GREAT WESTERN PETROLEUM CORPORATION

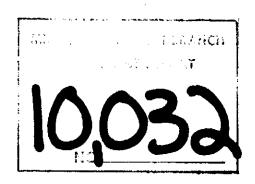
GEOLOGICAL AND GEOCHEMICAL REPORT

GWP 11, 12, 14, 16, 18

(GWP II GROUP)

OMINECA MINING DIVISION

BRITISH COLUMBIA



NTS: 94E/6E 57 19 N, 127 6 W

OWNER: GREAT WESTERN PETROLEUM CORPORATION

AUTHOR: LOUISE K. ECCLES

DATE:

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INTRODUCTION

The GWP 11, 12, 14, 16 and 18 Claims are situated 12 km. southwest of Toodoggone Lake, which is 300 km. due north of Smithers, B.C. (Figure TJV-91-16).

Access to the property is usually by fixed wing aircraft from Smithers or Terrace to Sturdee Valley airstrip and by helicopter from there.

The area is mountainous with elevations ranging from 1400 to 1950 metres. Steep slopes and cliffs occupy cirque headwalls and active talus and felsenmeer prevent vegetation from growing on some hillsides.

The claims are centrally located with respect to a long, curved, cliff-lined valley occupied by a major tributary of a creek situated halfway between Saunders and Lawyers Creeks, south of the Toodoggone River. This valley trends north and westerly.

There is a marked difference in vegetation between the north and south facing slopes at lower elevations. Below 1500 metres on the south facing slopes, coniferous trees and buckbrush willows are widely spaced. On the north facing slope however, thick vegetation consisting of coniferous trees and buckbrush extends to an elevation of 1600 metres. Most of the area covered by the claims is above treeline and vegetation consists of alpine grasses and mosses.

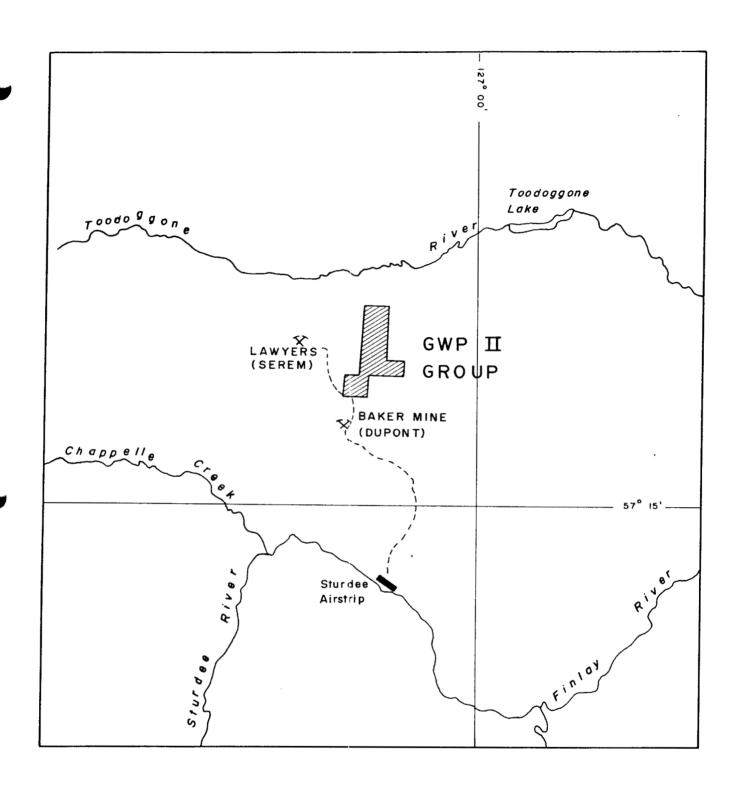


Figure TJV-81-16 LOCATION - GWP II GROUP OF CLAIMS

Work done on the claims in the 1981 field season consisted of geological mapping and geochemical sidehill sampling.

PROPERTY DEFINITION

HISTORY

The area north of Toodoggone River has a history of gold placer mining dating back to the 1920's. In the 1960's interest in porphyry copper and molybdenum deposits spurred companies to explore the widespread gossans that are prevalent in the region.

The GWP 11 and 12 claims adjoin the Chappelle claims of Dupont Exploration on which is the currently producing Baker gold-silver mine.

Due west of the claims, is the Lawyers gold prospect, presently undergoing surface and underground development.

In the early 1970's part of the area covered by the GWP 11, 12, 14, 16 and 18 claims was originally part of the Saunders No. 1 Group. Work done on that group consisted of soil geochemistry and is reported in B.C. Ministry of Energy, Mines and Petroleum Resources Assessment Report 3314.

The GWP 11, 12, 14, 16 and 18 claims were staked in January 1981. The location and configuration of these claims are shown on Figure TJV-81-17.

LIST OF CLAIMS

CLAIM NAME	RECORD NO.	UNITS	DATE RECORDED
GWP 11	3498	3	Jan. 12, 1981
GWP 12	3499	6	и и и
GWP 14	3501	12	11 11 11
GWP 16	3503	16	н н н
GWP 18	3505	16	11 11 11

Owner and Operator

The claims are recorded in the name of Great Western

Petroleum Corporation and are operated by that company under a joint

venture agreement with E & B Explorations Ltd. of Calgary.

Economic Assessment of the Property

GWP 11 and 12 claims showed the most interesting geology in that the Toodoggone rocks were highly silicified and argillized. An access road from the Lawyers Property passing through the Baker Mine and on to the Sturdee airstrip runs through the southwest corner of the GWP 11 and this relatively good access combined with the geology makes this part of the GWP II Claim Group the most interesting exploration target.

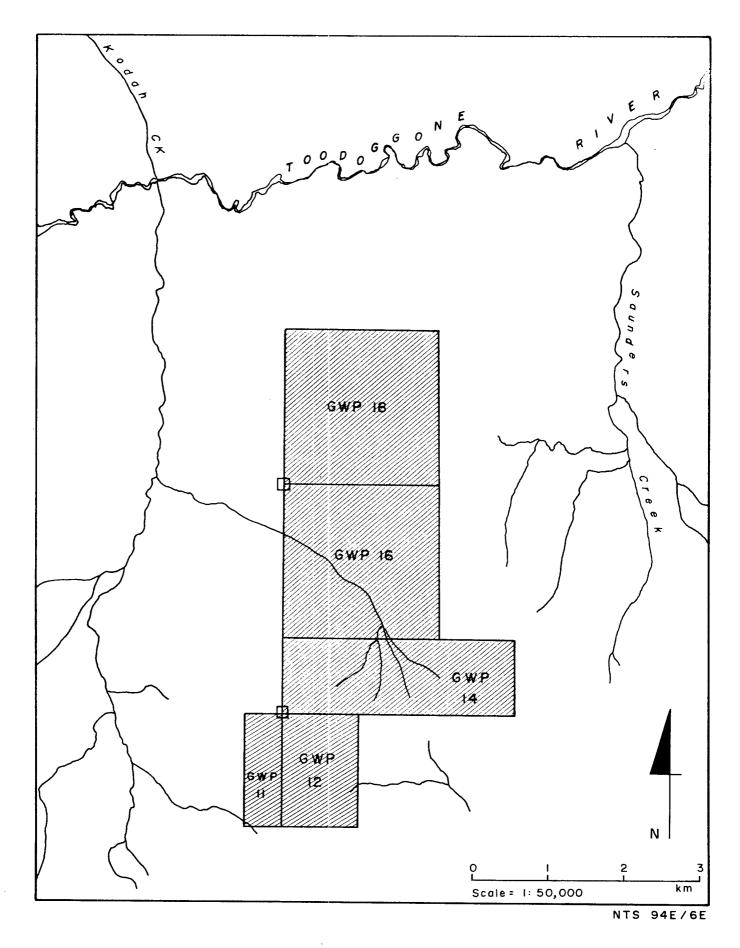


Figure. TJV-81-17 LOCATION OF GWP II, 12, 14, 16, 18

MINERAL CLAIMS

(GWP II GROUP)

GEOCHEMICAL SURVEY

Sample Collection and Preparation

Because of the steep nature of the terrain, sidehill soil sampling was undertaken on GWP II Group rather than utilizing a grid.

Two contour lines, spaced 100 metres apart vertically, were sampled along each hillside. Samples were collected at 100 metre spacings using hip chains, altimeters, compasses and 1:10,000 scale topographic maps for control.

Soil horizons are poorly developed over most of the area. Where possible, samples were collected from the 'B' horizon or a depth of 5 to 20 cm. using stonemason's hammers, and placed into gussetted, high strength, brown paper sample bags.

Samples were allowed to air-dry before shipping to Min-En Laboratories in North Vancouver. In some cases, samples were dried and seived to minus 80 mesh in the field before shipping to Min-En Laboratories for analysis.

Sample locations are plotted on Figure TJV-81-18. Total area sampled was about 13 square kilometres.

Silt samples were collected from creeks and dry gullies where encountered along the sidehills. Rock samples were collected from areas where there was no soil cover and also from certain areas between and above the contour lines by geologists during the course of mapping.

A total of 221 soil, 11 silt and 85 rock samples were collected and analyzed for copper, lead, zinc, silver and gold.

INTERPRETATION

Values for gold, silver, lead, zinc and copper are plotted separately on Figures TJV-81-19 to 23, located in the back pockets of this report.

Precious and base metal values were generally quite low over the claim group with only a few anomalous values coming from individual isolated samples. Follow up sampling around these sites did not yield any significant values.

The following tabulation indicates background, weakly, moderately and highly anomalous values for the soil sample results obtained for the GWP 11, 12, 14, 16 and 18 claims.

ELEMENT	BACKGROUND	WEAKLY ANOMALOUS	MODERATELY ANOMALOUS	HIGHLY ANOMALOUS
Au (ppb)	5	10-20	21-40	> 40
Ag (ppm)	0.9	1.8-3.6	3.4-7.4	77.4
Cu (þpm)	14	28-56	57-114	7114
Pb (ppm)	18	36-72	73-146	7146
Zn (ppm)	65	130-260	261-522	1522

The anomalous values obtained for gold and/or silver are coincident with small gossans that are associated with quartz stockworks and minor disseminated pyrite and arsenopyrite found in the north central part of the claim group. These areas occur within the relatively unaltered crystal tuffs of the Middle Toodoggone Unit in small fault zones.

Values for gold and silver range from 5 ppb to 75 ppb and .1 ppm to 3.8 ppm. respectively.

Copper and lead values ranged from between 2 and 96 ppm, and 1 ppm and 762 ppm respectively. Anomalous values were associated with minor, isolated quartz stockworks and gossans located within the Middle Toodoggone volcanic unit.

Values for zinc ranged between 4 ppm and 372 ppm. Usually the anomalous zinc values were coincident with either the anomalous copper or lead values.

GEOLOGICAL FIELD WORK

Geological mapping was done in conjunction with the soil geochemistry. Topographic maps and airphoto mosaics at a scale of 1:10,000 served as controls for the mapping. Geology was plotted at a scale of 1:10,000 and is shown on Figure TJV-81-24 in the back pocket of this report. Total area mapped was about 13 square kilometres.

Rock exposures are abundant on sidehills between 1600 meters and 1700 meters. In the valley bottom and along some of the ridge tops (especially where topography is plateau-like) abundant felsenmeer and lack of outcrop hampers the mapping efforts.

GENERAL GEOLOGY

The GWP II group, lying within the eastern margin of the Intermontaine Belt is mainly underlain by unaltered, interbedded grey to black crystal tuffs and green porphyritic rocks of the Middle and Upper Toodoggone Volcanic assemblage of early Jurassic age.

The oldest rocks seen on the claims are crystalline limestones of Permian age, part of the Asitka Group. These rocks were found only at the southernmost part of the claim group where they have been thrust over younger rocks.

A total of 7 distinct rock types have been mapped, 6 of those being various phases within the Middle and Upper units of the Toodoggone Volcanic assemblage.

DETAILED GEOLOGY

ASITKA GROUP - LIMESTONE

These older rocks (permian age) have been thrust over younger rocks. They are coarsely crystalline, white to grey and display banding accentuated by reddish hematite staining.

TOODOGGONE VOLCANIC ASSEMBLAGE

MIDDLE UNIT

The Middle Toodoggone Volcanic Unit is composed of Silicified,

Pyritic Volcanic rocks, Green Toodoggone Porphyry and Pink Quartz-Feldspar

Porphyry. These rocks, like the tuffs of the Upper Unit are closely

related to each other and represent different phases of the same parent

magma. Contacts between the various phases are gradational.

Green Toodoggone Porphyry - These rocks are cormonly dark green with pink to orange feldspar phenocrysts up to 3 mm. in size. Mafic minerals (hornblende and minor biotite) are commonly altered to epidote.

Often the rock contains quartz eyes and grey to green lithic fragments that blend in well with the fine grained green groundmass and often are hard to distinguish. The rock is slightly magnetic.

Pink-Quartz Feldspar Porphyry - Sometimes this rock has the appearance of a fine grained intrusive with a pink groundmass, although in some cases a green groundmass (or variations between pink and green) are observed. Hornblende phenocrysts altering to chlorite and epidote often stand out against the pink groundmass. Quartz eyes up to 2 mm. are common. In some areas, this rock has undergone intense argillic alteration. Laumontite and calcite veining is evident in areas of most intense alteration.

Silicified, Pyritic Volcanic Rocks - Intense silification and kaolinization have obliterated remnant textures in this rock type which commonly displays intense limonite staining and minor disseminated pyrite and arsenopyrite. Outcrops are not common because of the readily weathering nature of this rock.

UPPER UNIT

The Upper Toodoggone unit is composed of lavender, black and grey to green crystal tuffs. Usually these rock types can be distinguished from one another and mapped separately, although they are interpreted as being transitional with one another.

Lavender Crystal Tuff - These rocks have a fine grained lavender groundmass with 2 mm. phenocrysts of hornblende altering to chlorite.

The rocks display minor limonite staining on weathered surfaces and some finely disseminated reddish crystals that are probably hematite stained feldspars. In some locations the rock shows a welded texture, with flattened and aligned white feldspar phenocrysts.

Green to Grey Crystal Tuff - Crystals and fragments of feldspar, biotite and hornblende, up to 3 mm across are set in a fine grained green to grey groundmass with occasional quartz-eyes. Often the rock is made up of a higher proportion of crystals than groundmass. Grey and green fine grained lithic fragments are present in the groundmass but are often indistinguishable.

The mafic minerals and parts of the groundmass are sometimes altered to epidote but generally this unit appears fresh and unaltered. The rock weathers pink to dark grey and crude columnar structures are common.

Black Tuff - This rock is slightly darker than the grey to green crystal tuff due to the abundance of hornblende, biotite and dark grey to black quartz eyes.

STRUCTURE

The various phases within the Middle and Upper units of the Toodoggone Volcanic assemblage are gradational and contact and bedding attitudes are not easily distinguishable. One bedding attitude strikes northeast with a 30° dip to the southeast. Crude columnar structures attest to the flat-lying nature of the Upper unit.

Small gossan areas with quartz stockworks indicate fracturing and perhaps faulting in a few isolated areas within the claims.

Asitka limestones are thrust over Toodoggone Volcanic rocks in the south part of the claim group.

MINERALIZATION

Most of the area covered by the GWP II claim group is underlain by unaltered and unmineralized rocks of the Upper unit of the Toodoggone Volcanic assemblage. To the north part of the claims some small isolated gossans occur associated with quartz stockwork and disseminated pyrite and arsenopyrite in Middle unit rocks.

Geochemical sampling over these areas indicated anomalous values in either gold, silver, copper or lead. Follow-up geochemistry over these "highs" failed to indicate any extent of these anomalous zones. See plates 1, 2 and 8 on Drawings TJV-81-19 to 23 for results of detailed follow-up geochemistry.

In the southernmost area of the claim group, on the GWP 12 claim, outcrops of highly silicified and argillized Middle unit Toodoggone Volcanic rocks occur near coarse grained limestone of the Asitka Group. These rocks are highly limonite stained and contain minor disseminated pyrite and arsenopyrite. While this area was the most interesting geologically, geochemical results failed to show significant values.

CONCLUSIONS AND RECOMMENDATIONS

The rocks underlying the GWP II group include 3 distinct phases of a tuff which occurs within the Upper unit of the Toodoggone Volcanic Assemblage. These phases can often be mapped as separate entities but upon closer examination are seen to be completely transitional with one another.

Rocks from the Middle unit of the Toodoggone Volcanic Assemblage occur as dykes or flows on the property. Contact relationships between the Upper and Middle Toodoggone Volcanic units are obscured by the large amount of felsenmeer.

From a geological point of view, the main area of interest within the claim group is a highly silicified zone in the Middle unit of the Toodoggone Volcanic Assemblage that occurs on the GWP 12 claim. Geochemical results, however, are disappointing.

The geochemical survey over the entire claim group showed the small isolated gossans and associated quartz stockworks within the Upper Toodoggone unit to be anomalous in either gold, silver, lead or copper. Most geochemical results were low and were rarely above background values.

A road leading from the Sturdee Valley airstrip, through the Baker Mine and to the Lawyers Prospect, cuts through the southwest corner of the GWP 11 claim. Costs of detailed exploration on this portion of the claim group could be significantly reduced by the use of this road.

Before any further work is undertaken on the GWP 11 and 12 claims it is recommended that the mutual boundary with the Chappelle claims be surveyed.

COST STATEMENT - GWP 11, 12, 14, 16, 18 Claims (GWP II Group)

Geochemical Surveys and Geological Mapping

1. WAGES

Name	Per Diem Rate	Specific Dates	No. Days	Amount
N. Carter (geologist)	\$200.00	July 2	1	\$200.00
L. Eccles (geologist)	116.58	June 25-27	3	\$349.74
D. Forster (geologist)	93.73	June 25, 26, July 10, Aug. 6, 7	5	\$468.65
N. Caira (geologist)	83.51	June 25, 26, 28	3	\$250.53
<pre>K. Hudson (sampler)</pre>	52.85	July 10, Aug. 7, 21	3	\$158.55
<pre>C. Leupold (sampler)</pre>	57.96	June 27	1	\$ 57.96
R. Riedel (sampler)	57.96	June 26	1	\$ 57.96
L. Tamaki	63.06	June 26, July 10, July 24-26	5	\$315.30
I. Hribar (cook)	66.38	(Proportioned amongst other claims - 6.5% x 61 days)	3.96	\$263.20
C. Carter (Lab Technician)	52.85	(Proportioned amongst other claims - 6.5% x 38 days)	2.47	\$130.54
Proportion of to this Group:		Days allocated days @ \$84.49	16.64	\$1405.88
		Total	45.07	\$3658.31

2. TRANSPORTATION

A. Mobilization

Charter aircraft Smithers - Sturdee Strip (total \$6970.60 - Kelowna Flightcraft Aircharter Invoice No. 4723B and Transprovincial Airlines Invoice No. 67308, split between properties)

\$453.09

B. Demobilization

Charter aircraft Sturdee Strip - Smithers (part of Aviar Aviation Invoice No. 0450) Air Fares (5 crew, Smithers to Vancouver @ \$510.25 - proportioned)

48.36

33.17 \$81.53

C. Helicopter Support

Viking Helicopters - Total 95.25 hours split between properties = 6.19 hours @ \$428.00/hr. including fuel; June 25-29, July 10, 24-26, Aug. 6, 7:

\$2649.85

<u>ALC Airlift Corporation</u> - Total 12.18 hours split between properties = .79 hours @ \$415/hr. including fuel; between July 30 - Aug. 1:

328.55 \$2978.40

CAMP COSTS

A. Room and Board

45.07 man days @ \$50.00/day (including all or parts of June 25-28, July 10, 24-26, Aug. 6, 7)

\$2253.50

B. Expediting

(split between properties)
Total \$1411.13 - Bema Industries Invoice Nos.
0990 - July 15/81

\$ 91.72

0934 - June 30/81 0852 - June 15/81

0805 - May 31/81

4. GEOCHEMICAL ANALYSIS

	221 soil samples and 11 silt samples analyzed for Cu, Pb, Zn, Ag and Au @ \$10.55 per sample (Min - En Labs. Invoices)	\$2447.60
	85 rock samples analyzed for Cu, Pb, Zn, Ag and Au @ \$11.95 per sample (Min-En Labs Invoices)	\$1015.75
	Sample shipment costs and supplies (Min-En Invoices) Total \$1431.45 proportioned between properties	\$ 93.04
	Total	\$3556.39
		A-10-10-10-10-10-10-10-10-10-10-10-10-10-
5.	REPORT PREPARATION	
	Writing and drafting Airphoto Mosaics and Maps - Burnett Resource	\$ 400.00
	Surveys Ltd Total \$4242.11 (proportioned)	\$ 275.74

\$ 675.74

SUMMARY OF COSTS:

1. 2.	Wages Transportation: A. B. C. Camp Costs: A.	Demobilization Helicopter Support Room and Board	\$3,658.31 453.09 81.53 2,978.40 2,253.50 91.72
4. 5.	. -		3,556.39 675.74
			\$13,748.68

APPENDIX "A"

Analytical Procedures

APPENDIX 'A'

ANALYTICAL PROCEDURES

Samples are processed by Min-En Laboratories

Ltd. in North Vancouver employing the following procedures:

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer.

1.0 gram of the samples are digested for six hours with ${\rm HNO_3}$ and ${\rm HC10_4}$ mixture.

After cooling samples are diluted to standard volume. The solutions are analyzed by Atomic Absorption Spectrophotometers.

Copper, Lead, Zinc and Silver are analyzed using the $\mathrm{CH_2H_2}$ - Air flame combination on these sample solutions.

For gold geochemical samples, a suitable weight 5.0 or 10.0 grams are pretreated with HNO_3 and HClO_4 mixture.

After pretreatments the samples are digested with <u>Agua</u>

<u>Regia</u> solution, and after digestion the samples are taken

up with 25% HCI to suitable volume.

At this stage of the procedure copper, silver and zinc can be analyzed from suitable aliquot, by Atomic Absorption Spectrophotometric procedure.

Further oxidation and treatment of a least 75% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl Ketone.

With a set of suitable standard solutions, gold is analyzed by Atomic Absorption instruments. The obtained detection limit is 5 ppb.

QUALIFICATIONS

I, LOUISE K. ECCLES, do hereby certify that:

- 1. I am a geologist residing at 782 West 22nd Avenue, Vancouver, British Columbia and am employed by Great Western Petroleum Corporation.
- I am a graduate of the University of British Columbia with a B.Sc. (Honors) degree in geology.
- I have practised my profession in geology continuously for the past five years in British Columbia, Ontario, Yukon and Northwest Territories.
- 4. Between June and the end of August, 1981, I directed a field program on the GWP 11, 12, 14, 16 and 18 claims on behalf of Great Western Petroleum Corporation.

L.K. Eccles

ATTESTATION

I, Nicholas C. Carter of Victoria, British Columbia, do hereby certify that:

- 1. I am a practising geologist, registered with the Association of Professional Engineers of British Columbia since 1966;
- 2. I am graduate of the University of New Brunswick with B.Sc. (1960); Michigan Technological University with M.S. (1962) and the University of British Columbia with Ph.D. (1974).
- I have practised by profession in British Columbia and Eastern Canada and the Western United States for the past 21 years.
- 4. I personally oversaw the geological and geochemical program carried out by Ms. Eccles on the GWP 11, 12, 14, 16 and 18 claims and will attest to the authenticity of data contained in this report.

N.C. Carter,

Ph.D., P.Eng.

