## ASSESSMENT REPORT ON THE BEATTON CLAIM GROUP

N.T.S. 94/A7 Latitude 56 24 N Longitude 120 41 W UTM Zone 10: 673000E; 6253000N

Report Prepared for DIAMANT RESOURCES LTD 123-280 NELSON ST Vancouver, B.C. V6B2E2

By

Derrick Strickland, B.Sc. 208-1707 Charles Street Vancouver, B.C. V5N 2T7

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#### Metric Conversion Table

l foot (ft)	=	0.3848 meters (m)
1 inch (i.)	н	2.54 centimeters (cm)
1 kilometer (k)	=	0.26137 miles (mi)





#### **INTRODUCTION**

#### Location

The Beatton Claims are located in northeastern British Columbia (Figure 1) in the Peace River Lowlands, 25 kilometers northeast of Fort St. John. (Figure 2). NTS map sheet number: 94A.047

#### Access

Provincial Highway 97 (the Alaska Highway) is the main roadway through the region. Many other secondary highways and roads service the Peace River area. For this program, oil and gas service roads and seismic cut lines were used for access. The central portions of the Beatton claims were accessed by jet boat.

#### Physiography

The Peace River area in northeastern British Columbia is an agricultural region consisting primarily of farming and rangeland. In addition to agriculture, the Peace River Region is one of British Colombia's premier gas producing regions.

The forest cover is dominantly spruce, pine and poplar. Spruce forests dominate the muskeg rich regions in the north. The climate is temperate continental with moderate precipitation, warm summers and cold winters. The region's population is situated primarily in the Peace River valley (Fort St. John and Dawson Creek) region.

The topography on the claims is gently sloping terrain, generally descending southward towards the Peace River. The elevation of the peneplain is 730 meters ASL. The Peace River Lowlands are transected by the deeply incised channels of the Alces River, Flatrock Creek, and Zhoda Creek to an elevation of about 500 meters ASL.

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### **CLAIM STATUS**

The registered owner of the Beatton claims is Diamant Resources Limited.

Claim Name	Status	Record No.	NTS Map Sheet	Units
BEATTON-1	Good Standing 2003.07.24	388647	094A047	20
BEATTON-2	Good Standing 2003.07.24	388648	094A047	16
BEATTON-3	Good Standing 2003.07.25	388649	094A047	20
BEATTON-4	Good Standing 2003.07.25	388650	094A047	16

The Beatton claims comprise 72 units for a total area of 1800 ha. The claims are located on NTS map sheet 94A.047 in the Liard mining division of British Columbia, Canada.

#### **REGIONAL GEOLOGY**

The crystalline basement rock of northeastern B.C. is not exposed in the Peace River region, but several oil and gas exploration wells have cored to basement. Petrologic and radiometric studies of these basement cores along with interpretation of geophysical data has provided researchers with the ability to interpret the nature of the crystalline basement beneath parts of northeastern B.C. (Gal, 2001).

A major crustal feature of the northeast trending Great Slave Lake shear zone, also known as the Hay River Fault Zone, cuts off the south margin of the Slave craton. This structure is ancient (1.9 billion years; Hoffman 1987) and may have resulted from oblique collision of a Slave "microcontinent" craton with the Churchill Province craton. Where exposed along the east side of Great Slave Lake, the shear zone records consistent dextral offset. Through geophysics (magnetics, gravity), the Great Slave Lake shear zone can be traced to the southwest, across Alberta and almost to the Rocky Mountain Trench. It thus crosscuts the northeastern B.C. region, from about 120°W, 57° N. Age dating and analysis of basement cores and geophysical data have delineated a basement terrain in northeastern British Columbia called the Nova Domain (Villeneuve et al., 1993).

The Nova Domain lies south of the Great Slave Lake shear zone (GLSZ), and bears many attributes in common with the Slave Craton (Figure 3). Basement drill cores from the area between Hudson Hope and Clayhurst have yielded Archean and Paleoproterozoic ages (Villeneuve et al., 1993). The association of early Proterozoic and Archean gneisses in drill holes has led to the suggestion that the Nova Domain may be the faulted remnant (dextrally displaced) of the Slave craton in the Northwest Territories (Villeneuve et al., 1993). Alternatively, this region of crust may be related to Archean crust underlying the Ksituan High, which is a magmatic belt located east of the Nova Domain (Villeneuve et al., 1993). If the Nova Domain is Slave craton equivalent, then it presents an attractive exploration target for diamonds in northeastern British Columbia.

#### **Basement Structures**

The Peace River Arch is a northeast trending basement structure that controlled the deposition of Palaeozoic sediments. It was an anomalously positive tectonic element (arch) during the Devonian and possibly early Palaeozoic. By the Carboniferous period and later, the Peace River Arch had become a site of subsidence and excess sedimentation (Ellis et al., 1986). The axis of the Peace River Arch trends roughly east-west, crossing into northeastern B.C. at about 120°W, 56° N, and extends west-southwestward. The Peace River Arch is a long-lived, large-scale structure of a type that could be influential in localising kimberlite diatremes.

The Buffalo Head craton kimberlites in Alberta are interpreted to occur along the crest of the Peace River Arch. Around the Fort St. John area in northeastern British Columbia, the Peace River Arch is cut by significant northwest trending cross structures that extend into the basement. These intersecting structures thus provide potential sites for kimberlite emplacement.

#### **Property Geology**

The Beaton claims are in the Western Canada Sedimentary Basin with the local bedrock geology composed of Upper Cretaceous Kaskapau and Dunvegan formations and Lower Cretaceous Upper Shale (see Figure 4 for regional geology map). The Kaskapau formation consists of shale, silty shale with minor amounts of sandstone, siltstone, and ironstone. The Dunvegan formation is a fine to medium grain grey sandstone that is evenly bedded and interbedded with grey to dark grey siltstone and carbonaceous shale. Ironstone bands and thin coal seams are also present. The Upper Shale consists of grey shale and a silty shale with minor amounts of sandstone, siltstone, thin bands of ironstone, and scattered concretions of ironstone (see Figure 5 for property geology map).



Figure 3. Tectonic domains in the basement of northwestern Alberta and northeastern British Columbia based on aeromagnetic anomaly data and U-Pb geochronology (Ross, 1990)

## **DIAMANT RESOURCES LTD.**

Basement Tectonics Domains Northeast B.C. and Northwest Alberta.

From Ross (1990)

Figure 3



#### MINERAL OCCURRENCES

The British Columbia MINFILE database indicates nine mineral occurrences on NTS map sheet 94A. They are mainly industrial minerals such as clay in surface deposits and minerals such as gypsum. Bentonite occurrences are known from drill core data in the Fort St. John Group. Bentonite is a clay mineral that typically forms from weathered volcanic rock or ash. These occurrences may indicate a type of volcanic activity occurred in the area during the Cretaceous time period.

#### **PREVIOUS WORK**

Recent assessment reports (Stapleton 1997 a,b; 1998 a,b) outlined the exploration efforts of TUL Petroleums Ltd. (TUL) and partners in the Peace River region of northeastern B.C.. Work in northeastern British Columbia began in 1996 after prospecting along the Beatton River, northeast of Ft. St. John, revealed garnet bearing beach sands downstream from Indian Creek (at UTM 0642990E, 6252060N) (Stapleton, 1998a). The Lucky Jim property was staked surrounding this showing and in the upstream direction. The beach sand samples were treated to separate the heavy mineral fractions and were subsequently examined by microscope and electron microprobe. Diamond indicator minerals, including G-9 garnet, were identified. It was proposed the source was possibly kimberlite and that it lay west of the Beatton River and north of Indian Creek. A widely spaced airborne survey was flown over the target area, and resulted in a magnetic anomaly being identified (Stapleton 1997a), (Gal 2001).

Stapleton (1997a) reported:

"The Canagrad aero magnetic survey was further studied and overlaid on air photos. The magnetic anomaly shows as a topographic depression in a circle of trees on a bench half way between the Peace River Peneplain elevation and the Beatton River shores"

TUL staked a second property (Moose Creek) along the Alces River east of Fort St. John. Here, diamond indicator minerals from gravel and volcanic boulders were found in a gravel pit located along the Alces River (Stapleton, 1997b). The volcanic boulders were identified, petrographically, as altered lamprophyre. Samples from the gravel pit were examined by microscope and electron microprobe. Diamond indicator minerals including G9 garnet and clinopyroxene (Cr-diopside) were identified. An airborne magnetic survey was flown over the area (Stapleton, 1997b).

Regarding the Moose creek Property, Stapleton (1997b) concluded:

1. The Moose Creek Claim encompasses a gravel pit in the SE1/4 17-83-14-W6M that contains volcanically derived clasts.

2. The Tyran Transport - Esau Gravel Pit produced mantle derived garnets that have been classified by Loring Laboratories, according to the Fipke 1989 classification system, as G-9 pyrope - kimberlitic indicators.

3. Moose Creek Claim sediment samples and fines from under the Tyran gravel crusher in the Tyran gravel pit produced clinopyroxenes which plotted in the Diamond Inclusion Field, according to the classification system of Fipke, 1989.

4. An aero magnetic survey of the Moose Creek and neighbouring claims indicate magnetic highs or anomalies and lineaments that are worth further investigation.

5. The Alces River is a deeply incised channel that cuts through the Moose Creek Claim and is mapped on the Geological Survey of Canada Tectonic Map of Canada. It is likely a result of deep basement faulting.

6. The kimberlitic indicator G-9 garnets and the diamond indicator pyroxenes found in the Tyran gravel pit on the edge of the Alces River channel indicate that there is likely a kimberlitic, lamprophyric or lamproitic intrusive in the area because diopsides (CP-2) and chrome diopsides (CP-5) do not survive in the gravel depositional environment for more than a few kilometres (University of Western Australia, Publication No. 8. 1992.)

Another assessment report does not deal with kimberlite exploration, but is interesting nonetheless. Sevensma (1970) mentions an occurrence of limonitic soils and clays, and massive sulphide pebbles (later identified as concretions from Cretaceous mudstones), about a <sup>1</sup>/<sub>2</sub> mile from the east bank of the Doig River. A soil sample with anomalously high amounts of Ag had been collected, which would suggest hydrothermal activity, and possibly volcanism or plutonism. A follow-up soil survey outlined weakly anomalous amounts of Ag that was attributed possibly to a white volcanic ash observed in the area. Sevensma (1970) made a possible correlation of the ash with reports of Cretaceous volcanics cored in an oil exploration well drilled to the northeast near the trace of the Great Slave Lake shear zone.

#### SUMMARY OF WORK PERFORMED AND RESULTS

#### **Heavy Mineral Sampling**

During the summer program of 2002, a total of seven samples, consisting of seven stream sediments, were collected (See Appendix A for Beatton field notes and Sample Location Map).

#### Heavy Mineral Sampling Procedure

The heavy mineral sampling procedure was to collect material from streams. The coarse material consisting of pebbles, stones and cobbles were removed by sieving at or near the sample site and a rough pebble count was taken. The resulting samples, weighing 20 to 25 kilograms, were then shipped to the Saskatchewan Research Council (SRC) of Saskatoon for processing.

Once the samples were received by the SRC they underwent a reduction process. (Figure 6 Kimberlite Indicator Minerals). The reduction process is outlined below:

- The process consisted of sizing the original 25 kg material (1.0 to +0.25 mm)
- The material was first sent to a shaker table
- The heavies were then passed through a High Intensity Magnetic Separator
- The magnetic portion was immersed in a heavy liquid (specific gravity of 3.1)
- Any mineral with a specific gravity greater than 3.1 underwent Frantz Magnetic Separation @ 0.34 Amps the resulting proportions being Frantz Uppers 1 and Frantz Lower 1 (LW1)
- The Frantz Uppers 1 were further processed using Frantz Magnetic Separation @ 0.19 amps, resulting in Frantz Lower 2 (LW2)

Once the samples were reduced to approximately 160 grams in size (see Appendix A Beatton Sample Results) the  $LW1^1$  and  $LW2^2$  fractions were shipped back to Vancouver where the author then examined each of the samples under a binocular microscope and the kimberlitic indicator minerals were isolated. These indicator grains are counted, examined for surface abrasions that may be indicative of transportation distance, and saved for additional testing if warranted.

Anomalous kimberlitic indicator concentrations are classified and these, together with the abrasion characteristics of the indicator minerals found and the local ice-flow direction, are used to trace potential kimberlite sources.

<sup>1</sup> Minerals of interest in this fraction are, Peridotitic Pyrope, Eclogitic Pyrope, Chrome rich Diopside, and Olivine 2 Minerals of interest in this fraction are Picro-ilmenite and Magnesium rich Chromite

### **Heavy Mineral Results**

Seven Samples were collected on the Beatton property. Five out of those seven samples were processed and observed for kimberlitic indicator minerals (Appendix A - Beatton Indicator Results). Of the five samples observed, four yielded kimberlitic indicators (Appendix A - Sample Results Map). Sample 119009 yielded three P-pyropes (or Picro-illmenite) and three Chrome Diopsides, which may be indicative of a proximal or distal source.

#### Kimberlite Indicator Minerals – Till Saskatchewan Research Council Reduction Process



### **RECOMMENDATIONS AND CONCLUSIONS**

The Beatton claims have yielded kimberlitic indicators such as peridotitic pyrope, pirco-ilmenite, chrome diopside, and olivine. The combination of these indicator minerals and their abundances indicate that a kimberlitic source might be proximal to the samples. Based on the above results it is recommended that the next exploration program incorporate the following:

- More stream sediment and glacial till samples be taken on the regional basis to gain insight of possible indicator distribution to determine if the results are indicative of the area or anomalous.
- Take more till and stream samples in the areas of known magnetic highs and undertake ground searches.
- Conduct indicator studies, grain morphology studies, and more detailed sampling to further define the indicator trains and to determine whether the source is present on the claim group.
- Develop a better understanding of the ice direction through direct observation in the field and ground truthing of known glacial deposit maps.

#### **CERTIFICATE OF QUALIFICATIONS – Derrick Strickland**

- I, Derrick Strickland, of 208-1707 Charles Street, Vancouver, British Columbia hereby certify:
  - 1. I am a graduate of Concordia University and hold a B.Sc. degree in Geology (1993).
  - 2. I have been employed in the mineral exploration industry since 1986 and have practiced my profession since graduation.
  - 3. I have worked extensively, in varying capacities, in diamond exploration for seven years.
  - 4. I have experience in mineral identification as it pertains to kimberlite exploration.
  - 5. I have trained numerous mineral pickers to find Kimberlitic indicators in exploration samples.
  - 6. I have worked on numerous kimberlite exploration programs in Quebec, Ontario, Alberta, North West Territories, British Columbia, and Australia.
  - 7. I performed the work as discussed on the Beatton claim Group for Diamant Resources.

DATED at Vancouver, British Columbia, this 12<sup>th</sup> day of November, 2002

Shuft inner

Derrick Strickland B.Sc.

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#### GLOSSARY

Several minerals are useful indicators for kimberlites and, to a certain extent, in the evaluation of the diamond potential of a kimberlite. These minerals survive glacial transport, are far more abundant in kimberlite than diamond, and are visually and chemically distinct. Chrome-pyrope, eclogitic garnet, chrome-diopside, magnesium-illmenite, chrome-spinel, and olivine are the most commonly used kimberlite indicator minerals, although in rare cases, diamond is abundant enough to be its own indicator.

**E-Pyrope** is an Eclogitic Garnet. E-Pyropes are calcium and chrome bearing garnets that are typically yellow in colour.

**P-Pyrope** is a Peridotitic Garnet. P-Pyropes are chrome-rich pyropes that are typical distinctive from other garnets. P-Pyropes have a distinctive purplish colour. This group of pyropes is where Gurneys G9 and G10's occur.

Cr. Diopside is a chrome rich diopside that may be derived from a kimberlite.

**Picroilimenite** is a magnesium-rich ilimenite typically found in kimberlites and represents one of the most important diamond indicator minerals.

**Chromite** is a magnesium-rich chromite and is an important accessory mineral in mantle-derived ultramafic rocks and kimberlite magmas.

**Olivine** is a magnesium-rich olivine. There are numerous types of olivine, from iron to magnesium rich. The one of particular interest is the magnesium-rich olivine, which includes olivines found in peridotitic xenoliths and kimberlite magmas.

**APPENDIX A** 

SAMPLE LOCATION MAP

### SAMPLE DESCRIPTION TABLE

SAMPLE RESULTS MAP

SAMPLE RESULTS TABLE

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# **Beatton Field Data**

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SAMPLE NO.:	DATE:	TYPE:	WEIGHT:	NTS MAP:	NAD83_E	NAD83_N	TOPOGRAPHY1:
119009	07-Jul-02	Stream Sed	25 kg	94A	642997	6253891	Sample taken on lower part of valley.
119010	07-Jul-02	Stream Sed	25 kg	94A	643388	6253403	Sample taken 200m upstream from junction of Beaton River.
119014	09-Jul-02	Stream Sed	25kg	94A	643844	6256033	Westside of Beaton River, upstream of Doig River.
119015	09-Jul-02	Stream Sed	>25 kg	94A	644782	6255559	Taken in river valley, approx 800m deep.
119016	09-Jui-02	Stream Sed	25kg	94A	644241	6253439	Creek draining from SE into Beaton River, upstream from junction with Indian Creek.150m upstream from junction with Beaton River.
119017	0 <del>9</del> -Jul-02	Stream Sed	>25 kg	94A	642800	6252163	Taken in river valley on Beaton River.
119018	09-Jul-02	Stream Sed	25kg	94A	6428 <del>9</del> 8	6252300	Eastside of Beaton River, downstream from junction with Indian Creek.

# **Beatton Field Data**

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SAMPLE NO.:	REMARKS1:	Remarks2:	Remarks3:	CREW:
	Taken at Indian Creek. Sub-ang to rounded pebbles and cobbles, minor boulders. 50%	Sample south end of magnetic anomaly. Definite clay rich till on	V. low water level @ time of sampling. Hole depth 25	
119009	sst, 20% shale, 20%qtzit, 5% granitoid.	slope above creek. 10m wide at high water.	cm. No reaction to HCl. Poplar, spruce, with wild rose grass.	R.R, A.M., O.P. D.S.
119010	10-12m high water width. 35-40 cm sample depth. 60% sst, 20% qtzite, 25%shale, sub- ang to surrounded cobbles-pebbles.	No response to HCI. Creek is at low water level.	Cottonwood, poplar,spruce, and alder.	R.R, A.M., O.P. D.S.
119014	Sample hole 45cm in depth. Sandstone and shale o/c in river banks.75m @ high water.40%shale,30%sandstone,20%quartzit e10% granitoid clasts - subrounded to rounded.	Clay rich till above shale, no reaction to HCI. Vegetation at sample location is pine,alder,birch,willow.		0.P. R.R.
119015	subrounded to subangular cobbles to pebbles, minor boulders. SST 50%, shale20%, metamorphic, 15%, granitoid, minor conglomerates.	Spruce and poplar trees. Hole depth 35 cm valley walls are SST and shale. 200m cliff of shale across from sample site.	Till slumpage. No reaction to HCI.	D.S. R.R.
119016	Sample hole 30cm in depth. Creek 20-30m wide at high water.60% shale,20% sandstone,15% quartzite,5% granitoid, sub- angular to sub-rounded clasts. Some iron stained shale.	Sandy till above shale o/c, no reaction to HCI. Vegetation at creek is pine, alder, poplar.		A.M. , O.P
119017	Sub-rounded to sub-angular cobbles to pebbles. SST 50%, shale 30%, granitoid 15% meta 15%. Sample depth 40 cm.	Spruce and grassland. No reaction to HCI. Sample taken opposite of SST cliff.	Taken on gravel bar.	DS, AM
119018	Sample hole 30cm in depth. Creek 75m wide at high water.40% shale,40% sandstone,15% quartzite,5% granitoid ,sub- angular to sub-rounded clasts. Some red brick sandstone.	Sandy till ,no reaction to HCl. Vegetation at creek is cottonwood, poplar, alder and pine.		DS, RP



# **Beatton Indicator Resluts**

SAMPLE NO.:	Sample Wt. Kg.*	Observed Wt. Grams**	P Pyrope	E Pyrope	Chromite	Picro- ilmenite	Olivine	Cr.Diopside	Total
119009	19.60	241.11	3			1		3	7
119010	17.15	112.68							
119014	21.10	364.09			1				1
119015									
119016	23.00	209.22			3			1	4
119017									
119018	20.65	263.48			1	2	1	2	6

\* Sample weight is in Kilograms \*\* Observed weight in Grams

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## **APPENDIX B**

## STATEMENT OF EXPENDITURES

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## **RIO MINERALS LIMITED MINERAL EXPLORATION AND DEVELOPMENT**

209-475 Howe Street Vancouver, BC V6C 2B3 email: info@riominerals.com Phone: 604-671-2245 Fax: 604-689-3609

July 22, 2002

## BEATTON RIVER PROJECT Statement of Costs

Item	Description	<b>Billing Method</b>	Cost per	Days	Total
Wages	Geologist	Per day	\$ 450.00	03 days	\$ 1350.00
Wages	Geochemistry- Stream sediment sampling - 2 men	Per day	\$ 450.00	03 days	\$ 1350.00
Truck Rental	2 – 4x4 trucks	Per day	\$ 65.00	06 days	\$ 390.00
Boat Rental	Jet boat used for stream sediments.	Per day	\$ 500.00	01 day	\$ 500.00
Food/Accom.	4 men	Per day	\$ 90.00	12 mandays	\$ 1080.00
Supplies/rentals	Flagging, bags, thread, radios.	Per day	\$ 35.00	03 days	\$ 105.00
Analytical	7 - Indicator samples	Per sample	\$ 742.05	_	\$ 5194.35
Report	Geology Report	-	\$2895.56	-	\$ 2895.56
TOTAL	-	-		_	\$12864.91
IUIAL		-	-	-	<b>⊅1∠804</b> .