

NTS: 92P/2W
Lat: 51 04 59N
Long: 120 52 06W
Elevation: 915 M

**GEOLOGICAL ASSESSMENT REPORT
ON THE
PUMICE CLAIM GROUP
CLINTON MINING DIVISION
BRITISH COLUMBIA**

BY

FAYZ YACOUB, P.Ge., F.G.A.C.
6498-128B Street
Surrey, British Columbia
V3W 9P4

December 2001

SUMMARY

The Pumice claim group comprises seven contiguous mineral claims (Pumice 1-7), totaling seven units, and lies approximately 60 kilometers northeast of the town of Cache Creek, in south-central British Columbia.

Geologically the property is underlain by massive rhyolite ash of the Miocene Deadman River Formation (Chilctin Group). The Miocene volcanic ash occurs in flat-laying beds, and are soft, poorly consolidated, composed of sandy pebbly; white-light gray to buff colored very fine to fine- grained lapillii tuffs with varies size cavities.

The Sherwood Creek Ash was previously tested for its pozzolonic properties. All chemical and physical results meet the American Society for Testing Metals (ASTM) specifications. The ash is proved to be pozzolonic and can be used as a mineral admixture in concrete.

Recent investigation during the 2001 program indicated that the ash is a quality absorbent for oil and oil products.

The property enjoys an excellent location in south-central British Columbia, near the cement plant in the Marble Canyon, and is a short distance to the Canadian National Railways.

The expected low mining costs due to the location value of the property, supported by the road access, the full exposure of the ash, and the possibility of open pit mining method suggests that The Pumice Claim Group has good potential for developing an economic industrial mineral deposit (pozzolonic volcanic ash), sufficient to support the Canadian market.

A resource evaluation program and more testing are highly warranted to evaluate the industrial mineral potential of the property, and to determine the commercial value of the Sherwood Creek deposit.

A second phase exploration program with a total budget of \$ 25,000 is proposed to follow-up on the successful results obtained from the first phase program.

| | Page |
|---|------|
| Summary..... | i |
| 1.0 Introduction..... | 1 |
| 2.0 Location, Access & Physiography..... | 1 |
| 3.0 Property Status..... | 1 |
| 4.0 Property History..... | 4 |
| 5.0 Regional Geology..... | 7 |
| 6.0 The 2001 fieldwork program..... | 9 |
| 6.1 Scope & Purpose..... | 9 |
| 6.2 Method & Procedures..... | 9 |
| 7.0 2001 Results..... | 9 |
| 7.1 Property Geology..... | 9 |
| 7.2 The Chemical Characteristics of the Ash | 13 |
| 7.2.1 The Cation Exchange Capacity (CEC)..... | 13 |
| 7.2.2 The Oil Adsorption Test..... | 13 |
| 7.2.3 Further Tests by the writer..... | 14 |
| 7.2.3.1 The absorption Test..... | 14 |
| 8.0 Discussion And Conclusion..... | 15 |
| 9.0 Recommendations..... | 15 |
| Proposed Budget..... | 16 |
| References | |
| Cost Statement | |
| Certificate of Qualifications | |

List of Figures

| | | |
|----------|---|----|
| Figure 1 | General Location Map..... | 2 |
| Figure 2 | Claim Location Map..... | 3 |
| Figure 3 | Regional Geology Map..... | 8 |
| Figure 4 | Sample Location Map..... | 10 |
| Figure 5 | Sherwood Creek Deposit (Satellite Image)..... | 11 |

List of Photos

| | | |
|-----------|---|----|
| Photo # 1 | Sherwood Creek volcanic ash (Surface Exposure)..... | 12 |
|-----------|---|----|

List of Appendices

| | |
|------------|-----------------------------|
| Appendix A | Chemical and Physical Tests |
|------------|-----------------------------|

1.0 INTRODUCTION

This report presents the results of the 2001 fieldwork program completed on the Pumice Claim Group. The main purpose of this report is to evaluate the physical and the chemical characteristics of the volcanic ash of the property, and to test the capability of the ash to absorb crude oil and oil products. The report also describes the regional geology and the past exploration in the area, and outlines a budget proposed for the next phase exploration program.

Fayz Yacoub, P.Geol, and a field assistant performed the fieldwork.

This report is based upon the geological and geochemical results of the 2001 exploration activities on the property, and on a review of government assessment reports, regional geological maps, and claim data from the Mining Recorder's office. The writer was on the property between September 21 and September 22, 2001. The writer supervised and carried out all the fieldwork.

2.0 LOCATION AND ACCESS

The Pumice Claim Group is located in south-central British Columbia, approximately 60 Km northeast of the town of Cache Creek.

Access to the property is via Trans-Canada High-Way going east from Cache Creek, then follow the well maintained all weather Deadman Road going northeast for thirty-eight kilometers up to the property.

3.0 PROPERTY STATUS

The Pumice Claim Group consist of seven contiguous mineral claims, totaling seven units .The property lies in the Clinton Mining Division and is wholly owned by Fayz Yacoub of Surrey, B. C.

The pertinent claim data is as follows:

| Claim Name | Record # | No of units | Expiry Date |
|------------|----------|-------------|--------------|
| Pumice 1 | 370958 | 1 | Aug 17/2005 |
| Pumice 2 | 370959 | 1 | Aug 17/2005 |
| Pumice 3 | 380955 | 1 | Oct 02/2003* |
| Pumice 4 | 380956 | 1 | Oct 02/2005* |
| Pumice 5 | 380957 | 1 | Oct 02/2003* |
| Pumice 6 | 380958 | 1 | Oct 02/2003* |
| Pumice 7 | 380959 | 1 | Oct 02/2003* |

PUMICE CLAIM GROUP (GENERAL LOCATION MAP)

Topographic Layers

 Lakes 1:6M

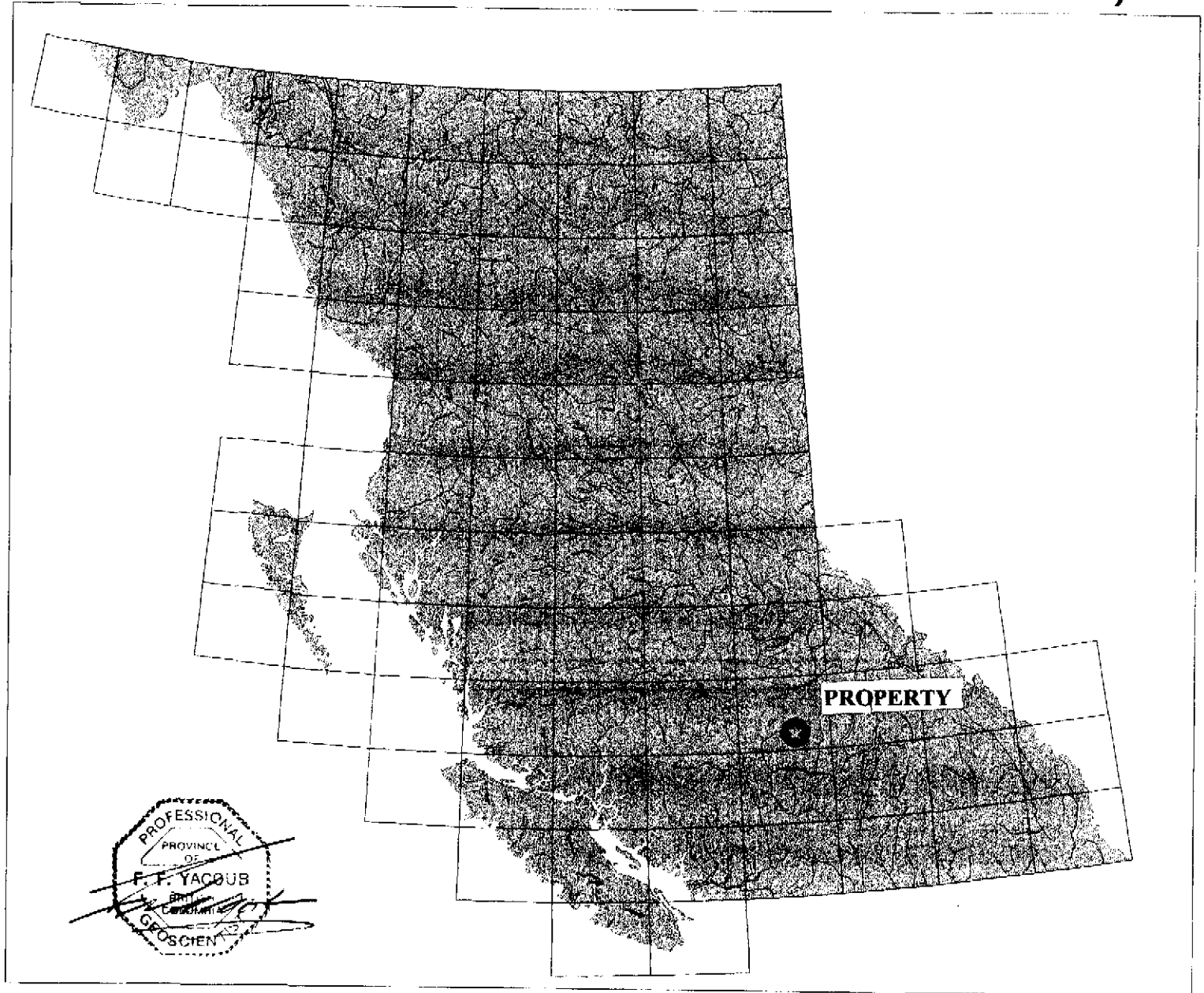
 Rivers 1:6M

Grid Layers

 Grid 1:250K maps - outline

BC Border Layers

 BC Border 1:6M



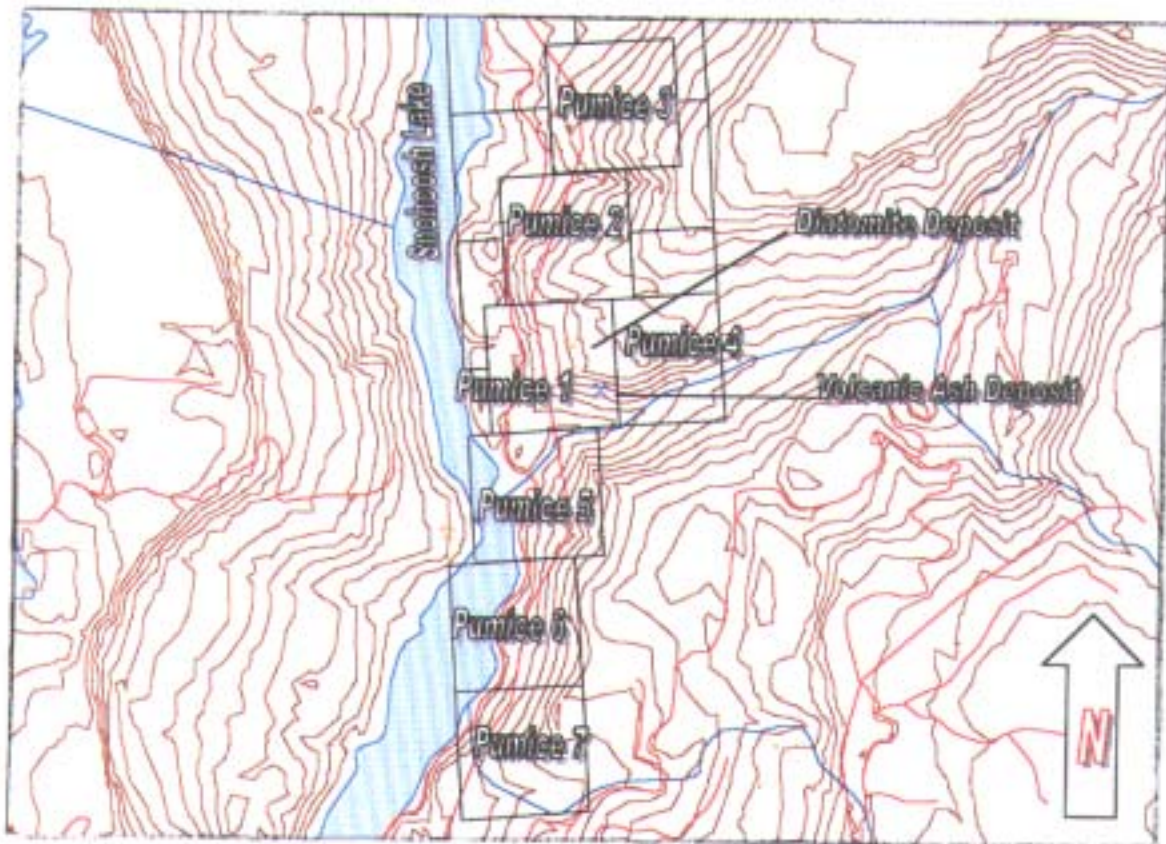
SCALE 1 : 9,000,000



FIGURE # 1

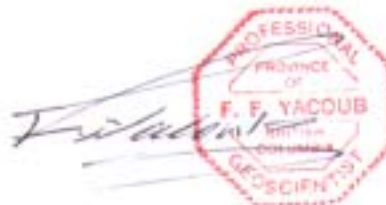


SHERWOOD CREEK VOLCANIC ASH CLAIM LOCATION MAP



- Road
- Creek

FIGURE #2



*** Date up to which 2001 assessment report is accepted by the Gold Commissioner to be applied to the claims.**

The total area of the claims is 1.75 square kilometer, 175 hectares, 432.25 acres.

4.0 PROPERTY HISTORY

The Sherwood Creek occurrence was known for so many years as a possible good source of pozzolan. An attempt has been made to exploit the deposit in 1959.

In June 1959, a little development work was done on the main exposure north of Sherwood Creek and a tractor road was put in for approximately 250 meters along the bottom exposure of the chalky white ash, and a shallow trench had been bulldozed northward up the slope. At approximately 90 meters west of the first trench a second trench was dug in horizontally for 60 meters and exposed 10 meters of white ash. At approximately three hundred meters north of the second trench a third trench was put in for thirty meters and exposed buff colored ash. White ash was found extensively at the main deposit and in another outcrop approximately 1.5 kilometer south of the Sherwood Creek deposit by the main road. The ash is very uniform in color and extremely fine grained. Previous test showed 83.6 % of the ash material passed through a 200 mesh screen.

The following shows a screen analysis of a sample from the white fine ash

| Retained on (mesh) | % |
|--------------------|-------|
| 35 | 0 |
| 48 | 0.10 |
| 65 | 0.30 |
| 100 | 0.60 |
| 150 | 0.80 |
| 200 | 14.50 |
| Through 200 | 83.60 |

Petrographical analysis indicated that the ash consist mainly of angular fragments of clear volcanic glass

Three representative samples were previously analyzed to determine the chemical composition of the ash. The results are as outlined below:

| | (1) Wt % | (2) Wt % | (3) Wt% |
|--------------------------------|-------------|-------------|------------|
| SiO ₂ | 73.10 | 71.70 | 70.10 |
| Al ₂ O ₃ | 12.46 | 13.88 | 14.31 |
| Fe ₂ O ₃ | 1.74 | 1.82 | 2.69 |
| CaO | nil | nil | 1.60 |
| K ₂ O | 3.46 | 3.09 | 2.66 |
| Na ₂ O | 2.98 | 1.80 | 1.64 |
| MgO | 0.46 | 0.38 | 0.47 |
| H ₂ O | 1.90 | 4.01 | 2.27 |
| Organic matter | 3.86 | | |
| Total | 99.96 | 99.78 | 100.04 |

1. Finest material (80%-200 mesh)
2. Medium fine material
3. Coarsest bed

To test the pozzolanic reaction of the ash, a channel sample was collected over 25 meters above the top white bed at the main outcrop of the Sherwood Creek deposit

Chemical Analysis

| Test | A.S.T.M. Requirement | Sherwood Creek Deposit |
|--|----------------------|------------------------|
| SiO ₂ +AlO ₂ +Fe ₂ O ₃ | Min. Per cent, 70.0 | 84.80 |
| MgO | Max .Per cent, 5.0 | 0.49 |
| SO ₃ | Max .Per cent, 3.0 | 0.10 |
| Ignition loss | Max .Per cent, 10.0 | 7.25 |
| Moisture content | Max .Per cent, 3.0 | 3.23 |

Physical Tests

| Test | A.S.T.M. Requirement | Sherwood Creek Deposit |
|--|----------------------|------------------------|
| Specific gravity | | 2.44 |
| Fineness: % | Max 12% | 1.00 |
| Activity index with cement % of control at 28 days | Min 75 | 84 |
| Activity index with lime at 7 days | Min 600psi | 709 |
| Water requirement% of control | Max 115 | 97 |
| Drying Shrinkage | Max.0.03 | -.008 |
| Autoclave expansion % | Max 0.5 | 0.06 |

The test results meet the chemical and the physical requirements to be used as a mineral admixture in concrete. Tests have also indicated that the white ash is suitable for cream glazes on ceramic ware and as an ingredient for certain ceramic bodies.

In 1987 Veto Resources Ltd completed drilling program, consisted of six drill holes to test the Sherwood Creek deposit. Reserves of 10,000,000 tons are indicated and more ground acquisition to the east was recommended.

In 1993 Mr. Michel Dickens, the previous owner of the claims conducted four days prospecting program to test the quality of the ash to absorb oil and eliminate odor. His home testing results indicated that Sherwood Creek volcanic ash has a remarkable quality to absorb crude oil and to eliminate ammonia odor.

5.0 REGIONAL GEOLOGY

After P.B.Read

Basalts of the Miocene Chasm Formation (Chilcotin Group) is the most abundant rocks in the region, however The massive rhyolite ash of the Miocene Deadman River Formation is exposed beneath the basalts as outcrops and cliffs on the east side of the Deadman Valley for a length of 6.5 kilometers.

The Miocene succession consists of up to 350 meters of fluvial rhyolite ash and fine clastic sediments underlying a minimum thickness of 500 meters of olivine basalt flows. These rocks belong to the Chilcotin Group.

Rocks of the Deadman River Formation underlie parts of the valley walls of Deadman River. White to buff-weathering massive rhyolite ash dominates, and white tuffaceous sandstone and shale occur near the top of the sequence. In the Deadman River valley, Campell and Tipper (1971) suggested that diatomaceous layers up to 4 meters thick occur near the bottom of the succession.

Cross-section of the Miocene Deadman channel (Mio-Deadman) is 2 kilometers wide and 380 meters deep with the lower 200 meters filled mainly with rhyolite ash of Deadman River Formation (Read 1988).

Bevier (1983) noted that the present courses of the Fraser and Chilcotin Rivers were established during the late Miocene. The near coincidence of the Mio-Bonaparte channel and present Bonaparte River, Mio Deadman and present Deadman, and Mio-Snohoosh with Snohoosh Lake may have the same implication of Late Miocene development.

Pumice Claim Group (Regional Geology)

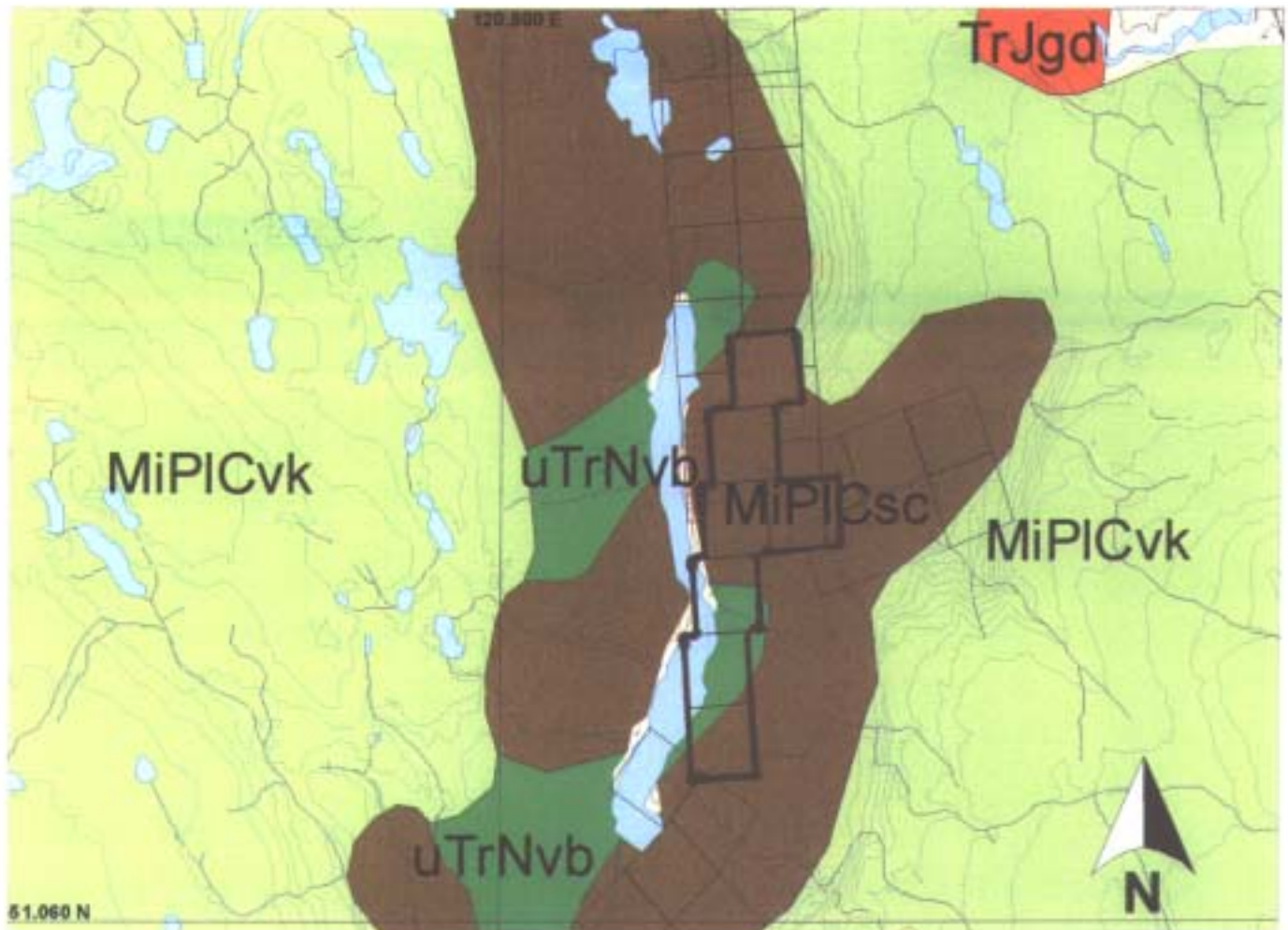
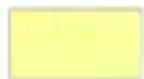


FIGURE #3



TrJgd - Late Triassic to Early Jurassic; Takomkane and Thuya batholiths and related plutonic rocks; Granodiorite, some diorite, quartz monzonite and granite, locally seyenite and seyendiorite



MiPICvk - Miocene to Pleistocene; Chilcotin Group; Olivine basalt, minor andesite, tuff, breccia, conglomerate, sandstone, siltstone, shale and diatomite.



MiPICsc - Miocene to Pleistocene; Chilcotin Group; Unconsolidated fluvialite conglomerate, sandstone, minor rhyolite ash, diatomaceous earth, olivine basalt and breccia



UTrNvb - Upper Triassic; Nicola Group; Pyroxene and pyroxene-hornblende basalt flows, breccias and tuffs, sandstone, siltstone, limestone and limestone breccia

6.0 THE 2001 FIELDWORK PROGRAM

6.1 Scope & Purpose

On September 22 and September 23, 2001. A two-man crew consisting of the writer and a helper carried out a fieldwork program of prospecting and rock sampling. The purpose of the program was to

- A) Locate and rock sample the Sherwood Creek ash deposit.
- B) Test the main chemical and the physical characteristics of the deposit.

6.2 Methods & Procedures

Prospecting and rock sampling was performed at scale 1:5,000 over the area of the Sherwood Creek volcanic ash. Control was established using G.P.S., and compass.

A total of two rock samples (10 kilogram each) were collected from the Sherwood Creek occurrence during the field visit (see figure # 4 for sample location). One sample was sent to Norwest Labs to determine the Cation exchange capacity of the ash, another sample was sent to Soilcon Lab to test the capability of the ash to adsorb oil products, and several other samples were used by the writer to test the performance of the ash to absorb oil from water.

Physical and chemical tests were conducted over chip samples cut across 25 meters of the Sherwood Creek ash.

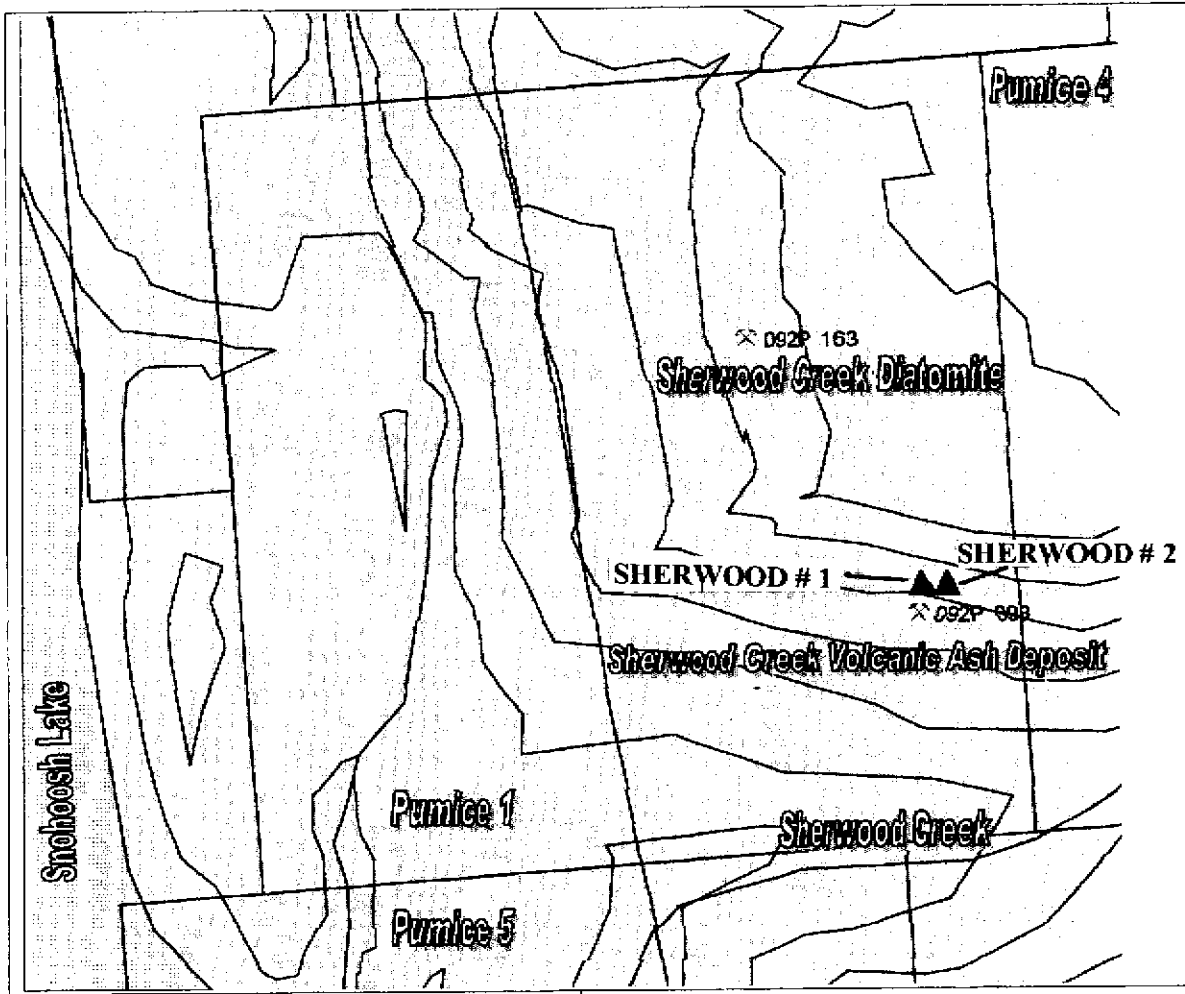
7.0 2001 RESULTS

7.1 PROPERTY GEOLOGY

The area of the property is underlain by massive rhyolite ash of the Miocene Deadman River Formation (Chilctin Group). The Miocene volcanic ash occur in flat-laying beds, and are soft, poorly consolidated, composed of sandy pebbly; white-light gray to buff colored very fine to fine-grained lapillii tuffs with varies size cavities.

The Sherwood Creek volcanic ash occur as large, fairly well exposed outcrops located on the Pumice 1 and Pumice 4 claims, 250-300 meters north of the Sherwood Creek, and measures about 400 meters long, 250 meters wide, and at 100 meters in depth. Exposures can be seen in an easterly direction for at least 400 meters. In places the weathering of the tuffs has left isolated pinnacles 10 to 15 meters high. Within these tuffs three or four horizontal beds of pure white, highly siliceous material, three to four meters thick and separated from one another by 10 to 30 meters of tuffs. The finest material has the appearance of pure white chalk.

SHERWOOD CREEK VOLCANIC ASH DEPOSIT AND SAMPLE LOCATION MAP



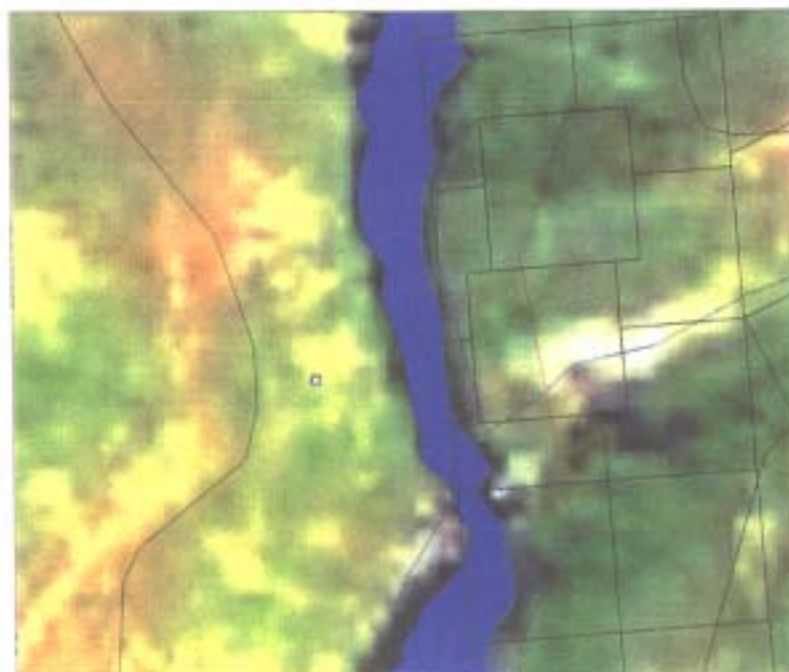
Scale 1:5,000

— Road
— Creek

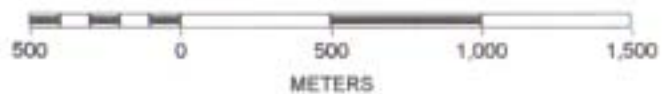


Fig 4

- ■ BC Localities
- □ MINERAL TITLES transparent
- □ All Others
- Contours (250)
- ROADS (250)
- RIVERS (250)
- Lakes (1:50k)
- BC LandSat



SCALE 1 : 25,000



**SHERWOOD CREEK DEPOSIT
SATELLITE IMAGE**

FIGURE #5



SHERWOOD CREEK DEPOSIT
SURFACE EXPOSURE
(PHOTO #1)

7.2 THE CHEMICAL CHARACTERISTICS OF THE ASH

7.2.1 The Cation Exchange Capacity (CEC)

One sample was tested at Norwest Labs to determine the Cation Exchange Capacity of the ash. Results indicated that CEC of the white ash is 37.6 meq/100g

7.2.2 The Oil Adsorption Test by Soilcon Lab

A pulverized sample of the ash was recently sent to the **Soilcon Labs** to test the ash for its performance to absorb oil and oil products.

Experimental Method: Diesel Adsorption (Gravimetric)

Objective: To determine the ability of the ash to adsorb oil products.

Procedures and Observations

In a clean glass jar, 200 ml of diesel fuel (0.7935 g/ml density) was added to 50 g of dried, pulverized, Sherwood Creek volcanic ash. The diesel fuel and the ash were mixed together on a vortex mixer for 1 minute. The jar was sealed and the mixture was left to saturate for 24 hours, then quantitatively transferred with acetone to a Buchner Funnel.

The mixture was gravimetrically filtered in a Buchner Funnel using Whatman #4 filter paper for 24 hours. After the 24 hours period, some freestanding diesel was observed remaining on the surface of the mixture in the funnel. The sample was then vacuum filtered for approximately 5 minutes to remove freestanding diesel, during which process some fines were observed to penetrate the filter paper and enter the filtrate.

The filtered ash and diesel mixture was weighed. In order to obtain the weight of the fines lost in the filtrate, the filtrate was re-filtered in a Buchner funnel using a Whatman #42 filter paper, then the recovered fines and filter paper was oven dried at 60°C for approximately 18 hours, and weighed. The weight of the recovered fines was added to the filtered ash and diesel mixture weight.

The total amount of diesel adsorbed by the ash was calculated by subtracting the initial ash weight from the filtered ash and diesel mixture weight.

Test Results:

| Sample | Initial Ash Wt (g) | Diesel Added (ml) | Diesel Density (g/ml) | Diesel adsorbed (g) | Diesel adsorption/ 100g ash | Diesel adsorption/ 1 kg ash | Average Adsorption/ 1 kg ash |
|-------------|--------------------|-------------------|-----------------------|---------------------|-----------------------------|-----------------------------|------------------------------|
| Sherwood 1 | 50 | 200 | 0.79 | 11.24 | 22.48 (g) 28.45 (ml) | 224.8 (g) 284.5 (ml) | 232.6 (g) |
| Sherwood 1D | 50 | 200 | 0.79 | 12.03 | 24.06 (g) 30.45 (ml) | 240.6 (g) 304.5 (ml) | 294.5 (ml) |

The adsorption test completed by Soilcon Lab indicated that every one kilogram of ash is capable to adsorb 232.6 gram or 294.5 ml of diesel.

7.2.3 Tests conducted by the writer

7.2.3.1 Oil absorption test

This test was conducted to evaluate the effectiveness of the ash to absorb oil from water

Procedures:

- Pour 1000 grams of water into glass container
- On the water surface, add 100 grams of motor oil
- Slowly stir the mixture to equally distribute the oil on the water surface
- Add a weighted amount of Sherwood Creek pulverized ash (200 grams) on top of the oily water and watch the ash floating on surface.

Within a few seconds, the ash gradually accumulates and surround the oil patches, resulting in the ash becoming thoroughly combined with the oil and sink directly down in gobs to the bottom of the container.

- Collect the oily ash from the bottom of the container.
- Calculate how much oil was absorbed by deducting the initial weight of the ash (200 gram) from the final weight of the oily ash collected from the bottom of the container.

Test Results:

Approximately 282 gram of oily ash was collected. That indicates the remarkable Ability of the ash to absorb oil from the water surface.

The same test was conducted once again on pulverized zeolite and bentonite samples. Both materials failed to float on the surface of the water and test results for both samples were not favorable.

8- DISCUSSION AND CONCLUSION

The volcanic ash of Sherwood Creek deposit is considered a natural commodity, environmentally friendly, and can be presented to the local and the international markets as a product of considerable values.

According to the American Society of Testing Materials (A.S.T.M), the deposit meets the chemical and physical requirements for N class pozzolanic material, and can be used as a mineral admixture in concrete.

The deposit will be a unique opportunity for British Columbia to develop and produce a natural commodity (white pure volcanic ash). The deposit could be used as a quality absorbent for oil products and oil spills.

9.0 RECOMMENDATIONS

- 1- A resource evaluation program should be initiated on the property consisting of geological mapping at scale 1:1000 to evaluate the size, and the surface exposure of the deposit.
- 2- More testing to identify the physical and the chemical characteristics of the ash such as porosity, specific gravity.
- 3- More testing should be done to evaluate the absorption potential of the ash.
- 4- Reserves estimate to determine the commercial value of the deposit.
- 5- Initiate a business plan to bring the volcanic deposit of the property into production.

10.0 PROPOSED BUDGET

Phase 2: Project Geologist, two Geotechnicians 10 days.

| | | |
|-----------------------------|--------------|------------------|
| Project Preparation | | \$1,600.00 |
| Mob/Demob | | 2,550.00 |
| Field Crew | | 8,000.00 |
| Field Costs | | 4,825.00 |
| Lab Analysis | | 2,800.00 |
| Petrographic Analysis | | 400.00 |
| Data compilation and report | | 3,000.00 |
| | Subtotal | <u>23,175.00</u> |
| G.S.T@ 7% | | 1,622.00 |
| | TOTAL | 24,797.25 |
| | SAY | 25,000.00 |

Respectfully Submitted

Fayz Yacoub, P. Geo. , F.G.A.C.

REFERENCES

- Duffel, S** (1952) Ashcroft Map Area, British Columbia, Geological
And Mc Taggart, K.C., Survey of Canada. Memoir 262 (76-77), 96-99.
- Harben, P.W.,** (1990) Industrial Minerals, Geology and world deposits (Pumice & Scoria
P.216-219)
- Harben, P.W.,** (1992) The Industrial Minerals Handy book - A guide to Markets.
Specifications & Prices (Pumice & Scoria - P67).
- Hora, Z.D.** (1985) New developments in industrial Minerals
- Manning, D.A.** (1993) Introduction to industrial minerals.
- Pinsent, R.H.,** (1998) Preliminary exploration highlights, southwestern British Columbia.
- Read, P.B.,** (1987) The Industrial Minerals in the Kamloops Group.
- Read, P.B.,** (1988) The Industrial Minerals in the Chilcotin Group.
- Reves, J.E** (1968) Factors of particular significance to the economics of industrial
minerals.
- Yacoub, F.,** (2000) The Assessment Geological Report on the Barbecue and Landscape
Claim Group, Kamloops Mining Division.
- J.E.Merrett.** 1958 Report of the Minister of Mines

CERTIFICATE OF QUALIFICATIONS

I, FAYZ F. YACOUB, of 6498-128B Street, Surrey, British Columbia, V3W 9P4, do hereby declare that:

- 1) I am a graduate in: Geology and Chemistry from Assuit University, Egypt (B.Sc., 1967), and Mining Exploration Geology of the international Institute for Aerial Survey and Earth Sciences (I.T.C.), Holland (Diploma 1978);
- 2) I am a fellow in good standing with the Geological Association of Canada;
- 3) I am a professional geologist and a member of the Association of the Professional Engineers and Geoscientists of British Columbia.
- 4) I have actively pursued my career as a geologist for the past twenty-two years;
- 5) The information, opinion, and recommendations in this report are based upon fieldwork carried out by myself, and on published literature. I was present on the subject property between September 22, and September 23/2001.
- 6) I am the registered owner and have 100% interest in the Pumice Claim Group.

Fayz Yacoub, P.Ge. F.G.A.C.
December 2001

**THE PUMICE CLAIM GROUP
THE 2001 FIELDWORK PROGRAM**

COST STATEMENT

| | | |
|---|--------|----------------|
| Mob/Demo, Transportation, Car rentals, and fuel | | 816.61 |
| Food & Accommodation 6 man-days @\$60/day | | 360.00 |
| Field Crew | | |
| Geologist @ \$300/day x 2 days | 600.00 | |
| Helper @ \$150/day x 2 days | 300.00 | |
| | ----- | 900.00 |
| Field supplies include: flagging, thirds, sample bags, etc | | 80.00 |
| Analytical cost | | |
| Soilcone Lab | 154.08 | |
| Norwest Lab | 56.00 | |
| | ----- | 210.08 |
| Report writing includes: | | |
| Data interpretation, maps, report writing, word processing, photocopying, and binding. | | 1,800 |
| TOTAL COST | | 4166.69 |

APPENDIX A

CHEMICAL AND PHYSICAL TESTS

**Experimental Method:
Diesel Adsorption (Gravimetric)**

Objective:

To determine the ability of a pozzolanic clay mineral material to adsorb diesel using gravimetric analysis.

Materials:

- Diesel Fuel
- Vortex mixer
- Buchner Funnel
- 250 mL glass jars with lids
- Whatman #4 filter paper
- Whatman #42 filter paper
- Fume hood
- Electronic balance

Procedure and Observations:

In a clean 250 mL glass jar, 200 mL (+/- 1 mL) of diesel fuel (0.7935 g/mL density) was added to 50.00 g (+/-0.01g) of air-dried, crushed, pozzolanic material which passes a 2 mm sieve, and mixed on a vortex mixer for 1 minute. The jars were sealed and the mixture was left to saturate for 24 hours, then quantitatively transferred with acetone to a Buchner Funnel.

The mixture was gravimetrically filtered in a Buchner Funnel using Whatman #4 filter paper for 24 hours. After the 24 hour period, some freestanding diesel was observed remaining on the surface of the mixture in the funnel. The sample was then vacuum filtered for approximately 5 minutes to remove freestanding diesel, during which process some fines were observed to penetrate the filter paper and enter the filtrate.


The filtered soil and diesel mixture was weighed. In order to obtain the weight of the fines lost in the filtrate, the filtrate was refiltered in a Buchner funnel using a Whatman #42 filter paper, then the recovered fines and filter paper were oven dried at 60°C for approximately 18 hours, and weighed. The weight of the recovered fines was added to the filtered soil and diesel mixture weight.

Total amount of diesel adsorbed was calculated by subtracting the initial soil weight from the filtered soil and diesel mixture weight.

| Experimental Method Results | | | | | | | | |
|-----------------------------|----------------------------------|------------------|--------------|----------------|-----------------|-------------------|-------------|-------------|
| Client: | Fayz Yacoub | | | | | | | |
| Project ID: | Sherwood Clay Mineral | | | | | | | |
| Soilcon Job#: | 01-476 | | | | | | | |
| Media: | Soil (Zeolite-like clay mineral) | | | | | | | |
| Analysis: | Diesel Adsorption (gravimetric) | | | | | | | |
| Date Complete: | 7-Dec-01 | | | | | | | |
| Sample ID | # | Initial | Diesel Added | Density | Amount of | Diesel Adsorption | | |
| | | Soil Wt. Air Dry | | of Diesel used | Diesel Adsorbed | g Diesel/100 g | g Diesel/kg | L Diesel/kg |
| | | g | mL | g/mL | g | | | |
| Sherwood | 1 | 50.0 | 200 | 0.79 | 11.24 | 22.48 | 224.8 | 0.28 |
| Duplicate | 1D | 50.0 | 200 | 0.79 | 12.03 | 24.06 | 240.6 | 0.30 |

275 - 11780 RIVER ROAD, RICHMOND, B.C. V6X 1Z7 • TEL: (604) 278-5535 • FAX: (604) 278-0517
 E-MAIL: soilcon@soilconlabs.com • WEB SITE: www.soilconlabs.com

NT = Not Tested
 01-476 Diesel Adsorpt (Fayz) 12/12/2001
 Liability is limited to testing fee paid.

Initials: 



**NORWEST
LABS**

Analytical Report

9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Bill to: Yacoub Consulting
Report to: Yacoub Consulting

6498-128 B St
Surrey, BC, Canada
V3W 9P4

Attn: Fayz Yacoub

Sampled By:

Project ID:
Name:
Location:
LSD:
P.O.:
Acct. Code: 58458

NWL Lot ID: 97069
Control Number: E 51002
Date Received: Nov 29, 2000
Date Reported: Nov 30, 2000
Report Number: 137570

Page: 1 of 2

NWL Number: 97069-1
Sample Date:
Sample Description: CH.C/2000-R1

| Analyte | Units | Results | Results | Results | Detection Limit |
|--|----------|---------|---------|---------|-----------------|
| Classification Cation Exchange Capacity | meq/100g | 37.6 | | | |

Approved by: 



Accredited by the Standards Council of Canada (SCC) and by the Canadian Association for Environmental Analytical Laboratories (CAEAL) for specific tests registered with the Council and the Association



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Bill to: Yacoub Consulting
Report to: Yacoub Consulting

6498-128 B St
Surrey, BC, Canada
V3W 9P4

Attn: Fayz Yacoub

Project ID:
Name:
Location:
LSD:
P.O.:
Acct. Code: 58458

NWL Lot ID: 97069
Control Number: E 51002
Date Received: Nov 29, 2000
Date Reported: Nov 30, 2000
Report Number: 137570

Sampled By:

Method of Analysis:

| Test | Reference | Method | Date of Analysis | Location | Analyst |
|---|-----------|--|------------------|------------------|---------------|
| Cation Exchange Capacity (CEC) - Ammonium | McKeague | CEC and Exchangeable Cations by NH4OAc at pH 7, 3.32 | Nov 30, 2000 | Norwest Edmonton | Krista Madsen |

References:

McKeague Manual on Soil Sampling and Methods of Analysis

Comments:

Norwest Labs strongly recommends that this report is not reproduced except in full.