56-872 - 15616

POF-BC-3

# GEOCHEMICAL REPORT
on the
FRED 1 Mineral Claim
Liard Mining Division
NTS 94-E/~~12E~~ 11W
Latitude 57°~~41'08"~~ North 39'
Longitude 127°~~32'25"~~ West 28'
British Columbia

November 24, 1986

on behalf of
PROLIFIC PETROLEUM LTD.
Calgary, Alberta

by
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1 Au/Ag Stream Silt Geochemistry 1:10,000

# INTRODUCTION

Jempland Construction was contracted by Prolific Petroleum Ltd. to complete a stream silt geochemical sampling program on the FRED 1 mineral claim. A total of 19 stream silt samples were collected and analyzed for Au and Ag. This report describes the results of this program. Taiga Consultants Ltd. was contracted by Prolific to compile and interpret the results of this geochemical program, and to complete the assessment report.

## Location and Access

The FRED 1 mineral claim is located approximately 520 km northwest of Prince George, B.C., in the Stikine River area (Figure 1) on NTS map-sheet 94-E/12E. The legal corner post is located at 57°41'08" north latitude and 127°32'25" west longitude. The claim is accessible from Smithers (300 km to the south) to the Sturdee Airstrip via fixed-wing aircraft, then by helicopter to the claim, a distance of approximately 50 km.

## Property Status

The FRED 1 mineral claim was staked under the modified grid system (Figure 2) and is currently registered in the name of Taiga Consultants Ltd. Relevant claim data are as follows:

| Claim Name | No.of Units | Record Number | Date of Record |
|---|---|---|---|
| FRED 1 | 20 | 3537 | May 2, 1986 |

The FRED 1 mineral claim is in the process of being transferred to Prolific Petroleum Ltd.

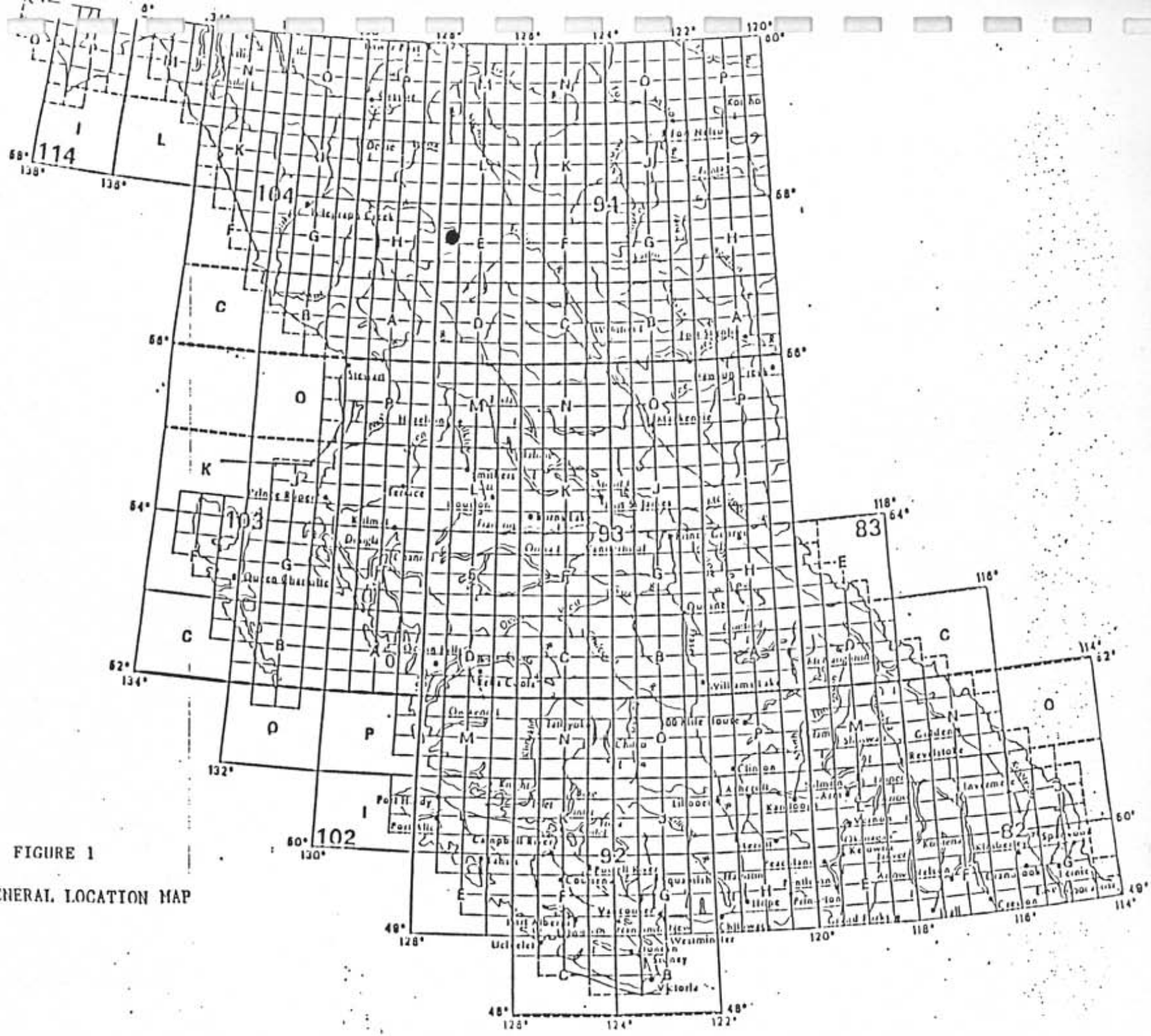
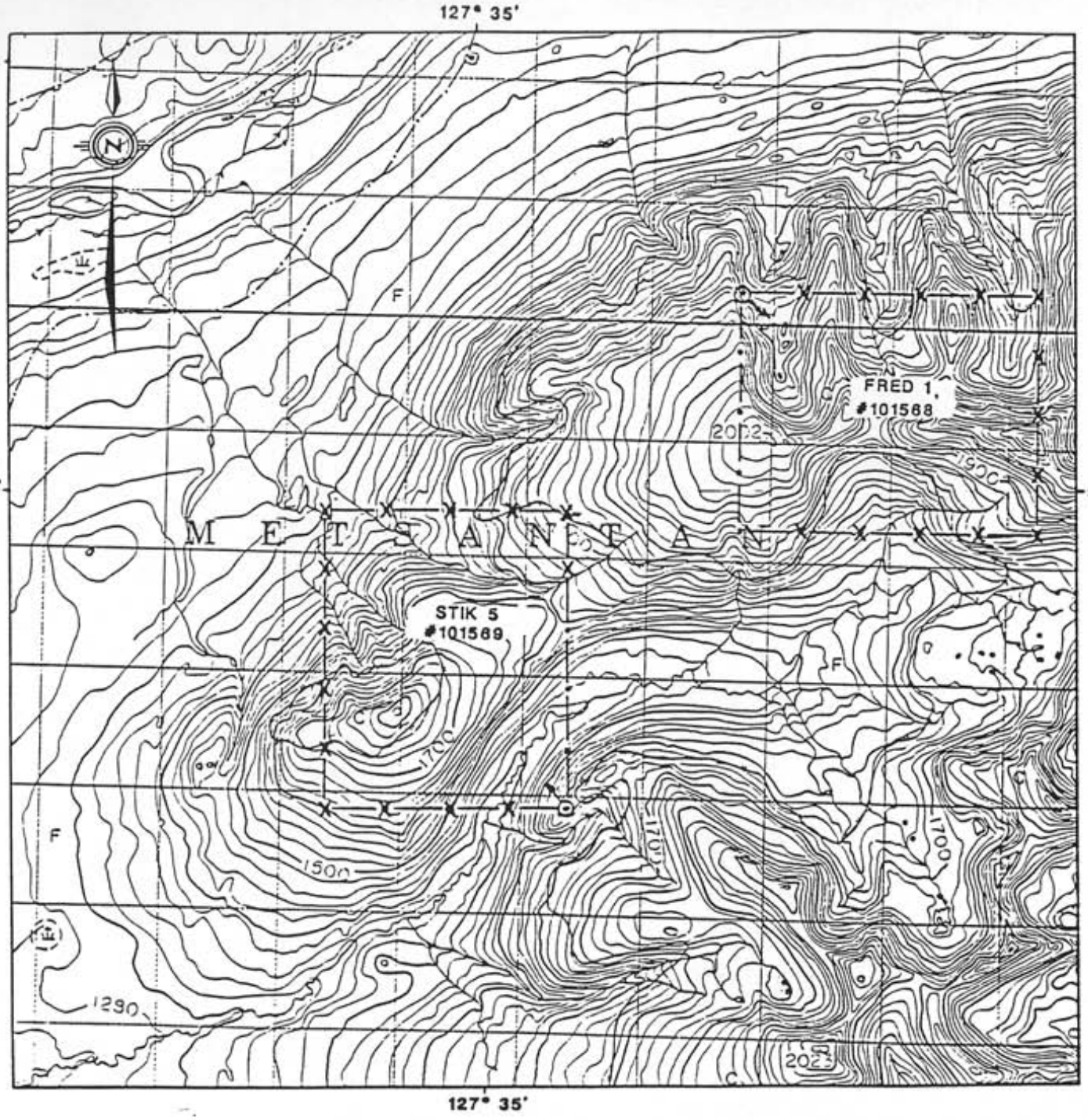



FIGURE 1

GENERAL LOCATION MAP




SCALE 1 : 50,000

LEGEND

- POSTS PLACED
- X POSTS NOT PLACED
- LEGAL CORNER POST ( LCP )

SPRUCE HILL 94E/12

TAIGA CONSULTANTS LTD.

F.M.C. # 278880

STAKED APRIL 19,1986

Fig. 2. Claim location

TAIGA CONSULTANTS LTD.

Physiography/Glaciation

The claim lies within the Cassiar Mountains physiographic subdivision of the Interior Plateau. The region was entirely glaciated and is characterized by wide U-shaped drift-filled major valleys. Deeply-cut V-shaped stream valleys occur locally at higher elevations.

Topographic relief within the claim averages about 580 m, with elevations varying from 1560 m ASL on a creek bed in the north-central portion of the claim, reaching 2140 m ASL on a mountain peak in the southeast portion of the property.

## REGIONAL GEOLOGY

The regional geology was mapped by the Geological Survey of Canada at a scale of 1:250,000 under the direction of Dr. H. Gabrielse during 1971-1975, with the results published in 1977 as Open File 483.

During 1971 to 1985, the British Columbia Ministry of Energy, Mines and Petroleum Resources carried out a mapping program in the Toodoggone area, with a compilation (Preliminary Map 61) published at a scale of 1:50,000 in 1985. This mapping, carried out under the direction of T. G. Schroeter, details the units of the Toodoggone Volcanics. The following description of the regional geology is excerpted from his 1981 report.

"The Toodoggone area lies within the eastern margin of the Intermontane Belt. The oldest rocks exposed are wedges of crystalline limestone more than 150 metres thick that have been correlated with the Asitka Group of Permian age. The next oldest rocks consist of andesitic flows and pyroclastic rocks including augite-tremolite andesite porphyries and crystal and lapilli tuffs that belong to the Takla Group of Late Triassic age. The Omineca intrusions of Jurassic and Cretaceous age (potassium-argon age of 186 to 200 Ma obtained by the Geological Survey of Canada) range in composition from granodiorite to quartz monzonite. Some syenomonzonite bodies and quartz feldspar porphyry dykes may be feeders to the Toodoggone rocks which unconformably overlie the Takla Group. The 'Toodoggone' volcanic rocks (named informally by Carter, 1971) are complexly intercalated volcanic and volcanic-sedimentary rocks of Early and Middle Jurassic age, 500 metres or more in thickness, along the west flank of a northwesterly trending belt of 'basement' rocks at least 90 km in length by 15 km in width (Geological Survey of Canada, Open File 306, replaced by Open Files 483 and 606). A potassium-argon age of 186±6 Ma was obtained by Carter (1971) for a hornblende separate from a sample collected from a volcanic sequence 14 km southeast of Drybrough Peak. Four principal subdivisions of 'Toodoggone' rocks have been recognized:

1. Lower volcanic division -- dominantly pyroclastic assemblage including purple agglomerate and grey to purple dacitic tuffs.

2. Middle volcanic division -- an acidic assemblage including rhyolites, dacites, 'orange' crystal to lithic tuffs, and quartz feldspar porphyries; includes welded tuff. The 'orange' colour of the tuffs resulted from oxidation of the fine-grained matrix while the rock was still hot. A coeval period of explosive volcanism included the formation of 'laharic' units and intrusion of syenomonzonite bodies and dykes. This event was accompanied by explosive brecciation along zones of weakness, predominantly large-scale faults and attendant splays, followed by silicification and deposition of precious and base metals to varying degrees in the breccias.

Rounded fragments of Omineca intrusive rocks are rare components in Toodoggone tuffs.

3. Upper volcanic-intrusive division -- grey to green to maroon crystal tuffs and quartz-eye feldspar porphyries.

4. Upper volcanic-sedimentary division -- lacustrine sedimentary rocks (sometimes varved), stream bed deposits, and possible local fanglomerate deposits and interbedded tuff beds.

Many Toodoggone rocks have a matrix clouded with fine hematite dust implying a subaerial origin; however, some varieties may have accumulated in shallow water. The host rock for mineralization (division 2) is an orange to chocolate brown coloured crystal tuff with varying minor amounts of lithic and vitric ash. Broken crystals of plagioclase and quartz are set in a fine-grained 'hematized' matrix of quartz and feldspar. The exact chemical composition(s) and rock name(s) await chemical analyses. Carter (1971) determined the composition of a suite of rocks collected from the Toodoggone area to range from latites to dacite (less than 30 weight per cent quartz); fused beads gave refractive indices between 1.505 and 1.535. Apatite may be a common accessory mineral.

To the west, Upper Cretaceous to Tertiary pebble conglomerates and sandstones of the Lower Tango Creek Formation of the Sustut Group (Eisbacher, 1971) unconformably overlie both Takla Group volcanic rocks and Toodoggone volcanic rocks.

STRUCTURE

The structural setting was probably the most significant factor in allowing mineralizing solutions and vapours to migrate through the thick volcanic pile in the Toodoggone area. The entire area has been subjected to repeated and extensive normal block faulting from Jurassic to Tertiary time. It is postulated that a northwesterly trending line of volcanic centres along a gold/silver-rich 'province' marks major structural breaks, some extending for 60 km or more (for example, M$^{c}$Clair Creek system, Lawyers system). Prominent gossans are often associated with structural zones but many contain only pyrite; sulphides occur as disseminations and fracture fillings in Toodoggone and Takla Group rocks. Thrusting of Asitka Group limestones over Takla Group rocks probably occurred during Middle Jurassic time.

Today, Toodoggone rocks display broad open folds with dips less than 25°. The Sustut Group sedimentary rocks have relatively flat dips and do not appear to have any major structural disruptions.

## EXPLORATION TARGETS

Precious metals exploration activity in the Toodoggone district mainly is focused on the epithermal gold mineralization associated with subaerial Early Jurassic intermediate to acidic volcanism (Toodoggone Volcanics). Gold mineralization found within Late Triassic alkaline andesitic rocks (Takla Group) and in Early Jurassic calc-alkaline volcanic rocks (Hazelton Group) is generally viewed as being in the "root zone" of the epithermal event related to Toodoggone volcanism (e.g., Baker Mine).

The structural settings of these epithermal vein systems are of primary importance in the development of economic gold mineralization within the Toodoggone Volcanics. Faulting and concomitant brecciation form the conduits for ascending gold-bearing hydrothermal solutions and vapours. It is also essential that repeated fault movement and brecciation occur, allowing multiple infusions of hydrothermal solutions.

Both lateral and vertical alteration patterns occur adjacent to these epithermal vein deposits. The outer propylitic zone consists of chlorite, epidote, calcite, and pyrite. This grades inward to an argillic/phyllic zone consisting of sericite, montmorillonite, illite, and silica. The silicified core zone is comprised of silica, adularia, and/or albite, immediately adjacent to the vein system.

Mineralized zones generally carry abundant hematite and manganese oxides. Native gold, electrum, barite, and minor pyrite occur within these silica-rich zones along with amethystine quartz. Anomalous silver, lead, zinc, and copper values have been found associated with the gold-bearing epithermal vein systems. However, the systems appear to be relatively free of arsenic and antimony.

## PROPERTY GEOLOGY

The south and east portion of the property is underlain by Upper Triassic Takla Group volcanics of dark green augite porphyry basalt and breccias with lesser andesite to basalt flows. The north and west portion is underlain by Upper Cretaceous Sustut Group (Tango Creek Formation) polymictic conglomerate, sandstone, shale, and carbonaceous mudstone. Two northeast trending faults cut across the centre of the claim. Figure 3 shows the property geology (from Preliminary Map 61, B.C. Min. of Energy, Mines & Petroleum Resources, 1985).

A chalcopyrite/galena/pyrite occurrence (Fred #3) is depicted on this map. Energy, Mines and Petroleum Resources mineral inventory describes this occurrence as "pyrite, chalcopyrite, galena in quartz-calcite veins in thick formations of hornblende andesite and trachytic andesite of Mesozoic age".

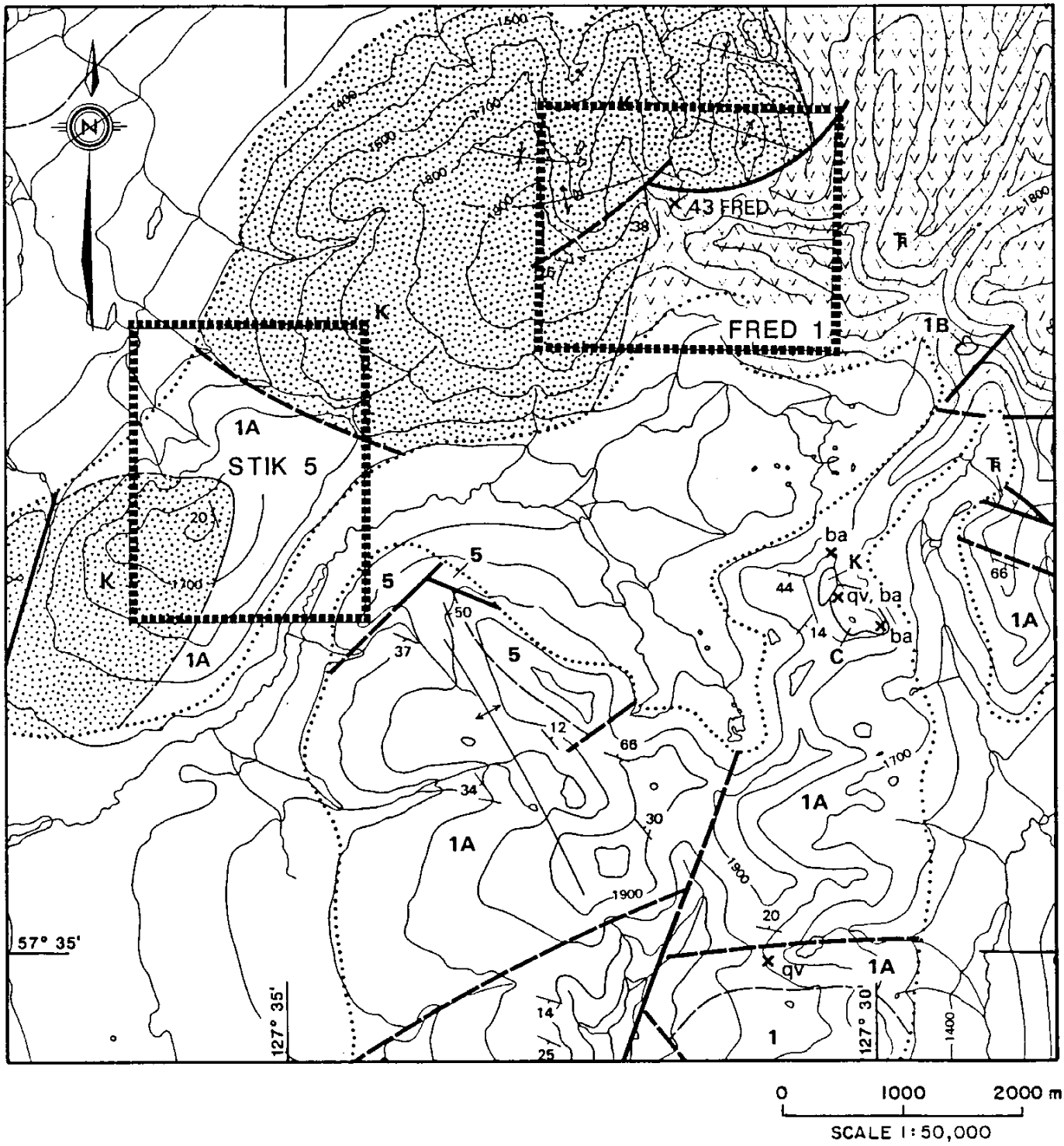
## 1986 EXPLORATION PROGRAM

From active channel, composite sample roughly sieved.

A reconnaissance stream silt geochemical sampling program was carried out on the FRED 1 claim from September 27 to October 3, 1986. A total of 19 samples were collected and forwarded to Bondar-Clegg in Vancouver, B.C., for Au and Ag geochemical analysis. Analytical procedures and results are presented in the Appendix. Map 1 shows the sample locations and results.

Elevated Ag values (greater than 1 ppm) up to 4.8 ppm were collected from each creek sampled. Four sites returned values of greater than 2 ppm, all from the same creek in the northeast corner of the claim. Gold values ranged from below the detection limit (5 ppb) up to 85 ppb. The eight samples from the north portion of the claim ranged from 10 to 30 ppb gold. From the south portion of the claim, two sites returned detectable gold values (10, 85 ppb).

Additional exploration is required to determine the source for these elevated gold and silver values.




GEOLOGY MAP

FIGURE 3

GEOLOGICAL LEGEND
(units appearing on Property Geology, Figure 3)

UPPER CRETACEOUS

K SUSTUT GROUP (Tango Creek Formation)
polymictic conglomerate, sandstone, shale, carbonaceous mudstone

LOWER TO MIDDLE JURASSIC "Toodoggone Volcanics"

6 TUFF PEAK FORMATION
pale purple, grey, green biotite augite hornblende plagioclase porphyry flows

5 McCLAIR CREEK FORMATION
purple, lavender, grey, and rarely grey-green, fine- to medium-grained, plagioclase porphyritic flows, includes some lapilli tuff and breccia.

2 MOYEZ CREEK VOLCANICLASTICS
conglomerate with some granitic clasts, graded, cross-bedded greywacke, well-bedded crystal tuff, epiclastic sediments, local laminated calcareous silt.

2A crystal tuffs in thin well-layered units, some epiclastic sandstone and mudstone.

1 ADOOGATCHO CREEK FORMATION
pale reddish grey to dark red-brown quartzose biotite hornblende phyric ash flows.

1A crystal ash tuff, lapilli tuff, and rare agglomerate with interspersed epiclastic beds, tuffaceous sediments and minor conglomerate.

1B quartzose plagioclase porphyry, jointed, domal intrusion(?) of homogeneous appearing grey to green chloritized and epidote altered rock containing abundant inclusions of Takla volcanics.

UPPER TRIASSIC

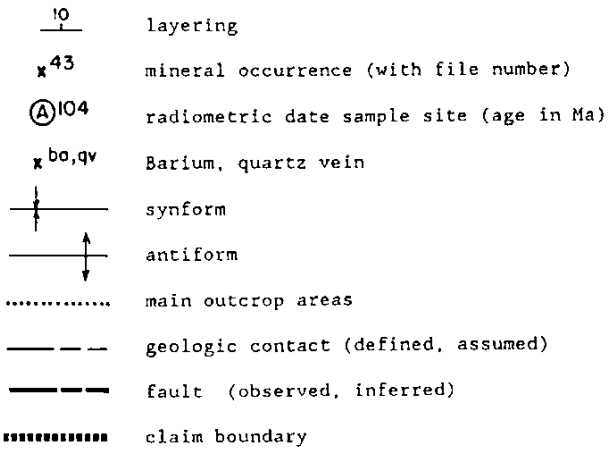
TAKLA GROUP
Dark green augite porphyry basalt flows and breccias with lesser fine-grained andesite to basalt flows and minor interbedded siltstone, tuffaceous sediments and chert.

INTRUSIVE ROCKS

LOWER JURASSIC (dykes, sills, small plugs)

C biotite hornblende diorite/gabbro

SYMBOLS



## SUMMARY AND RECOMMENDATIONS

Two man days were spent exploring the claim block which is underlain by Upper Triassic Takla Group volcanics, and sediments of the Tango Creek Formation (Sustut Group). Located in the centre of the property is a documented pyrite/chalcopyrite/galena occurrence in quartz-calcite veins in thick formations of hornblende andesite and trachytic andesite.

The 1986 exploration program consisted of detailed stream silt sampling of all the streams draining the claim block. Elevated Ag-in-silt values were obtained throughout the property, with elevated gold values obtained from the northern half of the claim.

Additional exploration is required to determine the source of these elevated Au and Ag values. The entire claim block should be covered by reconnaissance prospecting and geological mapping.

# CERTIFICATE

I, Claude Henry Aussant, of 31 Templebow Way N.E. in the City of Calgary in the Province of Alberta, do hereby certify that:

1. I am a Consulting Geologist with the firm of Taiga Consultants Ltd. with offices at Suite 100, 1300 - 8th Street S.W., Calgary, Alberta.

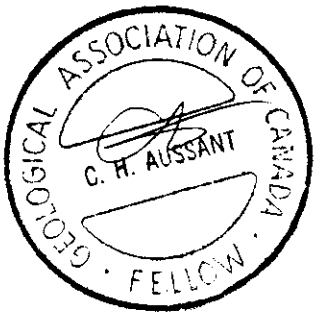
2. I am a graduate of the University of Calgary, B.Sc. Geology (1976), and I have practised my profession continuously since graduation.

3. I am a member in good standing of the Association of Professional Engineers, Geologists and Geophysicists of Alberta; and I am a Fellow of the Geological Association of Canada.

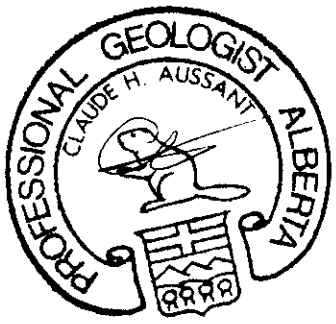
4. I do not own or expect to receive any interest (direct, indirect, or contingent) in the property described herein nor in the securities of PROLIFIC PETROLEUM LTD., in respect of services rendered in the preparation of this report.

DATED at Calgary, Alberta, this 24th day of November, A.D. 1986.

Respectfully submitted,




Claude H. Aussant, P.Geol., F.GAC




PERMIT TO PRACTICE
TAIGA CONSULTANTS LTD.
Signature
Date December 16/86
PERMIT NUMBER: P 2399
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

## BIBLIOGRAPHY

British Columbia Department of Mines:
- GEM 1973, pp.463
- assessment report 4643

Gabrielse, H.; Dodds, C.J.; Mansy, J.L.; Eisbacher, G.H. (1977): Geology of Toodoggone River [94-E] and Ware West Half [94-F]; Geol.Surv.Cda., Open File 483

Geological Survey of Canada:
- National Mineral Inventory, No.94-E/11 Cu3

Schroeter, T.G. (1981): Toodoggone River [94-E]; B.C. Min.Energy,Mines,Petro. Res.; Geological Fieldwork 1980, pp.6-7

------- (1985): Geology of the Toodoggone River Area, NTS 94-E; B.C. Min.Energy,Mines,Petro.Res.; Prelim.Map 61

# APPENDIX

Summary of Personnel

Summary of Expenditures

Certificates of Analysis

Analytical Techniques

## SUMMARY OF PERSONNEL

| Name / Address | Position | Dates | Man Days |
|---|---|---|---|
| Grant Paulson<br>745 Falkener Crescent<br>Prince George, B.C. | Supervisor | Sep.27-Oct.3 | 1 |
| Bruce Hiller<br>P. O. Box 578<br>Prince George, B.C. | Labourer | Sep.27-Oct.3 | 1 |

## SUMMARY OF EXPENDITURES

| | | |
|---|---|---|
| Pre-Field | | $ 100.00 |
| Field Personnel | 2 man days @ $225/diem | 450.00 |
| Fixed-wing support | | 357.00 |
| Helicopter | | 440.00 |
| Accommodations | 1 days @ $75/diem | 75.00 |
| Geochemical Analyses | 19 samples @ $9.65 Au | 183.35 |
| FM-radio rental | | 25.00 |
| 4x4 truck rental | | 30.00 |
| Disposable field supplies | | 16.75 |
| Freight | | 45.00 |
| Telephone | | 5.00 |
| Photocopying | | 20.00 |
| Fuel | | 30.00 |
| Post-field compilation | | 508.50 |
| Handling charges on third-party billings | | 201.25 |
| | | $2,486.85 |

Bondar-Clegg & Company Ltd.
130 Pemberton Ave.
North Vancouver, B.C.
Canada V7P 2R5
Phone: (604) 985 0681
Telex: 04-352667

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 126-5306 PROJECT: NONE GIVEN PAGE 2

| SAMPLE NUMBER | ELEMENT UNITS | Ag PPM | Au PPB |
|---|---|---|---|
| S1 86AD00G9 002B | | 0.3 | <5 |
| S1 86AD00G9 003B | | <0.2 | <5 |
| S1 86AD00G9 004B | | <0.2 | <5 |
| S1 86AD00G9 005B | | <0.2 | 10 |
| S1 86AD00G9 006B | | <0.2 | 5 |
| S1 86AD00G9 007B | | <0.2 | <5 |
| S1 86AD00G9 008B | | <0.2 | <5 |
| S1 86AD00G9 009B | | <0.2 | <5 |
| S1 86AD00G9 010B | | 0.2 | 20 |
| S1 86AD00G9 011B | | 0.2 | 10 |
| S1 86AD00G9 012B | | <0.2 | <5 |
| S1 86AD00G9 013B | | <0.2 | <5 |
| S1 86AD00G9 014B | | <0.2 | <5 |
| S1 86AD00G9 015B | | <0.2 | <5 |
| S1 86AD00G9 016B | | <0.2 | 10 |
| S1 86AD00G9 017B | | <0.2 | <5 |
| S1 86AD00G9 018B | | <0.2 | <5 |
| S1 86AD00G9 020B | | <0.2 | <5 |
| S1 86AD00G9 021B | | 0.2 | <5 |
| S1 86AD00G9 022B | | <0.2 | 5 |
| S1 86AD00G9 023B | | <0.2 | <5 |
| S1 86AD00G9 024B | | <0.2 | 30 |
| S1 86AD00G9 025B | | <0.2 | <5 |
| S1 86AD00G9 026B | | <0.2 | <5 |
| S1 86AD00G9 027B | | <0.2 | <5 |
| S1 86AD00G9 028B | | <0.2 | <5 |
| S1 86AD00G9 029B | | <0.2 | 15 |
| S1 86AD00G9 030B | | <0.2 | <5 |
| S1 86AD00G9 031B | | <0.2 | <5 |
| S1 86AD00G9 032B | | <0.2 | 30 |
| S1 86AD00G9 033B | | <0.2 | <5 |
| S1 86AD00G9 034B | | 0.2 | <5 |
| S1 86AD00G9 035B | | 0.2 | <5 |
| S1 86AD00G9 036B | | <0.2 | <5 |
| S1 86AD00G9 037B | | <0.2 | 5 |
| S1 86AD00G9 038B | | 0.2 | <5 |
| S1 86AD00G9 039B | | <0.2 | <5 |
| S1 86AD00G9G 001 | | 0.2 | <5 |
| S1 86AD00G9G 002 | | 0.2 | <5 |
| S1 86AD00G9G 003 | | <0.2 | <5 |

| SAMPLE NUMBER | ELEMENT UNITS | Ag PPM | Au PPB |
|---|---|---|---|
| S1 86FRED1G 002 | | 1.2 | 25 |
| S1 86FRED1G 003 | | 0.8 | 30 |
| S1 86FRED1G 004 | | 0.6 | 10 |
| S1 86FRED1G 001A | | 0.9 | <5 |
| S1 86FRED1G 002A | | 1.8 | 5 |
| S1 86FRED1G 003A | | 2.3 | 5 |
| S1 86FRED1G 004A | | 1.7 | <5 |
| S1 86FI 000B | | 1.6 | 85 |
| S1 86FI 001BA | | 1.4 | 10 |
| S1 86FI 002BA | | 1.3 | <5 |
| S1 86FI 003BA | | 1.5 | 5 |
| S1 86FI 004BA | | 1.6 | <5 |
| S1 86FI 005BA | | 1.4 | <5 |
| S1 86FI 006BA | | 1.0 | 5 |
| S1 86FIG 000B | | 4.8 | 30 |
| S1 86FIG 001B | | 2.2 | 10 |
| S1 86FIG 002B | | 2.8 | 20 |
| S1 86FIG 003B | | 3.2 | 30 |
| S1 86FIG 004B | | 0.4 | 10 |
| S1 86ST1KSG 001 | | <0.2 | 10 |
| S1 86ST1KSG 002 | | 0.4 | 45 |
| S1 86ST1KSG 004 | | <0.2 | <5 |
| S1 86ST1KSG 005 | | <0.2 | 35 |
| S1 86ST1KSG 006 | | <0.2 | 5 |
| S1 86ST1KSG 007 | | 0.2 | <5 |
| S1 86ST1KSG 008 | | 0.5 | 20 |
| S1 86ST1KSG 009 | | <0.2 | <5 |
| S1 86ST1KSG 010 | | 0.2 | 5 |
| S1 86ST1KSG 011 | | 0.2 | 5 |
| S1 86ST1KSG 012 | | 0.2 | <5 |
| S1 86ST1KSG 013 | | <0.2 | <5 |
| S1 86ST1KSG 014 | | 0.3 | 5 |
| S1 86ST1KSG 015 | | 0.2 | <5 |
| S1 86ST1KSG 016 | | <0.2 | <5 |
| S1 86ST5 000B | | 0.2 | <5 |
| S1 86ST5 001B | | 0.3 | <5 |
| S1 86ST5 002B | | 0.4 | <5 |
| S1 86ST5 003B | | 0.2 | <5 |
| S1 86ST5 004B | | 0.3 | <5 |
| S1 86ST5 005B | | 0.3 | <5 |

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Phone: (604) 985-0681
Telex: 04-352667

BONDAR-CLEGG

# Geochemical Lab Report

REPORT: 126-5306 ( COMPLETE )

REFERENCE INFO:

CLIENT: TAIGA CONSULTANTS LTD.
PROJECT: NONE GIVEN

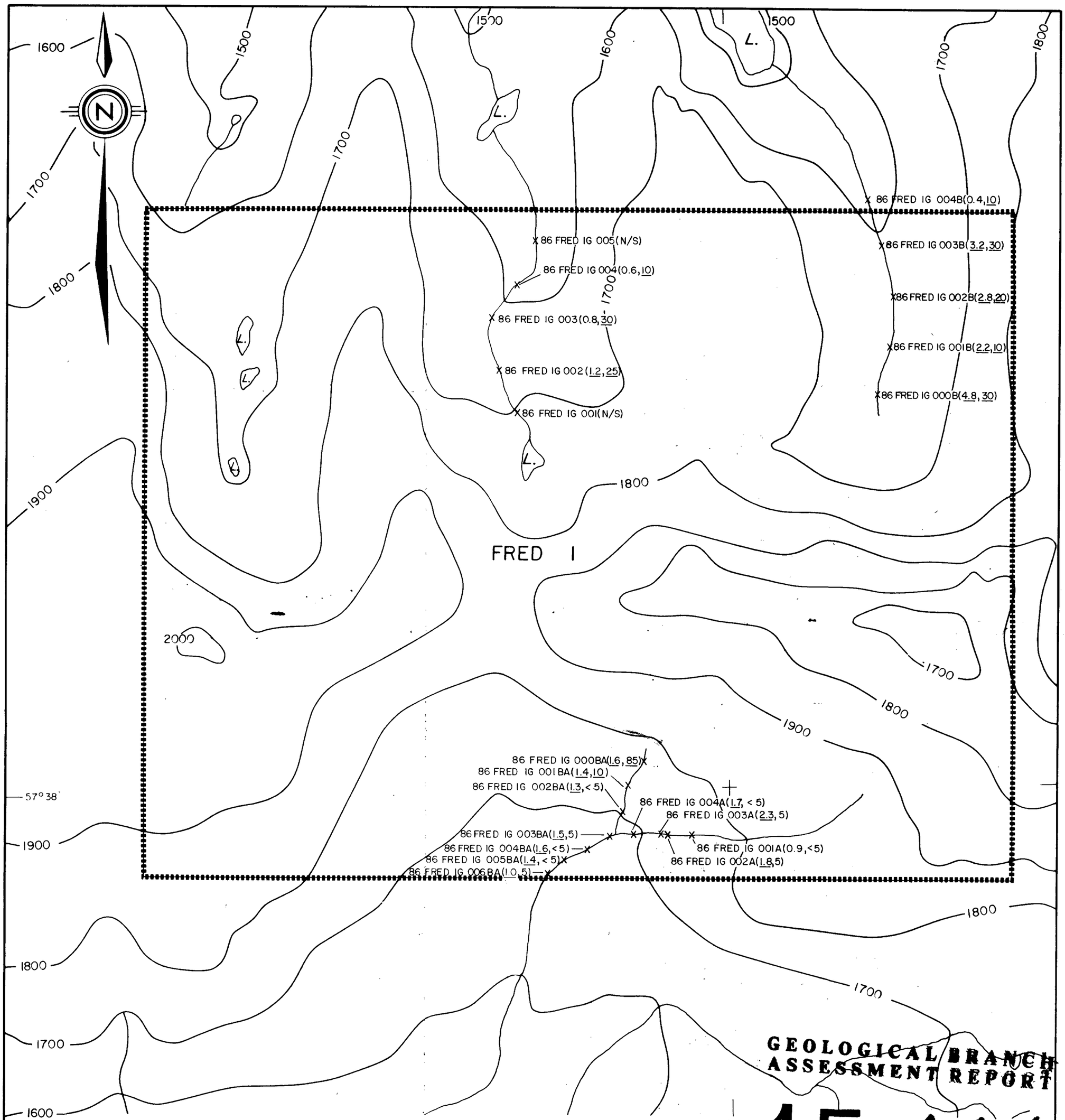
SUBMITTED BY: G PAULSON
DATE PRINTED: 14-OCT-86

| ORDER | | ELEMENT | NUMBER OF ANALYSES | LOWER DETECTION LIMIT | EXTRACTION | METHOD |
|---|---|---|---|---|---|---|
| 1 | Ag | Silver | 176 | 0.2 PPM | HNO3-HCL HOT EXTR | Atomic Absorption |
| 2 | Au | Gold - Fire Assay | 176 | 5 PPB | FIRE-ASSAY | Fire Assay AA |

| SAMPLE TYPES | NUMBER | SIZE FRACTIONS | NUMBER | SAMPLE PREPARATIONS | NUMBER |
|---|---|---|---|---|---|
| S SOILS | 176 | 1 -80 | 176 | DRY, SEIVE -80 | 176 |

REPORT COPIES TO: MR. JIM DAVIS
TAIGA CONSULTANTS LTD
MR. G. PAULSON

INVOICE TO: TAIGA CONSULTANTS LTD




SAMPLE No. / Ag(ppm), Au(ppb)

X 86 FRED IG 000 BA(1.6,85)



PROLIFIC PETROLEUM LTD.

# FRED 1 MINERAL CLAIM

## STREAM SILT GEOCHEMISTRY
## Ag, Au AND SAMPLE LOCATIONS

| | |
|---|---|
| DATE DECEMBER, 1986. | NTS 94 E/12 E. |
| PROJECT POF-BC-3 | MAPPED/DRAWN BY C. AUSSANT |
| SCALE 1:10,000 | 0 100 200 300 m |
| TAIGA CONSULTANTS LTD | MAP 1 |