  occur in the southwestern corner of the property. These units show considerable carbonate alteration.

In summary, the property consists of a sequence of west-northwest trending metavolcanics of intermediate to mafic composition containing intercalated chert, iron formation and associated sediments across the central

region of the claims. Three bodies of porphyritic felsic metavolcanics, possibly sub-volcanic intrusives, occur in the eastern part of the claims and a sill-like body of gabbro and diorite has intruded the sequence, in the central and eastern part of the claims.

5. PREVIOUSLY RECORDED ASSESSMENT WORK

The only recorded assessment work is that reported by INCO Limited in the mid-1960's when 5 drill holes, #'s 31911, 31912, 31913, 31914 and 31915 were drilled along the northwest trending zone of chemical meta-sediments in the search for base metals.

6. RESULTS OF PRESENT FIELD WORK

In general the eastern three-quarters of the property was prospected on foot and by boat along the Wakami River. The results relative to the above stated 7 objectives are outlined below.

6.1 Porphyry Bodies, Northeastern and Eastern Claims (#2 on Map)

Two porphyry bodies were identified in this area; the most northerly one is a massive grey rock containing white feldspar phenocrysts. (Samples G104-G109). In general this rock appeared to be relatively fresh with the only evidence of alteration being at sample G104 along the south shore of September Lake. In general nothing of economic interest was noted in this area and this body is rated to have a low economic potential.

The second porphyry body is located 3/4 miles south of the northeast corner of the property and consists of a sheared, sericitized and carbonatized quartz porphyry. Some minor quartz veining and pyrite mineralization were also noted in this area. Sample G122 was taken from this unit. This area is area #2 on the map and is recommended for further evaluation due to the rock types, alteration and minor quartz veining.

6.2 "Chemical Sediments" - East Central Claims (#3 on Map)

A number of outcrops were located in this area along the north edge of a northeast trending swamp. These outcrops show strong shearing, carbonatization, silicification, disseminated pyrite and quartz veining. The shearing trends  $105^{\circ}$  and dips steeply. Samples G114 and G115 come from this area. It is considered that this is a zone of shearing and alteration, not a chemical sediment, but due to the nature of the alteration this area should be considered for further evaluation.

6.3 Quartz Porphyry and Old Pits - Southeast Claims(#4 on Map)

Just north of the Wakami River and a few feet west of the claim line some old pits are located on a carbonatized, sericitized and sheared quartz porphyry very similar to that described in 1 above. A large quartz vein with some disseminated pyrite is also present here. Samples G153A and G153B were taken from this location. Due to the alteration, quartz veining and pyrite mineralization this area is recommended for further work.

6.4 Drill Holes South of Wakami River (#7 on Map)

These holes report shearing, graphitic metasediments and carbonatization along a metasediment-greenstone contact with over 100 ft. of casing through sand, gravel and boulders. No outcrop was observed in the area of these holes and in general the area is flat sand plain covered with jackpine. Nothing of interest was uncovered in this area by boulder prospecting. The potential of this zone is still open and could probably be best evaluated by basal till sampling.

6.5 Iron Formation - Wakami River, Northwest of Bridge

This area is about G147 sample location on the enclosed map and is area 51 on Preliminary O.G.S. Map P2340. An outcrop of ferruginous chert is reported by the O.G.S. from this locality. In this area the only outcrops found during a detailed search along the shore were outcrops of massive gabbro containing gash veins of quartz.

It is difficult to envisage a ferruginous chert in a massive gabbro except as an inclusion or else gabbro sills parallel to the stratigraphy. On the O.G.S. Map this location is noted as being east of the road so at present it is considered that this location was misplotted.

#### 6.6 Iron Formation - Northwest Claims

This area was not visited due to the restriction on access caused by the Wakami River freezing. Its potential remains the same as previously, based on the iron formation units in this area.

#### 6.7 Other Areas of Interest

Two other areas are considered to be of potential interest. The first area is noted area #1 on the enclosed map and consists of a silicified, carbonatized and pyritized boulder, sample G101 located approximately  $\frac{1}{4}$  mile west of the south end of September Lake. This boulder is considered to have come from the north and this area is suggested for further prospecting. Another area of considerable interest is in the southwest corner of the property indicated as area #5 on the enclosed map. (Samples G140, G141 and G161) Approximately 800 ft south of the #1 post of claim 797543 is an area of outcrop of agglomerates ( or volcanoclastic conglomerates) and tuffs trending  $110^{\circ}$  and dipping steeply. The agglomerate and tuffs show a pervasive pale yellow-brown carbonate alteration and contain disseminated pyrite. This alteration is very similar to alteration recently observed by the writer about a gold prospect being developed in the Matheson area. Due to the association of the rock type, alteration and pyrite mineralization this area is recommended for further work.

The gravel along the main road across the claims contains a number of boulders of iron formation that are considered to be of potential interest. 4 samples, G142 to G145 were collected. It is considered that the gravel comes from borrow pits in the immediate area and that if any of these

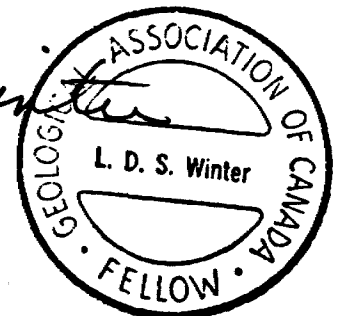
or other boulders showed economic potential they could be followed up.

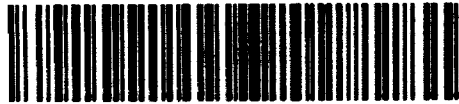
7. SAMPLES FOR ASSAYING

- G101 - boulder, silicified, carbonatized metavolcanic with minor disseminated pyrite (area #1)
- G114 & G115 - sheared, silicified, carbonatized meta-volcanic cut by quartz veins and containing disseminated pyrite (area #3)
- G122 - sheared, sericitized, carbonatized quartz porphyry (area #2)
- G140 - carbonatized metatuff (?) with minor disseminated pyrite (area #5)
- G141 - agglomerate or volcanoclastic conglomerate, carbonatized and carrying disseminated pyrite (area #5)
- G143, G144, G145 - boulders of iron formation from along main road.
- G153A- sheared, sericitized, carbonatized quartz porphyry adjacent to quartz vein.
- G153B - quartz vein containing disseminated pyrite.
- G161 - additional sampling of same area where G140 taken.

L.D.S.Winter  
B.A.Sc., M.Sc., F.G.A.C.  
December 2, 1984

*LDS Winter*





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GEOLOGICAL REPORT  
ON THE  
FAWN CREEK PROPERTY  
GARNET TOWNSHIP  
DISTRICT OF SUDBURY  
ONTARIO  
FOR  
POWER GEM RESOURCES LTD.

L.D.S. Winter  
B.A.Sc., M.Sc., F.G.A.C.  
May 14, 1984





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## 1. INTRODUCTION

Power Gem Resources Ltd. has acquired a block of 26 claims in the western part of Garnet township in the southern part of the Swayze greenstone belt in north-eastern Ontario (Figure 1). The area lies between, and along strike from, the Jerome Gold Mine property to the east and an area to the west being intensively explored for gold by International Rhodes Resources, Inco Limited, Dejour Mines Limited, Noranda Mines Ltd. and many other companies.

During the 1930's this general area was prospected for gold with some development and production taking place. The most notable was the Jerome Gold Mine, 25 km to the east, which produced 335,060 tons with a recovered grade of 0.17 oz gold per ton between 1941 and 1943.

The author was requested by the company to assess the potential of the Fawn Creek property. This report describes the property, outlines the features of economic interest and presents an exploration program to evaluate the potential of the claim group for gold mineralization.

## 2. SUMMARY AND RECOMMENDATIONS

The Fawn Creek property in Garnet township of the Swayze greenstone belt is underlain by steeply dipping mafic metavolcanic flows containing a zone of intercalated chemical-clastic sediments trending northwesterly across the property. Also within the metavolcanics in the northern part of the property is a zone of shearing and alteration. An irregular body of gabbroic composition intrudes all units in the northwestern and northern part of the claim group.

On a worldwide basis, a number of Precambrian gold deposits are hosted by chemical sediments. Also, recent studies of gold deposits in the Canadian Shield have indicated that gold mineralization is usually associated

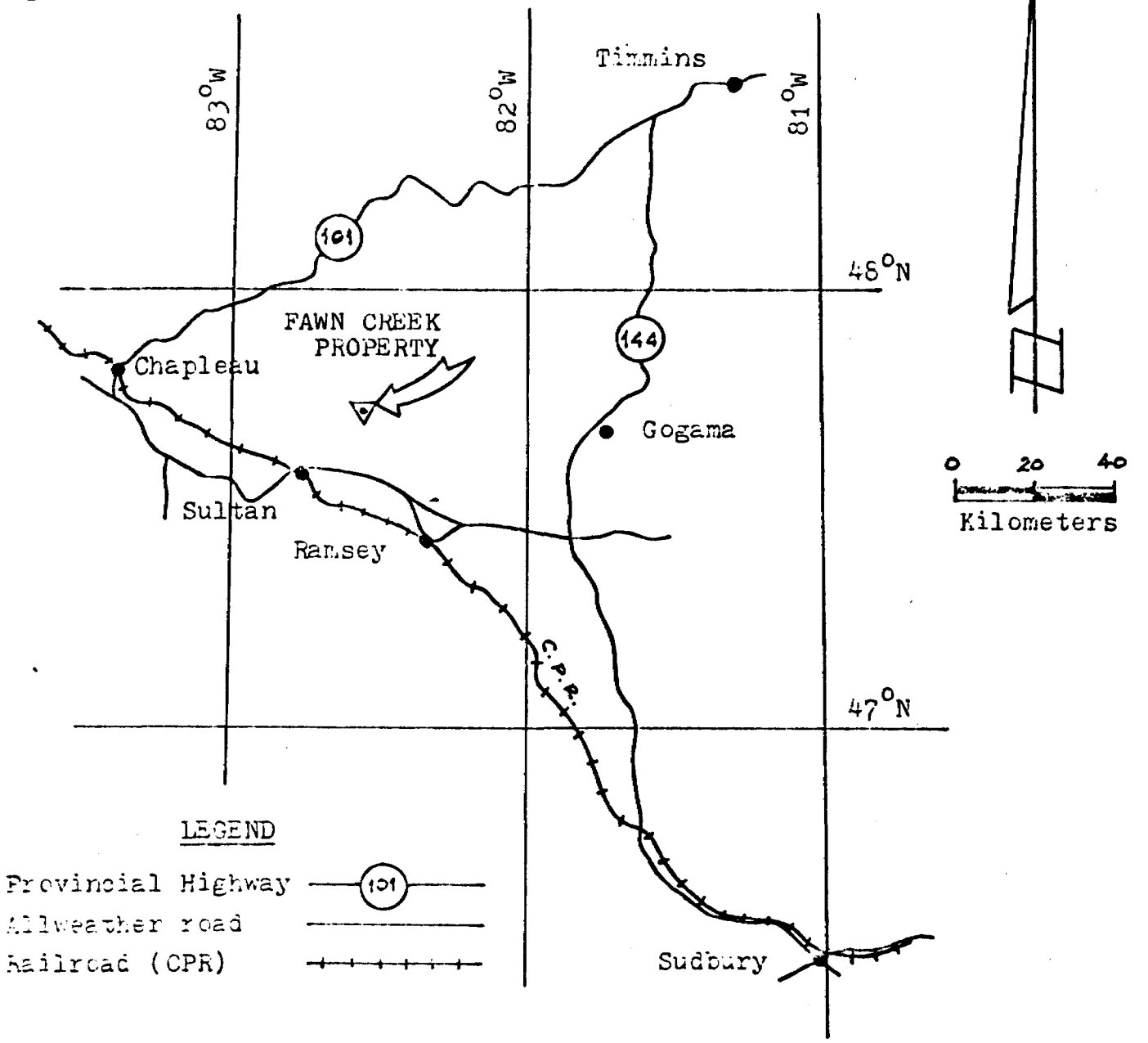


FIGURE 1

GENERAL LOCATION MAP  
 FAWN CREEK PROPERTY  
 DISTRICT OF SUDBURY  
 ONTARIO

To accompany the report for  
 POWER GEM RESOURCES LTD.



May 14, 84

with mafic metavolcanic sequences at their contacts with clastic and/or chemical sediments. Other features of importance are zones of alteration and quartz-rich felsic intrusives or extrusives. In comparing these features to the Fawn Creek property it is considered that the property hosts a very favourable geological environment for the localization of gold mineralization, with the chemical sediment horizon being the area of prime interest. A sample of magnetite iron formation from this horizon taken by a geologist of the Ontario Geological Survey assayed 0.01 oz gold per ton. Due to the favourable geological environment on the property it is considered that the property has considerable potential for the discovery of gold mineralization and a program of exploration is recommended to assess the potential.

An exploration program with a Phase I expenditure of \$25,613 is recommended with Phase II being implemented if the results of the first phase are sufficiently positive.

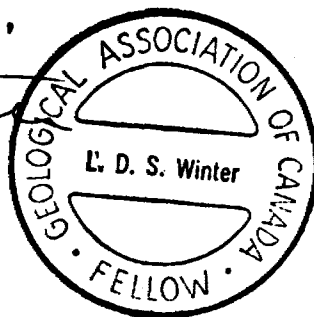
Respectfully submitted,

*L.D.S. Winter*

L.D.S. Winter

B.A.Sc., M.Sc., F.G.A.C.

May 14, 1984



3. PROPERTY

3.1 CLAIM GROUP AND OWNERSHIP

The Fawn Creek property of Power Gem Resources Ltd. consists of 26 unpatented, contiguous mining claims in good standing held by the company. The claim group which is illustrated in Figure 2 is located in the western part of Garnet township as shown on Plan M.829, Garnet Township, issued by the Surveys and Mapping Branch of the Ontario Ministry of Natural Resources. The claim numbers are as follows:

<u>Claim Numbers</u>	<u>No</u>
P. 797899 and P.797900	2
P. 798000 to P.798023	24
Total	<u>26</u>

3.2 LOCATION AND ACCESS

Garnet township is located in the District of Sudbury, Porcupine Mining Division of northeastern Ontario at 47°-43' N latitude, 82°-30' W longitude. (Figure 1) approximately 125 km southwest of Timmins.

A good gravel road trending north-south crosses the eastern part of the township and from this road, approximately 1 km south of the Wakami River, a good bush road leads west to and across the northern part of the Fawn Creek property. The gravel road in eastern Garnet township leads south and west a distance of 43 miles to Sultan on the main transcontinental line of the C.P.R. Highways 667 and 129 connect Sultan to Chapleau, 68 km to the northwest.

3.3 TOPOGRAPHY, VEGETATION AND CLIMATE

Travel Lake extends in an east-west to east-southeast direction across the northern part of the property. The property is swampy northeast of the lake and in the southeastern corner with areas of outcrop generally north and northwest of the lake. Most of the south and southwestern-most claims are overburden covered.

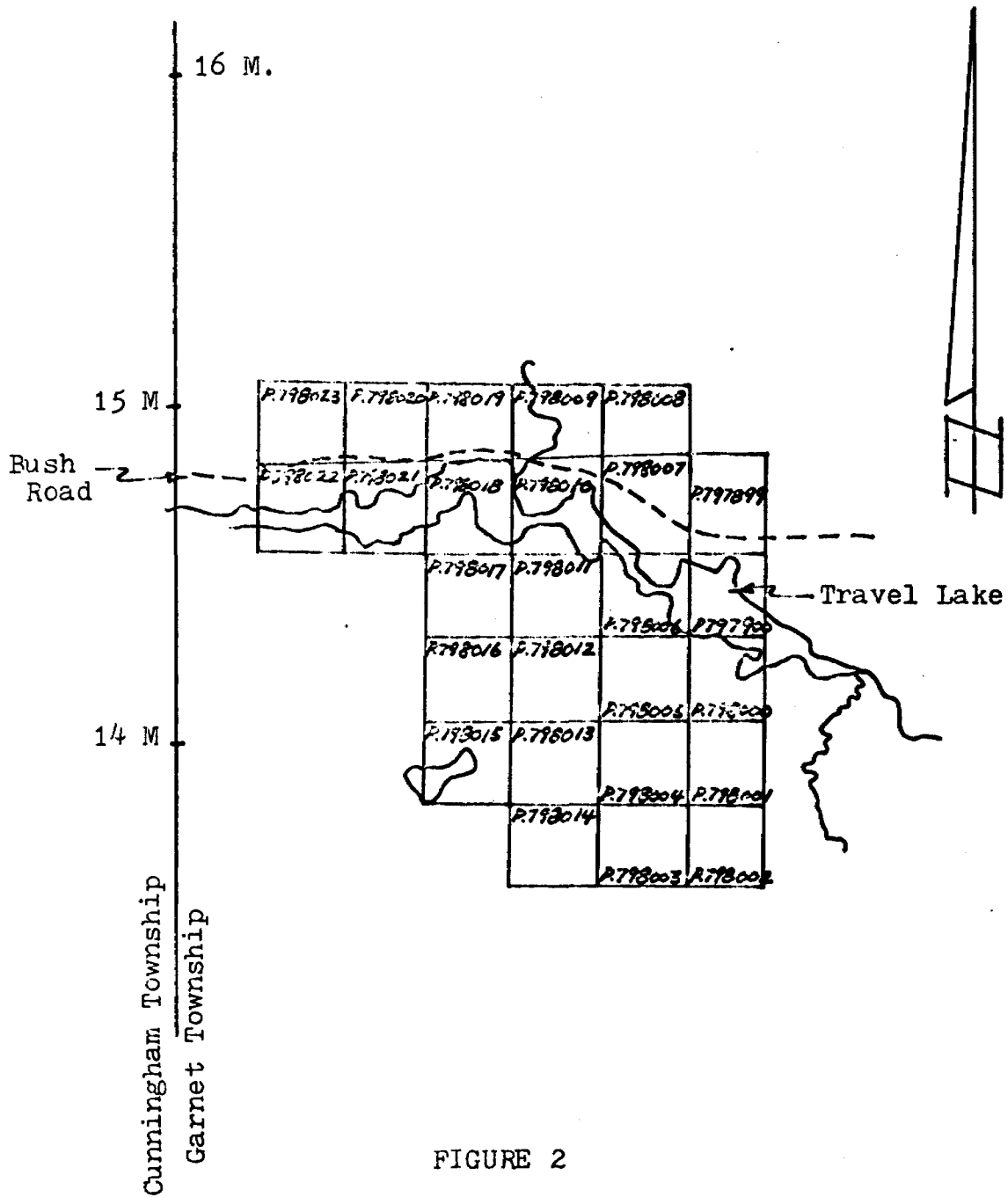
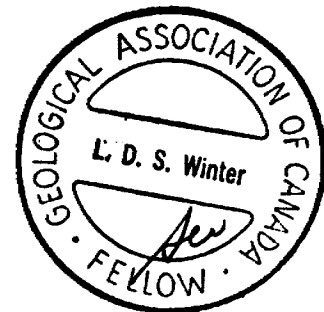


FIGURE 2

CLAIM GROUP  
 FAWN CREEK PROPERTY  
 GARNET TOWNSHIP  
 ONTARIO

POWER GEM RESOURCES LTD.

Scale: 1:31 680



May 14, 1984

About 1900 the area was burned over and is now forested with second growth jackpine, spruce, poplar and birch with alders in the low lying areas.

The climate is typical of the Canadian Shield with cold winters and cool summers with a temperature range between +30°C and -40°C on average.

### 3.4 SERVICES

The C.P.R. passess through Sultan, 43 km by road to the southwest. Chapleau, the closest source of supplies is an additional 68 km to the northwest. Men, equipment and services could be obtained in Timmins, 125 km to the northeast, or in Sudbury, 150 km to the southeast.

At present, electrical power is not available in the general area of the property.

## 4. PREVIOUS AND CURRENT WORK IN THE AREA

Interest in the area was originally due to the discovery of iron formation shortly after 1900 with some claims being staked but the grade was too low and the claims were allowed to lapse. In the 1920's claims were staked in Cunningham township to the west for lead-zinc-copper mineralization associated with the iron formation. In the 1930's a few claims were staked for gold in both northern and southern parts of Garnet township but there appears to have been little additional work done at that time or in subsequent years. 14 scattered drill holes were drilled in the township between 1957 and 1971, apparently in the search for base metals. An airborne magnetometer survey was carried out along the northern edge of Garnet township and adjacent areas in 1976 by Union Miniere Explorations and Mining Corporation Limited (UMEX). During 1982 and 1983 exploration consisting of geophysics, geological mapping and some limited drilling directed towards the discovery of gold mineralization has

occurred in the township. Most recently there has been considerable claim staking in the area. V.B. Meen mapped the area for the Ontario Department of Mine in 1941 and in 1977 it was remapped by Siragusa of the Ontario Geological Survey.

## 5. GEOLOGY

### 5.1 REGIONAL GEOLOGY

Garnet township is located in the south-central section of the Swayze greenstone belt which is an arcuate zone extending from Kukatush, southwest of Timmins, southwest to Tooms township with a southern arm extending east and east-southeast to Gogama. Through Garnet and Cunningham townships the formations are considered to face north suggesting this may be the southern limb of a major synclinerium outlined by the greenstone belt. The greenstone belt is surrounded on all sides by rocks of granitoid composition.

The southern arm of the Swayze greenstone belt extends for a strike length of at least 100 km and consists of metamorphosed tholeiitic basalts, clastic metasediments and chemical sediments represented by chert and iron formation. Mafic intrusive rocks are commonly found spatially associated with the metavolcanics and locally bodies of serpentized peridotite are also present. Some small plutons of granitoid rocks intrude the greenstones and lamprophyre dikes have been reported.

The dominant rock type on the southern limb of this metavolcanic belt is metamorphosed tholeiitic basalt which trends east-southeast across the area. These metavolcanics are locally pillowed, vesicular or amygdaloidal and have been metamorphosed to greenschist rank. Thin layers of intermediate to acidic crystal tuffs are interbedded with the flows.

Cycles of chemical and clastic sedimentation occurred



during the development of the volcanic pile and resulted in the deposition of chert and chert-iron formation carrying as much as 60% magnetite. Sulphide-rich exhalative units are also present within the chemical sediments. Deformation and fracturing has resulted in the development of chert-breccia in some sections.

Spatially, closely associated with the main chert units are relatively small bodies of feldspar porphyry which are considered to be sub-volcanic felsic intrusives.

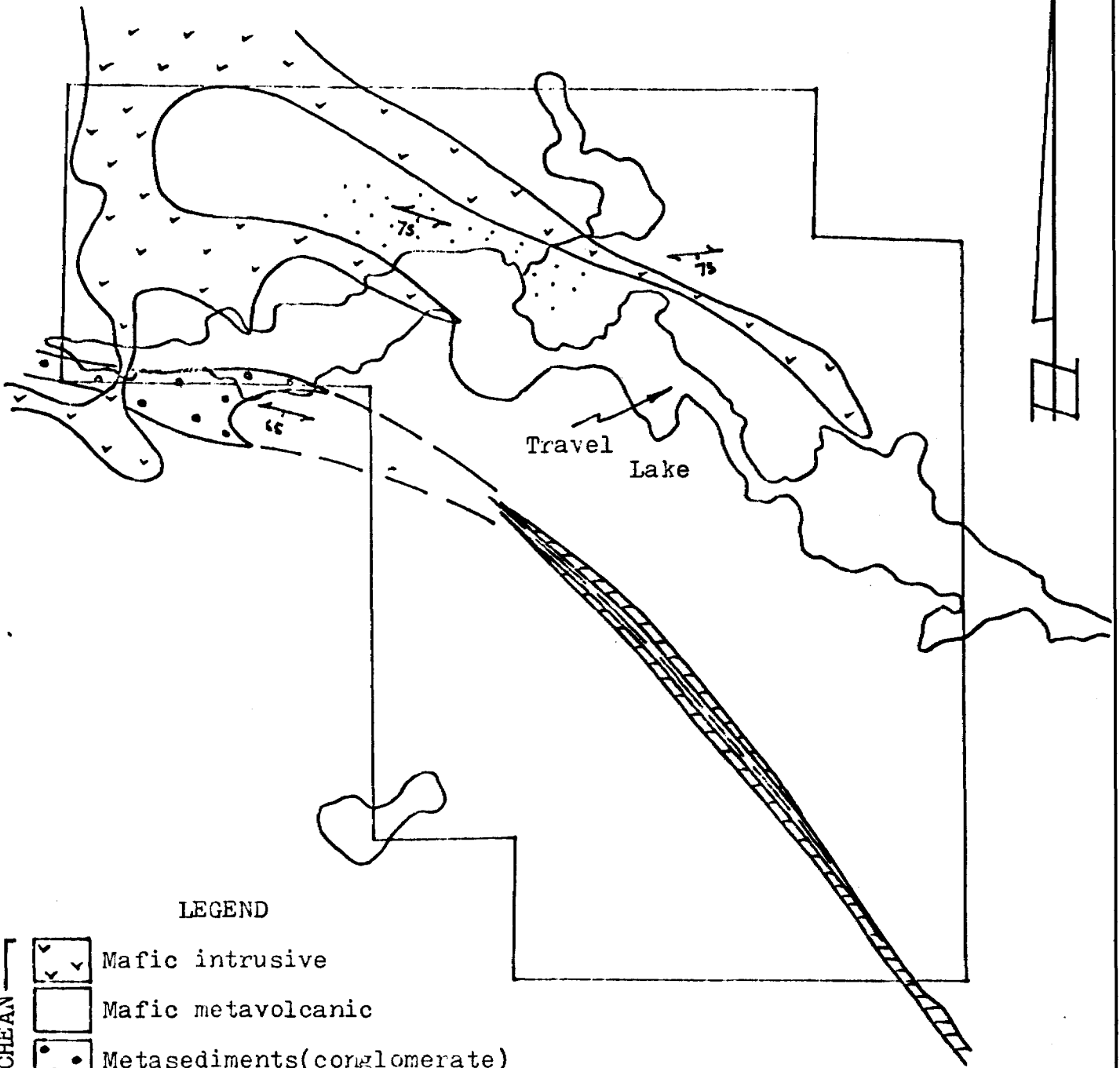
The metasediments which appear to be more extensive in the eastern and western parts of the belt consist of polymictic conglomerate, and minor arkosic sandstone and minor slate.

The mafic intrusives occur in the central part of the belt associated with the mafic metavolcanics. The composition of these rocks varies from diorite to gabbro, with gabbro being dominant. The peridotite bodies are massive, variably serpentized bodies that may or may not be associated with the gabbroic intrusives.







The metamorphic foliation in the area trends west-northwest to northwest and dips vertically to sub-vertically. There may be faulting parallel to the regional foliation but the most apparent direction of faulting is north-northwest as indicated by observed offsets, displacement of units and airphoto lineaments. Some east-northeast zones of shearing are also reported.

## 5.2 PROPERTY GEOLOGY

The Power Gem Resources Ltd. property in western Garnet township is underlain predominantly by a northwest trending and steeply dipping sequence of tholeiitic metabasalts. In general these metavolcanics are dark green in colour, range from fine to medium grained and are usually massive to pillowed. One exception is along the northern shore of Travel Lake (Figure 3) where the metavolcanics are sheared and strongly altered and bleached.



LEGEND

- ARCHEAN —
-  Mafic intrusive
-  Mafic metavolcanic
-  Metasediments (conglomerate)
-  Iron Formation Zone
-  Foliation 75
-  Alteration

Scale: 1: 15 840



FIGURE 3

PROPERTY GEOLOGY  
 FAWN CREEK CLAIM GROUP  
 GARNET TOWNSHIP  
 ONTARIO

To accompany the report for  
 POWER GEM RESOURCES LTD.  
 May 14:84

In the southern corner of the western edge of the property a 100 to 200 meter wide band of conglomerate is present striking east-southeast. Along the trend of this unit to the southeast a similar conglomerate plus chert, argillite and iron formation are present. This zone of chemical/clastic sediments, which dips vertically to steeply north, continues to the southeast corner of the property where iron formation consisting of interbedded layers of chert, magnetite bearing chert and argillite outcrops. A drill hole drilled into this unit in the centre of the claim group in 1965 reported iron formation carrying sulphide mineralization. A sample from a 4 cm thick magnetite layer, taken by a geologist of the Ontario Geological Survey from iron formation in this area, assayed 38.9% iron and 0.01 oz gold per ton.

An irregular cross-cutting intrusive body of gabbroic composition with sill-like tongues extending to the southeast, parallel to the volcanic stratigraphy, occurs in the northwest corner of the claim group.

In summary, the claim group is underlain by a sequence of northwest trending and steeply dipping mafic metavolcanics containing a zone of intercalated chemical and clastic sediments that show a facies change from clastic to chemical sediments in the west-central part of the property. On the north shore of Travel Lake is an area of shearing and alteration in the metavolcanics which is considered to be of economic interest. An irregular body of gabbro intrudes the metavolcanics in the northern part of the claim group.

## 6. ECONOMIC POTENTIAL

Gold deposits associated with Precambrian iron formation units have been recognized for a number of years. Some of the better known examples are those at Pickle Lake and Geraldton in Ontario, the Homestake Mine in South Dakota, several mines in the Minas Gerais

District, Brazil and deposits in Zimbabwe and Western Australia. Recently Dome Mines and associates have announced discoveries associated with these iron-rich chemical sediments south of Pickle Lake and at Opapimiskan Lake in Ontario. This mineralization is stratabound and some observers have suggested the gold was deposited from submarine hot springs or sea-floor volcanic exhalations that also deposited the iron and chert-rich horizons. Others have proposed that these deposits are due to epigenetic mineralization that was deposited in the iron formation that had previously been chemically and structurally altered. Regardless of the mode of origin, the iron formation units are considered to be very favourable areas for gold mineralization.

Recent studies of gold deposits in the Canadian Shield have indicated that in general, gold mineralization is concentrated in the upper parts of mafic-ultramafic volcanic sequences and especially at the contact zones of these sequences with clastic and/or exhalative chemical sedimentary rock sequences. Within this general environment the presence of volcanic and sedimentary units, zones of carbonate alteration and/or carbonate or sulphide-rich chemical sediments and small quartz-rich felsic intrusives or extrusives are favourable indicators for the occurrence of gold mineralization.

The Fawn Creek property of Power Gem Resource Ltd. contains several of the characteristics considered to be favourable for gold mineralization. Of particular interest is the zone of clastic sediments and cherty iron formation which trends southeasterly across the property for a length of over 1.5 km. As well as magnetite iron formation, sulphide-rich chert and graphitic sediments were intersected in a drill hole that tested this unit for its base metal potential in the mid-1960's. A sample of magnetite iron-formation taken by a geologist of the Ontario Geological Survey from this same area

assayed 0.01 oz gold per ton.

Along the north shore of Travel Lake outcrops of mafic metavolcanics are strongly sheared and altered. Much of the surrounding area is overburden and swamp covered but it is considered that this area of alteration is of interest for its potential for mineralization and should be carefully explored.

In summary, it is considered that the property contains a geological environment particularly favourable for the localization of gold mineralization; iron formation, including pyritic chert units, at the contact of mafic metavolcanics with a possible facies change within the clastic-chemical sediment unit and gold values within the iron formation. Because of these favourable features in a metavolcanic belt known for its gold mineralization, the property is considered to have the potential for the discovery of economically significant gold mineralization and the following program is recommended to assess this potential.

#### 7. PROPOSED EXPLORATION PROGRAM AND BUDGET

Much of the property, and particularly that part south of Travel Lake is overburden covered and due to that condition the proposed exploration program relies heavily on geophysical methods and overburden sampling techniques. The magnetic survey is proposed as a means of outlining the iron formation as well as the volcanic stratigraphy. Basal till sampling has been successfully used through much of this area and it is proposed as a means of detecting gold mineralization in the overburden covered areas. The initial phase of the exploration program is presented below.

FAWN CREEK PROPERTY - PROPOSED BUDGET

PHASE I

1. Line cutting; including base lines and cross lines at 400 ft. spacing 21 line-miles @ \$250 per mile	\$ 5,250
2. Magnetometer survey 21 line-miles @ \$150 per mile	3,150
3. Geological Mapping	3,885
4. Basal Till sampling and assaying	4,350
5. Trenching, sampling and assaying	2,850
6. Supervision, reports, maps and assessment submissions	3,800
7. Contingency 10%	<u>2,328</u>
TOTAL - PHASE I	<u>\$ 25,613</u>

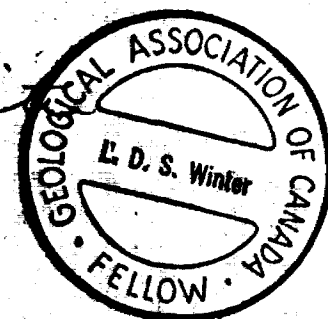
If the results of Phase I are sufficiently encouraging then the Phase II program is recommended as a follow-up.

PHASE II

1. Trenching, sampling and assaying	\$ 4,500
2. Induced Polarization Survey over selected areas 10 line-miles @ \$1000 per mile	10,000
3. Diamond drilling, including logging, sampling, assaying etc. 5000 ft. @ \$25 per foot	125,000
4. Supervision, maps reports, assessment submissions and contingency	<u>13,950</u>
TOTAL - PHASE II	<u>\$153,450</u>
TOTAL ESTIMATED BUDGET FOR PHASES I & II	<u>\$ 179,063</u>

L.D.S. Winter,  
B.A.Sc., M.Sc., F.G.A.C.  
May 14, 1984

*L.D.S. Winter*



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CERTIFICATE OF QUALIFICATION

I, Lionel Donald Stewart Winter do hereby certify:

1. that I am a geologist and reside at 1849 Oriole Drive, Sudbury, Ontario, P3E 2W5,
2. that I am a Fellow of the Geological Association of Canada,
3. that I graduated from the University of Toronto in Mining Engineering in 1957 with a Bachelor of Applied Science and from McGill University, Montreal in 1961 with a Master of Science (Applied) in Geology,
4. that I have practised my profession continuously for 25 years,
5. that my report on the Fawn Creek property, Garnet township, Ontario, is based on my personal knowledge of the geology of the area, a property visit and on a review of published information on the property and surrounding area.
6. that I have no personal, direct or indirect interest in the Fawn Creek property, Garnet township, District of Sudbury, Ontario or any adjacent properties, nor do I hold or intend to hold any shares of Power Gem Resources Ltd., and I have written this report as a totally independent consultant.

L.D.S. Winter  
B.A.Sc., M.Sc., F.G.A.C.  
May 14, 1984

*L.D.S. Winter*





LETTER OF CONSENT

I, L.D.S. Winter, consulting geologist, 1849 Oriole Drive, Sudbury, Ontario P3E 2W5 do hereby consent to Power Gem Resources Ltd. using, in part or in whole my report on the Fawn Creek Property, Garnet township, District of Sudbury, Ontario in a prospectus or statement of material facts. However excerpts from this report may only be made with my express written permission.

By: L.D.S. Winter

L.D.S. Winter, B.A.Sc., M.Sc., F.G.A.C.

May 14, 1984



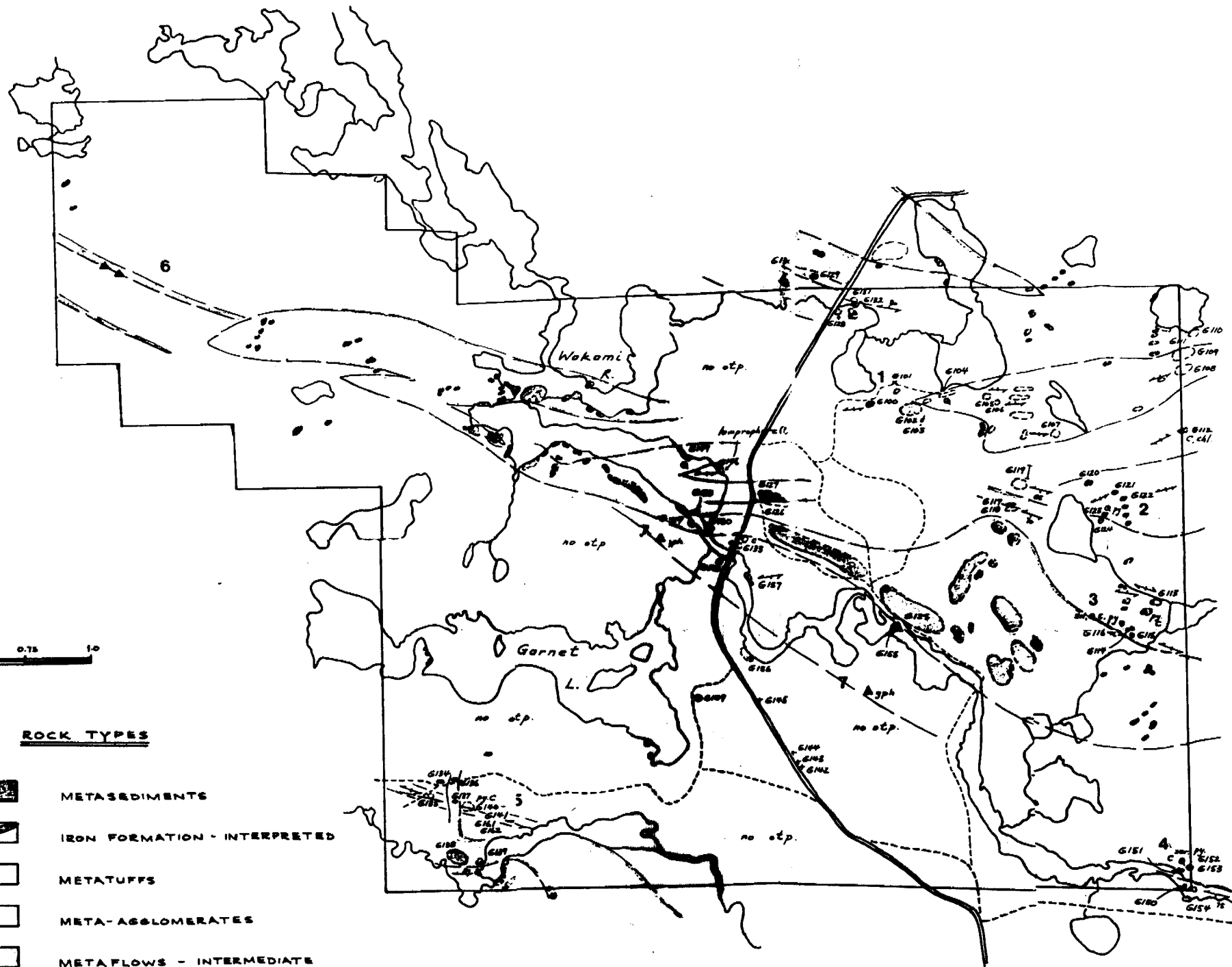


41060W0687 63.4494 GARNET

900

OM 84-5-P-253

THIS SUBMITTAL CONSISTED OF VARIOUS REPORTS, SOME OF WHICH HAVE BEEN CULLED FROM THIS FILE. THE CULLED MATERIAL HAD BEEN PREVIOUSLY SUBMITTED UNDER THE FOLLOWING RECORD SERIES (THE DOCUMENTS CAN BE VIEWED IN THESE SERIES): Airborne Mag & VLF-EM Survey → see 2.8181



**LEGEND & SYMBOLS**

- OUTCROP
- G125 ROCK SAMPLE LOCATION
- - - BUSH ROAD
- == GRAVEL ROAD
- FOLIATION
- - - INTERPRETED CONTACT
- Q QUARTZ
- C CARBONATE
- ser SERICITE
- chl CHLORITE
- py PYRITE
- gm GRAPHITE
- ▲ DIAMOND DRILL HOLE
- 3 AREA OF POTENTIAL ECONOMIC INTEREST DISCUSSED IN REPORT

**ROCK TYPES**

- METASEDIMENTS
- IRON FORMATION - INTERPRETED
- METATUFFS
- META-ASGLOMERATES
- METAFLOWS - INTERMEDIATE TO MAFIC
- FELDSPAR PORPHYRY
- QUARTZ PORPHYRY
- GABBR0

**GARNET LAKE PROPERTY  
GARNET TOWNSHIP**

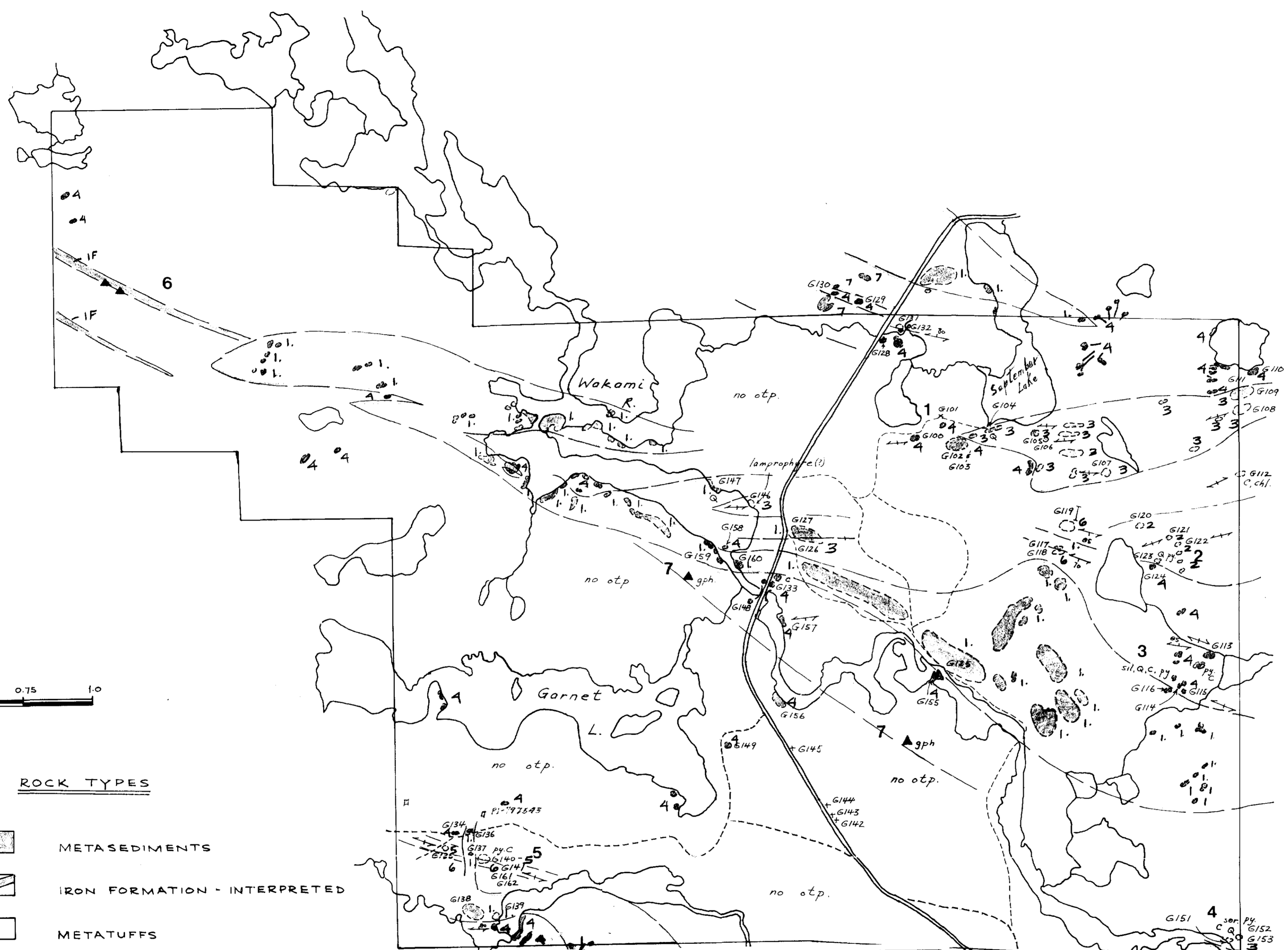
**GEOLOGY**

DATA COMPILED FROM O.G.S. PRELIMINARY MAP P.2340  
AND FIELD WORK BY S. WINTER AND R. FOULIN.

SCALE: 1:15 840

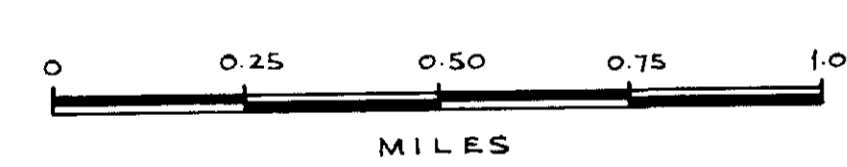
NOV. 27 '84  
S. WINTER





**LEGEND & SYMBOLS**

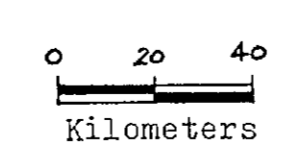
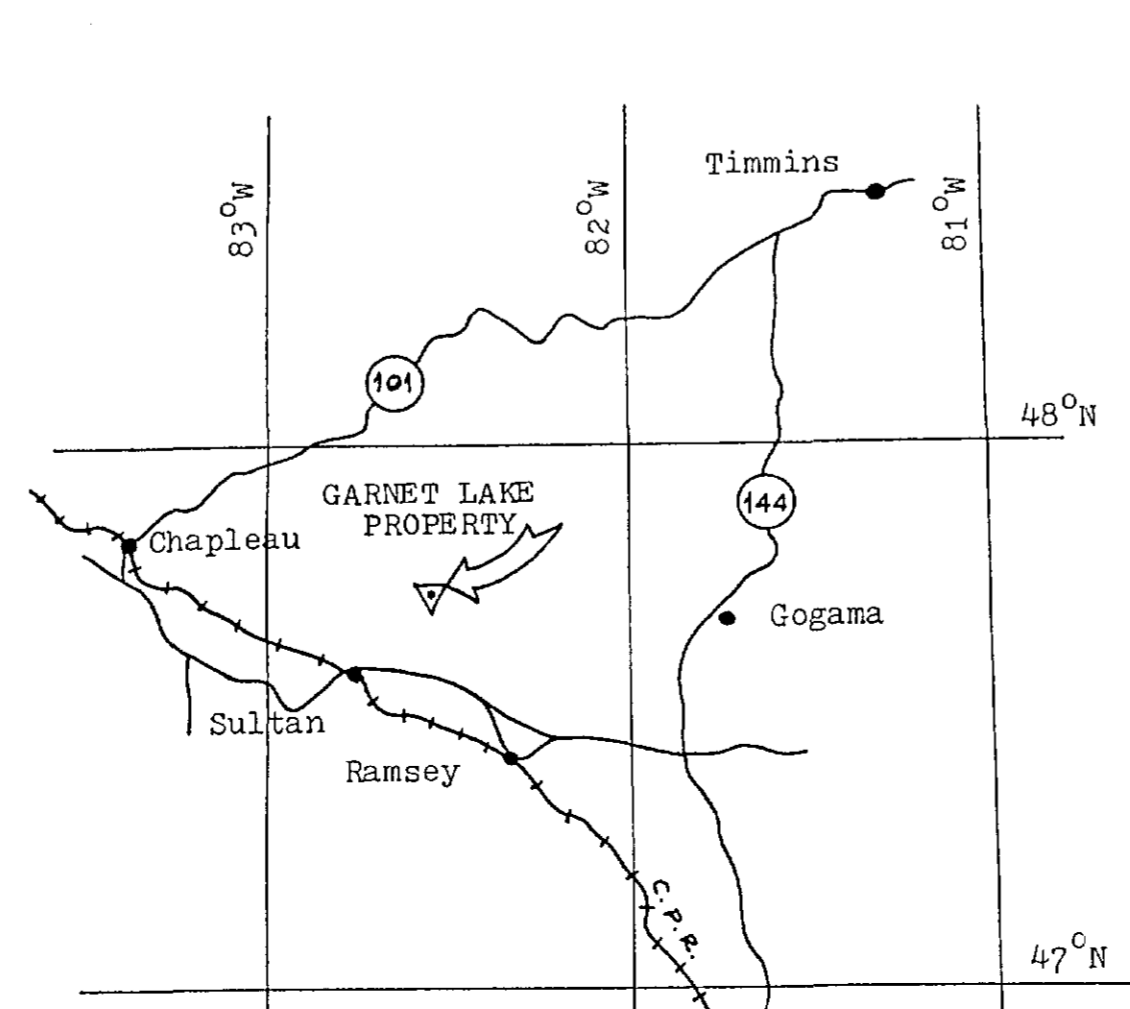
	OUTCROP
G123	ROCK SAMPLE LOCATION
	BUSH ROAD
	GRAVEL ROAD
	FOLIATION
	INTERPRETED CONTACT
Q	QUARTZ
C	CARBONATE
ser	SERICITE
chl	CHLORITE
py	PYRITE
gph	GRAPHITE
	DIAMOND DRILL HOLE
3	AREA OF POTENTIAL ECONOMIC INTEREST DISCUSSED IN REPORT



**ROCK TYPES**

7		METASEDIMENTS
IF		IRON FORMATION - INTERPRETED
6		METATUFFS
5		META-AGGLOMERATES
4		META FLOWS - INTERMEDIATE TO MAFIC
3		FELDSPAR PORPHYRY
2		QUARTZ PORPHYRY
1		GABBRO

DATA COMPILED FROM O.G.S. PRELIMINARY MAP P.2340 AND FIELD WORK BY S. WINTER AND R. POULIN.



**LEGEND**

	Provincial Highway (101)
	Allweather road
	Railroad (CPR)

63.4494  
**GARNET LAKE PROPERTY**  
**GARNET TOWNSHIP**

**GEOLOGY**



SCALE: 1:15 840  
 1" = 132m

NOV. 27 : 84  
 S. WINTER

