MAR 19980003: OBED

Received date: Mar 13, 1998

Public release date: Mar 14, 1999

NTS 83F/6, 83F/11

EXPLORATION - 1997

OBED PROPERTY, ALBERTA
(CLAIM NUMBERS 9395120001 and 9395120002)

(APEX Project 97210)

prepared for

Sharata Resources Ltd.

APEX Geoscience Ltd.

February, 1998

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EXPLORATION - 1997

OBED PROPERTY, ALBERTA (CLAIM NUMBERS 9395120001 and 9395120002)

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EXPLORATION - 1997

OBED PROPERTY, ALBERTA (CLAIM NUMBERS 9395120001 and 9395120002)

SUMMARY

Sharata Resources Limited's (Sharata) 'Obed' mineral property (claim numbers 939512001 and 939512002) is about 260 km west of Edmonton, and about 20 km east of the town of Hinton, Alberta. During the1997 exploration program, APEX Geoscience Ltd. collected a total of 35 heavy mineral stream sediment samples, 38 stream silt samples, 11 heavy mineral till samples and 5 rock grab samples from within the Obed property. The stream silt samples contain up to: 132 parts per billion (ppb) gold,1.0 parts per million (ppm) cadmium, 3,123 ppm manganese, 13 ppm copper, 2.0 ppm silver and 563 ppm strontium. Rock grab samples from the Obed property contain up to 1.0 gram silver per tonne, 398 ppm lead, 603 ppm zinc, 6.3 ppm cadmium and 154 ppm chromium.

The 35 heavy mineral stream sediment and the 11 heavy mineral till samples were processed for their 'diamond indicator minerals, (ie. specifically pyrope and eclogite garnets, diopsides, purple spinels, chromites and ilmenite), and also were superpanned in order to identify the number of placer gold grains in each sample. Electron microprobe analysis of selected diamond indicator mineral grains identified one or more anomalous chromite grains from many of the 35 heavy mineral stream sediment samples and 11 till samples. That is, several chromites contain very high magnesium and chrome contents. In some cases chromite grains contain up to 61.88 weight per cent (wt%) Cr_2O_3, with 22 grains having anomalous chemistries, including 4 grains with chemistries that are a definite indicator of a peridotite mantle source and 2 other grains with chemistries that are a definite indicator of a kimberlite or lamproite diatreme source. As well, 9 of the 35 heavy mineral stream sediment samples and 3 of the 11 till samples produced silicate grains with a definitely anomalous diamond indicator chemistry. These silicate grains include: (a) several eclogitic garnet grains from several sample sites that are definite indicators of diamondiferous eclogitic mantle, (b) three chrome-rich pyropic garnet grains that are possible indicators of diamondiferous peridotitic mantle, (c) a single grain of chrome-rich diopside that is a definite indicator of diamondiferous peridotitic mantle, and (d) several grains of high titanium and high chromium grossular garnets which may be indicative of a mantle source. In short, the diamond indicator results show that several grains from the Obed property samples have anomalous diamond indicator mineral chemistry indicative of possible deep-seated mantle origin, and also indicate the possibility that kimberlite or lamproite diatremes may exist in subcrop. Thus there is a reasonable possibility that an intrusive kimberlitic or lamproitic body with diamondiferous mantle xenoliths may exist within or in close proximity to Sharata's Obed property.

With respect to the superpanned results for gold grains in the heavy mineral stream sediment samples and till samples, the 35 heavy mineral sediment samples produced a total of 258 gold grains, with a maximum number of 26 gold grains occurring in a single stream sediment sample. The size of the individual gold grains in the stream sediment samples ranges from 20 to 1,000 μm in longest dimension. For the 11 till samples, a total of 66 gold grains were identified, with up to 15 gold grains occurring in a single till sample. The size of the individual gold grains in the till samples ranges from 20 to 300 μm in longest dimension. In general, the anomalous gold grains in the superpanned stream sediment and till samples, and the anomalous gold content of the stream silt samples, tend to cluster near the central and easternmost parts of the Obed property. Therefore, the existence of anomalous gold-bearing samples within the Obed property may indicate that a gold-bearing zone in bedrock exists within or in proximity to the Obed property.

A three phase follow-up exploration program is recommended to evaluate the potential for the presence of diamondiferous kimberlites or related intrusions and gold bearing sources within the Obed property of Sharata Resource Ltd. **Phase 1** should comprise a pre-field office compilation and interpretation of LandSat satellite imagery and aerial photographs to search for 'circular' features or possible fault-related lineaments that may have been important to either diatreme emplacement or deposition of gold-bearing zones. As well, the amount, cost and usefulness of any prior aeromagnetic, seismic or drilling data should be investigated. **Phase 2** should consist of conducting a detailed airborne geophysical survey of the Obed property. This survey should preferably be helicopter-supported, and should capture magnetic, very low frequency electromagnetic (VLF-EM) and, if possible, multi-channel, multi-frequency electromagnetic data, be flown at a mean terrain clearance of about 30 m and with a line-spacing of about 100 m. If possible, the recommended Phase 1 and Phase 2 work should be completed during spring 1998, or at least prior to the initiation of Phase 3. **Phase 3** should comprise fieldwork to follow-up the positive results of the 1997 field program, and also any positive results obtained from the recommended Phase 1 office study and Phase 2 airborne geophysical survey. The Phase 3 fieldwork should comprise detailed follow-up stream silt and heavy mineral stream sediment sampling at intervals of about 500 m along selected anomalous creeks identified by the 1997 exploration, and systematic till sampling throughout the Obed property. Assuming the results of the Phases 1 to 3 work are positive, then a Phase 4 drill testing of selected targets will be needed.

The estimated costs for the recommended phased office and field work are: **Phase 1**, about $10,000; **Phase 2**, about $75 000 for a helicopter-supported airborne geophysical survey, or about $25,000 for a fixed-wing airborne geological survey; and for the **Phase 3** follow-up fieldwork, including reporting thereon, about $90,000. The recommended Phase 3 fieldwork will require a four man geological crew for approximately four field weeks, with the crew using two four-wheel drive trucks and four all-terrain-vehicles for daily crew deployment. In short, the total estimated budget for the recommended **Phases 1 to 3** office and field programs at the Obed property is $175,000 if the Phase 2 airborne geophysical survey is performed by helicopter, versus about $125,000 if the airborne geophysical survey is performed by fixed-wing, which is lower cost, but technically less effective.

INTRODUCTION

Location, Physiography and Climate

The 'Obed property' (claim numbers 939512001 and 939512002) of Sharata Resources Limited (Sharata) is in west-central Alberta, approximately 260 km west of the province's capital, Edmonton, and 20 km east of the town of Hinton (Figure 1). The property is geographically centered at about latitude 53°30'N, longitude 117°15'W, and is encompassed by 1:50,000 National Topographic System map areas 83F/6 and 83F/11.

The Obed property lies at the eastern margin of the Rocky Mountain Foothills of the Canadian Cordillera and is drained by numerous smaller creeks which flow either west or north into the Athabasca River, or east into the McLeod River. Topographic relief within the property ranges from about 975 m above sea level (asl) (3,200 feet) along the Athabasca River at the northwest corner of the property, to a maximum elevation of about 1,340 m asl (4,400 feet) at the Obed Mountain summit which is just north of the central portion of the Obed property.

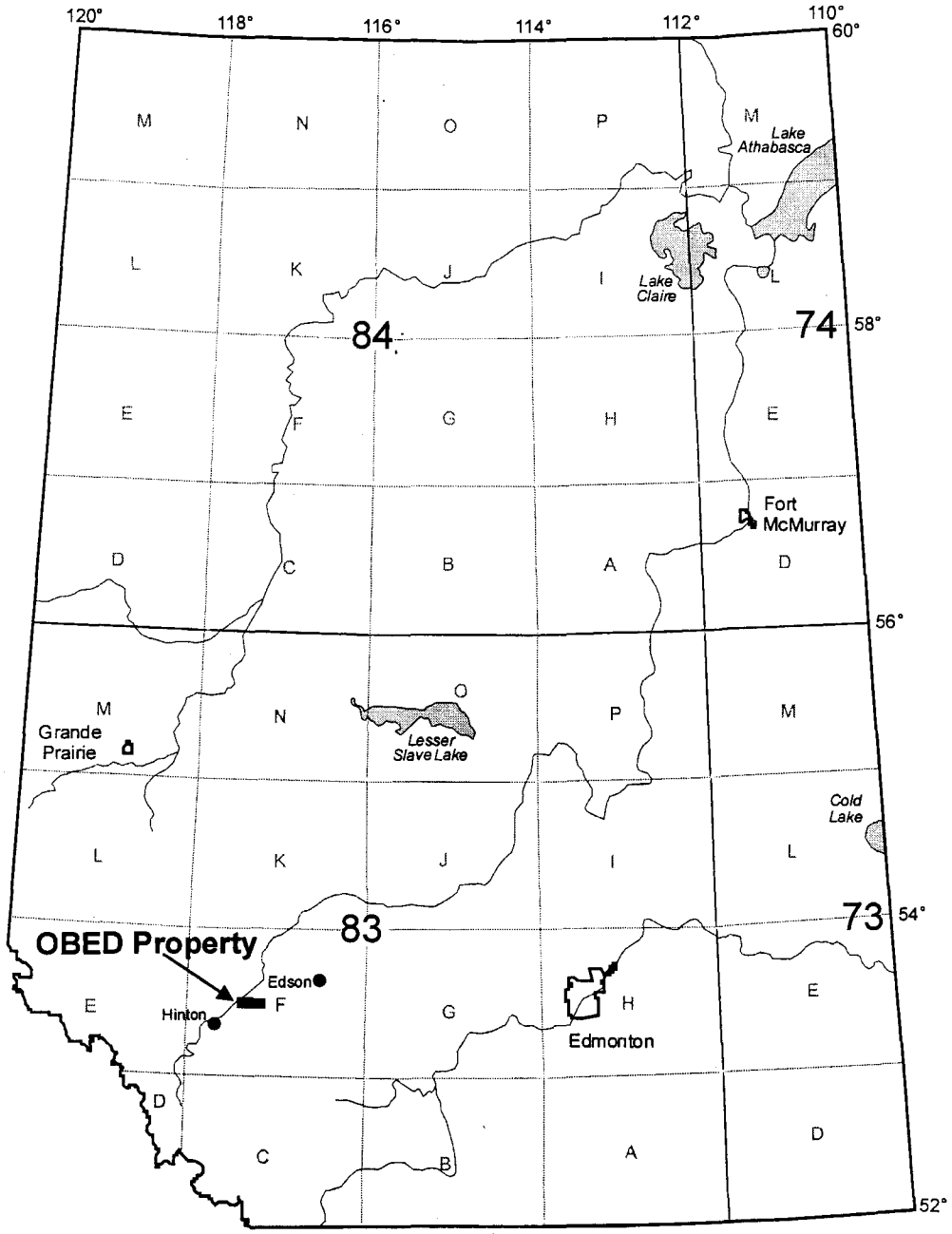
Summers in west-central Alberta are moderate, with temperatures ranging up to 25°+C in July, whereas winters are typically cold, with temperatures at times reaching -40°C. Snow typically can fall as early as September, but in most years comes in late October or November, with abundant snow cover that can last into late April or early May.

Access and Infrastructure

Access to and within the Obed property is provided by a well-maintained network of: (a) primary, paved all-weather roads; (b) secondary, loose surface (gravel) roads; and (c) numerous seismic cut lines, which diagonally cross most of the Obed property at line spacings of 4 km (trending northeasterly) and 2.5 to 5.5 km (trending northwesterly). The Yellowhead Highway (Highway 16 West) runs southwesterly across the northwest corner of the property enroute to Hinton (Figure 2). Within the Obed property there are three gravel, dry weather roads that provide access to the central and eastern portions of the property. Two of these roads are accessible from the Yellowhead Highway just west of the Hargwen railway junction. The third road is accessible from Highway 47 just southwest of the Embarrass railway junction. An old cart trail parallels the Yellowhead Highway and the Canadian National Railway (CNR) lines and could be used for access in a few places. Four-wheel all-terrain-vehicles ('Quads') were used to provide access to more remote parts of the property along the cut seismic lines.

Accommodation, gas and food are available from the town of Hinton, about 20 km southwest of the property, or from Edson, about 55 km northeast of the property; both of which are situated along the Yellowhead Highway. Accommodation, but not meals, is also available at the Hunt Creek Motel, which is on the Yellowhead Highway about 1 kilometre west of the Obed property.

4.



Map divisions expressed in the National Topographic System Grid

SHARATA RESOURCES LIMITED
OBED PROPERTY
LOCATION
Scale 0 100 200 Km
APEX Geoscience Ltd.
EDMONTON, ALBERTA — JANUARY, 1998

Figure 1

Previous Exploration and Geoscientific Studies

In the Hinton and Obed Mountain region, industrial minerals, such as sand, gravel, clay, marl, limestone, gypsum and sulphur have been locally exploited by local municipalities, individuals and companies.

Placer gold has been panned from many of the major rivers in Alberta since the turn of the century, including selected portions of the Peace, Smoky, Little Smoky, Athabasca and North Saskatchewan rivers. As well, some of the tributary rivers, such as the McLeod River, in the vicinity of the Obed property are known to contain placer gold. (Figure 2) In most cases, the sources of the gold is unknown, but generally is believed to be upstream from localities nearer to the Rocky Mountains or be derived from earlier paleoplacers which exist in pre-glacial gravels. Near Edson and Hinton, prior exploration for placer gold has been focused along the McLeod River and in the High Divide Ridge area, which is southwest of the Obed property. For example, from 1989 to 1991 Fox Geological Consultants Ltd. conducted gold exploration in the High Divide Ridge area on behalf of Placer Dome Inc.; positive gold results from this work included: (a) 14 soil samples that assay up to 78 parts per billion (ppb) gold, (b) 30 stream silt samples that assay up to 1,510 parts per billion (ppb) gold, and (c) 6 large ('bulk') stream sediment samples which were sent to the Saskatchewan Research Council (SRC) and that returned results of up to 11 gold grains per sample (Fox, 1991).

With respect to diamonds in Alberta, in 1958 an independent prospector, Mr. Einar Opdahl, is reported to have found the first diamond in Alberta in fluvial gravels near Evansburg, Alberta, which is near, but east of Edson, Alberta (Edmonton Journal, 1992a). Subsequently, several areas in northern and southern Alberta with anomalous diamond indicator minerals, including in a few places, microdiamonds, have been reported as a result of either regional surficial sediments surveys conducted by government or exploration work conducted by companies (summarized in Dufresne *et al.*, 1996; and Fenton and Pawlowicz, 1997). As well, kimberlitic or ultramafic diatremes of possible mantle origin have been reported. These include the Mountain Lake kimberlite near Peace River, Alberta, which was discovered in the early 1990's by Monopros Ltd. (Wood and Williams, 1994), and at least 17 kimberlitic diatremes in the Buffalo Head Hills region of north-central Alberta. The Buffalo Head Hills kimberlites were discovered during 1997 by the 'Ashton joint venture (Ashton Mining of Canada Ltd., Pure Gold Resources Ltd. and Alberta Energy Company Ltd.) who have recently reported that at least 13 of the 17 kimberlite pipes which have been discovered to date on their Buffalo Head Hills property, are diamondiferous (Canadian Corporate News, 1997; Edmonton Journal, 1997a,c).

Closer to Sharata's Obed property, at least 23 diamond were discovered in 1995 in stream sediment in a tributary to the Wildhay River, about 65 km northerly of Hinton (Dufresne *et al.*, 1996; Balzer and Olson, 1977). The diamonds occur on the 'ARich property' which was initially staked by New Claymore Resources Ltd., Montello Resources and Troymin Resources, and the diamondiferous locale was reportedly discovered during follow-up stream sediment sampling for diamond indicator minerals of several high priority geophysical magnetic anomaly targets (Gilmour, 1995; Northern Miner, 1996). Kennecott

Canada Explorations, in a joint venture with the property owners, is reported to have recently finished follow-up ground magnetic surveying and the initial drilling of eight targets on the joint venture properties north of Hinton (Northern Miner, 1997). Results from this drilling are reported to have been negative, but Kennecott is expected to continue with its exploration and drilling program on another 13 targets later this month (Edmonton Journal, 1997b). Somewhat earlier, between 1993 and 1995, southerly of Hinton, Cameco Corp. (Drever and Matthews, 1995) and Western Diamex Ltd. (Bryant and Cantin, 1993) are reported to have conducted extensive diamond indicator sampling programs on their respective properties with at least some positive results (Figure 3). More recently, RIO Nevada Mine Corp. has recently acquired more permits around their Hinton-Nordegg properties after they discovered micro-diamonds during initial prospecting and sampling (Alberta Stock Exchange, 1997). The company is currently developing a follow-up program of airborne geophysics and till sampling to help delineate possible drill targets for this year. Information about prior diamond exploration in western and northwestern Alberta are contained in the report by Freeman (1994), Hawkins (1995), Morton *et. al.* (1993), and Balzer and Olson (1997).

Mineral Claim Status

The location, size and current expiry dates of the two mineral permits ('claims') owned by Sharata Resources Limited.,are summarized in Table I.

TABLE I

OBED PROPERTY MINERAL CLAIM TABULATION

Claim Number	Location (Tw-Rg-Sc)	Hectares	Recorded	Expiry Date[1]
9395120001	5-22-052; 1-18	4,608	Dec. 15, 1995	Dec. 15, 1997
9395120002	5-23-052; 1-19; 20SE; 21-24	5,952	Dec. 15,1995	Dec. 15, 1997
Totals		**10,560**		

[1]Current expiry date, prior to filing of any assessment credits or payments of any work deposits in lieu, plus an additional 90 days as permitted by the Alberta Mining Recorder (Mr. B. Hudson, Alberta Energy, pers. communication, Dec. 1997)

Based on the hectarage for the two claims in Table I, the assessment expenditures required to December 15, 1997 are $5.00 per hectare, or a total of $52,800.00, and for the next two year period to December15, 1999 are $10.00 per hectare, or a total of $105,600.00 for the second two year assessment period.

1997 Exploration

A three man crew, consisting of Dr. R. A. Olson (senior supervision), Mr. R. Ryziuk (prospector - field party leader) and Mr. L. Chin (field geologist) from APEX Geoscience Ltd. (APEX), drove to the property on June 2, 1997 (Appendix I). The following three days were spent evaluating access routes within the property, geologically examining selected outcrops, and establishing the procedures for stream sediment, till and rock grab sampling. Dr. Olson demobilized from the property on June 5, and Mr. Ryziuk and Mr. Chin demobilized to Edmonton on June 20. The crew was accommodated during the fieldwork at the Hunt Creek Motel which is just west of the Obed property.

From June 6 until June 20, Ryziuk and Chin continued sampling, prospecting and reconnaissance geological mapping. Daily crew deployment was by four-wheel drive quads or by foot. A total of 35 heavy mineral stream sediment samples, 38 stream silt samples, 11 heavy mineral till samples and 5 rock grab samples, were collected from within the Obed property (Figure 4). Approximately 120 km of cut seismic line were prospected using the Quads for crew deployment, and about 30 km of road were driven by truck. These totals represent 100 per cent (%) of the existing roads within the property, and about 90+% of the readily accessible seismic cut lines.

The Obed property was systematically prospected along road cuts, cut lines and drainages. In general, outcrop is scarce and, where present, mainly occur in road cuts or along cut lines, riverbanks and steep drainages. A total of 46 outcrops were discovered in or near the Obed property; all were prospected and geologically examined; rock grab samples were collected from five outcrops.

A seismic survey for Amoco Canada Petroleum Company Ltd. (AMOCO) was being conducted within parts of the Obed property at the same time as the APEX field crew were working. The APEX field crew benefitted from the improvements that had been made by AMOCO to some of the seismic cut lines, which included cutting of dead falls and the building of bridges over creeks. As well, in the western portion of the Obed property, AMOCO were drilling a series of percussion holes about 20 m (60 feet) deep approximately every 160 m (1/10 of a mile) along the northwest trending cut seismic lines for seismic charges. Drill cuttings for 232 of these holes, in 145 drilling areas were geologically logged by the APEX crew and classified into major lithologies.

REGIONAL GEOLOGY

The Obed property is near the western edge of the Western Canadian Sedimentary Basin (WCSB), a little easterly of the believed easternmost margins of the Rocky Mountain Foothills belt which exists between the Rocky Mountain Front Ranges of the Cordillera and the WCSB (Figure 5). Other regional structures in the vicinity include: (a) the northwesterly

trending axis of the Western Alberta Arch (WAA) which passes near Hinton, (b) the northwesterly trending axis of the Alberta Syncline which exists to the east, and (c) and the northeasterly trending extension of the Snowbird Tectonic Zone which lies to the north of Hinton.

The stratigraphy of the Mesozoic and Cenozoic strata in the Hinton region is summarized in Table II. The existing government geological mapping for the Hinton region indicates that the Obed property is underlain only by sedimentary rocks of early Tertiary (Paleocene) Paskapoo Formation (Price *et al.*, 1973). However, the following text summarizes the geology from the Precambrian Basement to the Tertiary.

Precambrian Basement

The Precambrian Basement exists at an approximate depth of about 5 km beneath the current topographic surface in the Hinton region (NTS 83F) and is comprised of two distinct magnetic terranes: the Chinchaga Terrane of lower magnetic relief to the north, and the more magnetically diverse Wabamum Terrane to the south. The age of these two terranes is inferred by Ross *et al.* (1991, 1994) to be mainly Proterozoic (2.4 to 2.0 Ga, but some others (e.g., Burwash *et al.*, 1994), have suggested there is a significant Archean component.

The Chinchaga Terrane underlies the northern third of the map area, and is interpreted to be subducted oceanic lithosphere that was accreted to the North American continent between 2.19 and 2.09 billion years before present (Ross *et al.*, 1991). The Wabamun Terrane is interpreted to be a magmatic belt about 2.32 billion years old which has largely escaped deformation (Villeneuve *et al.*, 1993). The boundary between these two terranes is believed to be a splay of the Snowbird Tectonic Zone, a major cratonic lineament that, further to the northeast, divides the Rae and Hearne Structural Subprovinces of the Churchill Province of the Precambrian Shield.

The 1250,000 scale regional aeromagnetic coverage for the Edson map area (Geological Survey of Canada, 1996), shows there are numerous magnetic anomalies throughout the Hinton region, including a positive magnetic high which is centered approximately within the Obed property. The geological reason for this aeromagnetic high is uncertain, but it is probably related to a deep-seated feature in the underlying Wabamum Terrane in the Precambrian Basement.

TABLE II

STRATIGRAPHY OF THE HINTON AREA

Era	Period	Age	Group	Formation	Member	Thickness
Cenozoic	Quaternary			Glacial Drfit		
	Tertiary	2 to 74.5 Ma	Saunders	Paskapoo		1,500 m
				Upper Coalspur		600 m
Mesozoic	Cretaceous			Lower Coalspur (Entrance Conglomerate at base)		(12 m)
				Brazeau		1,200 m
		74.5 to 87 Ma	Alberta	Wapiabi	Nomad	600 m
					Chungo	
					Hanson	
					Thistle	
					Dowling	
					Marshybank	
					Muskiki	
		87 to 89 Ma		Cardium		80 m
		89 to 96 Ma		Blackstone		500 m
		96 to 106Ma	Luscar	Gates	Mountain Park	400 m
					Grande Cache	
					Torrens	
				Moosebar		75 m
				Gladstone		125 m
				Cadomin		10 m
				Nikanassin		
	Jurassic			Fernie		

Paleozoic to Cenozoic Strata

The Precambrian Basement in the Hinton region is overlain by a sequence of carbonate and clastic rocks, up to 5,000 m thick, that range in age from Middle Cambrian to Tertiary (Wright, 1984). However, the bedrock within and immediately adjacent to the Obed property is reported to be underlain predominantly, if not entirely, by Paleocene Paskapoo Formation (Figure 5). To the southwest, within the Foothills, various Mesozoic strata exist.

Farthest southwest is the Jurassic Fernie formation, which is dominated by marine shale. This rock unit is overlain latest Jurassic to early Cretaceous Nikanassin Formation, which consists of marine and non-marine sandstone and shale.

The other Mesozoic strata present within the Edson map area comprise, from base to top, the Luscar Group, Alberta Group and the lower part of the Saunders Group (Table II). The Luscar Group was deposited during the Aptian to Albian (about 119 to 96 Ma), unconformably overlies the Nikanassin Formation, is about 600 m thick, is stratigraphically equivalent to the Mannville Group in central and northeastern Alberta, and is composed of both marine and non-marine sediment. From base to top, the Luscar Group consists of four formations: Cadomin, Gladstone, Moosebear and Gates.

Overlying the Luscar Group is the middle to Late Cretaceous Alberta Group (or stratigraphically equivalent Smoky Group), which is composed of the Blackstone, Cardium and Wapiabi Formations. The Blackstone Formation was deposited between about 96 to 89 Ma, is about 500 m thick, and consists primarily of dark marine shale and siltstone, with lesser amounts of sandstone and, in places, a few bentonite beds. Cardium Formation was deposited between about 89 to 87 Ma, is about 80 m thick, and consists of marine sandstone, siltstone and shale. The sandstones are typically more resistant with hummocky crossbeds and trace fossils. Lastly, the Wapiabi Formation was deposited about 87 to 74.5 Ma, is about 600 m thick, and is composed of dark grey marine shale and siltstone, and red-brown weathering sandstone with minor amounts of siltstone.

The Late Cretaceous to Tertiary (about 74.5 to 58 Ma) Saunders Group is comprised of the Brazeau, Coalspur and Paskapoo Formations, conformably overlies the Luscar Group and is predominantly of continental origin. The 1,200 m thick Brazeau Formation is composed almost solely of sandstone. The Brazeau Formation is overlain by the latest Cretaceous to Paleocene Lower and Upper Coalspur Formation which comprises an interbedded succession of sandstone, mudstone and thick coal seams that total about 600 m thick. In the Foothills, the Entrance Conglomerate exists at the base of the Lower Coalspur. The uppermost rock unit exposed in the Hinton region is Paleocene Paskapoo Formation, which consists of cycles of thick, tabular, buff-coloured sandstone layers interbedded with siltstone and mudstone. The sandstone beds range from a few metres thick, up to stacked successions greater than 60 m thick. Near the Rocky Mountain Foothills, the Paskapoo Formation can exceed 800 m in total thickness.

Lastly, overlying these bedrock units in the Hinton region there are extensive, thin to locally thick, surficial deposits of late Tertiary, Quaternary and Recent age. The surficial deposits include till, glaciofluvial, glaciolacustrine and aeolian sediments, alluvium, colluvium and organics (Roed, 1970, 1975). The oldest deposits are preglacial (late Tertiary) and are restricted primarily to old paleochannels and valleys, such as the one that underlies the present day Athabasca River. The oldest deposits comprise unconsolidated gravels up to tens of metres thick, with up to boulder-sized clasts. Lithologically, the gravels contain well-rounded clasts of Cordilleran origin, such as metaquartzite, carbonate and chert (Roed, 1975).

Pleistocene till of Wisconsinan age are widespread over the entire Hinton region. Till thickness may locally exceed 50 m, particularly near the Athabasca River, where drift thickness has been estimated to range from 50 m to 150 m (Fenton *et al.*, 1994). Seven tills have been identified in the Hinton to Edson region, two of which exist within the Obed property (Figure 6). These two tills are the Obed and the Marlboro, both of which are Cordilleran in origin, hence glacial transport generally was from the Rocky Mountain valleys north-easterly onto the Interior Plains.

GEOLOGY OF THE OBED PROPERTY

Surficial Geology

During May 1997, Ms. S. Balzer, a Quaternary geologist in the employ of APEX, performed an interpretation of the surficial geology within the Obed property using 1: 40 000 scale aerial photographs. The results of this interpretation are shown in Figure 6. Balzer postulated that the Obed property is underlain by the Marlboro and Obed Tills, by glaciofluvial and alluvial sediments, and by Recent soils and, in a few places, by peaty bogs.

The Marlboro Till is the older of the two tills, and is moderately stony with a silty, sandy-clay matrix and moderate carbonate content. The clasts are composed mainly of quartzite, limestone and sandstone, with minor granite which are possible Canadian Shield origin. Numerous flutes and drumlins in the area underlain by the Marlboro Till indicate ice movement was from the west to the east, then gradually curves towards the southeast, east of the Obed property.

The overlying Obed Till has associated extensive peat deposits, particularly in lower lying regions, is very stony and has a sandy-clay matrix with a high carbonate content. The clasts in the Obed Till are composed primarily of quartzite, limestone and sandstone. The Obed Till flanks the Athabasca River and contains glacial erratics from the Athabasca Erratics Train (Roed *et al.*, 1967). Drumlins, flutes and grooves in the Obed Till indicate that ice movement was from the southwest to the northeast, following the Athabasca River

valley to just north of the community of Obed, where ice movement abruptly changed course to a more southeasterly direction.

Glaciofluvial deposits, such as kames, kame moraines, eskers, meltwater channel deposits and outwash, are restricted to regions underlain by the Obed Till and, in particular, to the area adjacent to the Athabasca River. Recent alluvial river sediments exist along and near major drainages, such as the Athabasca and McLeod Rivers, and minor stream tributaries. Finally, poorly developed soils and, in places, peat bogs mantle the older surficial sediments.

Bedrock Geology

The Paskapoo Formation bedrock lithologies that underlie the Obed property are not known with certainty due to the extensive mantling by surficial sediments. In general, bedrock exposure is less than 1 areal percent of the property. Where exposed, the bedrock is predominantly sandstone, with subordinate lithologies (in decreasing order of abundance) including: calcareous siltstone, limestone, coal and conglomerate. The bedrock geology within the Obed property is shown on Figure 7. On this figure, the bedrock outcrops are supplement by APEX's geological logging of the percussion chips from the AMOCO drilling which existed along selected seismic cut lines.

The Paskapoo Formation sandstones which exist in outcrop within the Obed property, generally comprise pale grey-brown weathering, medium grained, well sorted, calcareously cemented, moderate to well rounded grains, with a bulk composition of lithic arenite to quartz arenite. The sandstones are primarily massive bedded or planar tabular crossbedded, but along the road cut of Highway 16 West, some other prominent sedimentary structures include trough crossbedding, foreset bedding and graded bedding. Other features present in the sandstones include large (up to 2 m) siliceously cemented concretions, rusty weathering oxidized horizons and, in a few places, channel-lag conglomerate deposits. Little alteration, other than local silicification, is present.

The siltstones are predominantly calcareous and massive, with occasional planar tabular bedding, and range in colour from pale yellowish-brown to dark black-brown depending upon the organic content. Conglomerate occurs in only a few locations within the Obed property. Coal seams were discovered at four sites (Figure 7), but it is doubtful if the coal seams' thickness ever exceeds 0.5 m; the lateral extent of these seams is currently unknown. The limestones in the Obed property are not exposed at surface, but were identified in some of the cuttings from the percussion drilling (Figure 7). These limestones are probably of freshwater origin and are laterally extensive in the southwest part of the Obed property.

EXPLORATION RESULTS

A detailed description of the methodology used in the preparation and analyzing of the stream silt, rock grab, heavy mineral stream sediment and till samples, is given in Appendix II. Appendices III to XI provide further information and data about the 1997 exploration samples and analytical results. Specifically: (a) Appendix III provides a summary of the location and descriptive characteristics for each of the samples taken during 1997 exploration; (b) Appendix IV comprises copies of the APEX proprietary sample cards for each sample; (c) Appendix V comprises the Geochemical Lab Reports that list the assay data for gold and 34 other elements; (d) Appendices VI to VIII are tables which summarize the diamond indicator and gold grain counts for each heavy mineral stream sediment and till sample, and the electron microprobe analytical data for the diamond indicator mineral grains; and (e) the various selected X-Y scatter plots and ternary plot in Appendices X and XI present chemical composition data from Appendices VII and VIII in comparison to the 'kimberlitic/lamproitic' or 'diamond inclusion fields' of eclogitic and peridotitic xenoliths which have been defined by data from diamond producing regions of southern Africa, Australia and elsewhere in the World. Finally, Appendices II and XII provide a summary of the methodology used to interpret the oxide and silicate diamond indicator mineral grain chemistries.

Stream Silt Samples

Stream silt samples from the Obed property contain up to 132 parts per billion (ppb) gold (Au), with four samples (7BRA020, 7BRA028, 7BRA029 and 7BRA033) containing 6 ppb Au or greater (Figure 8; Table III). The other 32 silt samples all contain 5 ppb Au or less. As well, some other stream silt samples contain up to 1.0 parts per million (ppm) cadmium (sample 7BRA003), 3,123 ppm manganese (sample 7BRA011), 13 ppm copper (sample 7BRA013), 2.0 ppm silver and 563 ppm strontium (sample 7BRA023). In total, 4 of the 38 stream silt samples which were submitted for analysis, are considered anomalous, while 4 others are considered possibly anomalous.

As result of the anomalous gold content in samples 7BRA020, 7BRA028, 7BRA029 and 7BRA033, APEX requested a subsequent re-assay of the pulp for each sample from Bondar Clegg. The results of this second set of fire assay analyses were received on July 16, 1997 and are tabulated in Table III under "Replicates". Although the replicate results are much lower than the initial assays, three of the four samples produced an assay greater than the background of < 5ppb Au. Sample 7BRA029 however, now assays less than 5 ppb Au. None the less, the gold content of these four samples is still deemed to be anomalous or possible anomalous, and the variation in the assays may be due to 'nugget effect' in each sample.

TABLE III

STREAM SILT SAMPLE GEOCHEMICAL HIGHLIGHTS

Sample Identifier	Anomalous gold results (parts per billion)*		Other possibly anomalous elements**
	Initial	Replicates	
7BRA003	< 5 ppb	< 5 ppb	**1.0 ppm Cd**
7BRA011	< 5 ppb	< 5 ppb	**3,123 ppm Mn**
7BRA013	< 5 ppb	< 5 ppb	**13ppm Cu**
7BRA020	**6 ppb Au**	**6 ppb Au**	None
7BRA023	< 5 ppb	< 5 ppb	**2.0 ppm Ag, 563 ppm Sr**
7BRA028	**49 ppb Au**	**12 ppb Au**	None
7BRA029	**132 ppb Au**	< 5 ppb	None
7BRA033	**88 ppb Au**	**6 ppb Au**	None

* Values greater than 5 ppb Au in stream silt sediment are considered to be anomalous.

** Based on APEX's experience with similar silt samples in Alberta.

< denotes "less than"

Rock Grab Samples

Rock grab samples from the Obed property contain up to 1.0 gram silver per ton (g Ag/t), 398 ppm lead, 603 ppm zinc, 6.3 ppm cadmium and 154 ppm chromium (Figure 8; Table IV). In total, two of the five rock samples which were submitted for analysis are considered to be possibly anomalous (samples 7BRP002 and 7BRP004).

TABLE IV

ROCK GRAB SAMPLE GEOCHEMICAL HIGHLIGHTS

Sample Identifier	Possible anomalous elements
7BRP002	**398 ppm Pb, 603 ppm Zn, 6.3 ppm Cd, 154 ppm Cr**
7BRP004	**1.0 ppm Ag**

* Based on APEX's experience with similar rock samples in Alberta

In addition to the five rock samples which were collected for geochemical analysis, 24 specimens were collected from selected outcrops for reference purposes. These 24 specimens currently are stored at the APEX warehouse in Edmonton, Alberta.

Superpanned Gold Count in Stream Sediment and Till Samples

Heavy Mineral Stream Sediment Samples

The superpanned gold grain count results for the 35 heavy mineral stream sediment samples include a total of 258 gold grains in 34 of the samples (Figure 8; Appendix VI). Nineteen of the 35 heavy mineral stream sediment samples contain more than 5 gold grains, with up to 26 grains in heavy mineral stream sample 7BRH004. The individual gold grains range in size from 20 to 560 μm in length and 20 to 300 μm in width (Appendix IX). Some of the anomalous superpan gold grain results coincide with sites that produced a stream silt with an anomalous gold content (e.g., site 7BRH030, 7BRA033).

In general, those stream sediment samples with the higher gold grain counts tend to cluster along drainages in the central part of the Obed property, or on two drainages that drain into the McLeod River near the east edge of the property (Figure 8).

Till Samples

The superpan gold grain count results for the 11 till samples comprise a total of 66 gold grains in 8 of the samples (Figure 8; Appendix VI). Five of the 11 till samples contain more than 5 gold grains, with up to 14 grains in till sample 7BRH003. The individual gold grains range in size from 40 to 300 μm in length and 20 to 280 μm in width (Appendix IX).

In general, as is the situation for the heavy mineral stream sediment samples, the five till sample sites with higher gold grain counts tend to cluster in the central part of the Obed property, or east of the McLeod River near the east edge of the property (Figure 8). Thus, the elevated gold grain counts in tills at these two locales may be the reason for the elevated concentrations of gold in the heavy mineral sediments in nearby stream drainages.

Diamond Indicator Minerals in Stream Sediment and Till Samples

Heavy Mineral Stream Sediment Samples

Diamond indicator mineral result highlights from the picked 35 heavy mineral stream sediment samples, include: (a) 4 probable chrome diopsides, (b) 10 possible diopsides, (c) 24 possible eclogitic garnets, (c) 5 possible uvarovite garnets, (d) 106 purple spinels, some of which may be pyrope garnets, and (e) 540 opaque oxide mineral grains (possible chromites, chrome-magnetites or ilmenites) (Appendix VI).

All the silicate and oxide definite and possible indicator mineral grains from the heavy mineral stream sediment samples (Appendix VI), were subjected to a partial Electron Microprobe (EM) analysis (as described in Appendix II) to identify those grains with chemistries of possible interest as kimberlitic or diamond indicators. As a result of the initial EM screen, 172 oxide grains and 35 silicate grains were then subjected to full EM analysis (Appendices VII and VIII). From the final full EM results, 12 of the 35 heavy mineral stream sediment samples and 1 of the till samples produced "Definite" or "Probably" anomalous diamond indicator minerals grains (Figure 9). As well, several other sites produced "Possibly (Questionably)" anomalous indicator grains. The criteria for ranking of the various diamond indicator mineral grains and sample sites into anomalous categories is summarized in Appendices II, and Appendices XII.A to XII.E tabulate the interpretation for each mineral grain and sample site. The highlights from the interpretation of the diamond indicator mineral data follow.

1. With respect to the oxide grains from the heavy mineral stream sediment (HMSS) samples:

(a) The EM analysis shows that the majority of the 540 opaque grains are chromites, with one or more chromites being found in all 35 heavy mineral stream sediment samples. The X-Y plots (e.g., Appendices X-5 to X-9, inclusive) show that many of the HMSS chromites plot within either the diamond inclusion (DI) field for diamondiferous peridotite xenoliths in southern Africa kimberlites, or within the DI field for the Argyle Australia diamondiferous lamproite.

(b) Some of the chromites contain very high magnesium (greater than about 10 wt% MgO), elevated chrome (greater than about 40 wt% Cr_2O_3) and low titanium contents (less than about 1.0 wt% TiO_2). Chromite grains with these MgO and Cr_2O_3 contents, and with low titanium contents, are probable to definite indicators of being derived from a peridotitic mantle source, and those chromites with greater than about 57 wt% Cr_2O_3, and more preferably greater than about 60 wt% Cr_2O_3, are indicators of diamondiferous peridotite mantle. There are 11 chromite grains having more than 57 wt% Cr_2O_3, up to 61.88 wt% Cr_2O_3, and 4 grains (numbers 18, 165, 127 and 132) from three sample sites (7BRH004, 7BRH008 and 7BRH028) that have more than 60 wt% Cr_2O_3 (Appendix XII.A; Figure 9)

(c) In contrast, those chromite grains with elevated chrome (greater than about 40 wt% Cr_2O_3) and high titanium contents (greater than about 2.0 wt% TiO_2), are definite to possible indicators of being derived from either kimberlitic or lamproitic diatremes. There are 5 chromite grains (numbers 56, 78, 90, 93 and 140) from five sample sites (7BRH010, 7BRH015, 7BRH018, 7BRH019 and 7BRH030) that have above or very close to 40 wt% Cr_2O_3, but also contain up to 2.57 wt% TiO_2 (Appendix XII.A).

(d) Finally, a picro ilmenite grain (number 172) was recovered from HMSS sample 7BRH017. This grain has low iron (less than 45 wt% FeO), high magnesium (12.10 wt% MgO) and elevated chromium (0.32 wt% Cr_2O_3) contents. Picro chromites with these elemental concentrations, particularly those with chromium above 1.0 wt% Cr_2O_3, are also indicators of being derived from either kimberlitic or lamproitic diatremes (X-Y plots in Appendices X-2 to X-4).

2.. With respect to the silicate grains from the heavy mineral stream sediment (HMSS) samples:

(a) Appendix XII.C shows there are 30 grains from 15 HMSS sample sites with definitely to possibly anomalous chemistries (Figure 9). This total includes 13 grains from 10 sites that have definitely or probably anomalous chemistries.

(b) Most of the anomalous silicate grains comprise almandine garnets with low total iron (less than about 20 wt% FeO), high magnesium (greater than about 6.5 wt% MgO) and low manganese (less than about 1.5 wt% Mn) contents. Garnets with these chemistries are indicators of being derived from diamondiferous eclogitic mantle which may have existed as xenoliths in kimberlitic or lamproitic diatremes, because they fall within the Diamond Inclusion Field (X-Y plots in Appendices X-10 to X-12, inclusive). There are a total of 12 such garnet grains, although because 2 of these grains (grain 9 from sample site 7BRH007, and grain 25 from sample site 7BRH023) also have an elevated MnO content above or near 1.5 wt%MnO, these two grains may be derived from a crustal rather than a eclogitic mantle source. Nonetheless, the other 10 eclogitic garnet grains (numbers 1, 8, 11, 13, 14, 15, 18, 19, 28 and 30) have definitely anomalous chemistries because they all plot within the DI Field on the CaO-MgO-FeO ternary diagram (Appendix X-13). These 10 definitely anomalous eclogitic garnet grains are from eight HMSS sample sites (7BRH002, 7BRH004, 7BRH009, 7BRH011, 7BRH015, 7BRH017, 7BRH028 and 7BRH030) (Figure 9).

(c) Lastly, also from HMSS sample site 7BRH009, there is a single chrome diopside grain (number 12) with chemistries that plot within the DI Field on a Cr_2O_3 - CaO X-Y plot (Appendix X-1).

Till Samples

Diamond indicator mineral result highlights from the picked 11 till samples include: (a) 2 probable pyrope garnets, (b) 3 possible pyrope garnets, (c) 3 possible eclogitic garnets, (c) 2 possible olivines, (d) 5 possible chrome diopsides and (e) 203 opaque oxide mineral grains (possible chromites, chrome-magnetites or ilmenites) (Appendix IV).

The EM analysis returned encouraging results for selected diamond indicator minerals from 7 of the 11 till sample sites (Figures 9).

1. With respect to the oxide grains from the till samples:

(a) Due to budgetary limitations only 55 (five random grains per sample) of the 203 picked oxide grains underwent the full EM analysis. The EM analysis showed that the majority of the opaque grains are chromites, with one or more chromites being found in all 11 till samples (Appendix VII.B). The various X-Y plots (Appendices XI-5 to XI-9, inclusive) show that many of the chromites have chemistries that fall within the Diamond Inclusion Field for southern Africa kimberlites, or within the DI Field for the Argyle lamproite.

(b) As well, there are four chromite grains (numbers 17, 18, 47 and 53) from three till samples sites (7BRT003, 7BRT009 and 7BRT011) that have chemistries that are possible indicators of being derived from either diamondiferous peridotite mantle (grains 17, 47 and 43) or from a kimberlite or lamproite source (grain 18) (Appendix XII.B; Figure 9).

(c) Finally, there is one picro ilmenite grain (number 5) from till sample 7BRT001 that has low iron (29.73 wt% Fe), high magnesium (14.06 wt% MgO) and high chrome (1.61 wt% Cr_2O_3) contents, which indicate this ilmenite definitely may be derived from a kimberlitic or lamproitic diatreme source (X-Y plots Appendices X-2 to X-4, inclusive; Appendix XII.B).

2. With respect to the silicate grains from the till samples:

(a) There are four silicate grains (numbers 2 to 5, inclusive) with possibly anomalous chemistries. These include three grains (numbers 2 to 4, inclusive) from two till samples (7BRT005 and 7BRT007) which are chrome-rich G9 pyropic garnets that have Cr_2O_3 and CaO contents (Appendix XII.D). These chemistries, although they do not fall to the left of the "85% line" for G10 garnets of Fipke *et al.* (1995), nonetheless are such that these three grains all still are within the confines of the DI Field for many garnets found in diamondiferous peridotitic mantle xenoliths (X-Y plot in Appendix XI-1).

(b) Lastly, there is a single grossular garnet grain (number 5) from till sample 7BRT004 with high chromium (6.44 wt% Cr_2O_3) and elevated titanium (0.86wt% TiO2) contents, which may indicate this grain was derived from a mantle source (Appendix XII.D).

The interpreted oxide and silicate diamond indicator mineral data in Appendices XII.A to XII.D, inclusive, were then used to classify "Definitely", "Probably" and "Possibly"

anomalous heavy mineral stream sediment and till sample sites as described in Appendix XII.E, and shown on Figure 9. This figure shows there are: (a) 4 Definitely Anomalous HMSS sample sites; (b) 8 Probably Anomalous HMSS and 1 Probably Anomalous till sample sites; and (c) several Possibly Anomalous HMSS and till sample sites. In general, the 13 Definitely and Probably anomalous samples sites are either from creeks draining the northeast trending highland in the central part of the Obed Property (11 HMSS sites), or from the eastern part of the Obed Property east of the McLeod River (I HMSS and 1 till sample sites). In general, the diamond indicator mineral data from the HMSS and till samples show there is a reasonable probability that kimberlitic or lamproitic diatremes exist within or proximal to the Obed Property, and further that these diatremes contain xenoliths of potentially diamondiferous peridotitic or eclogitic mantle (Appendices XII).

Lastly, after a review of the Obed property diamond indicator mineral data by Mr. M. Dufresne (*pers. communication, 1998*, who is a partner in APEX with extensive experience in diamond indicator results in Alberta; e.g. Dufresne *et al.*, 1996), he advises that the abundance of high MgO, high Cr_2O_3 chromites, coupled with the existence of several anomalous silicate indicator mineral grains, including at least 10 eclogitic garnets and a chrome diopside with excellent DI Field chemistry, are atypical in comparison with many other sample sites in the western and northern parts of Alberta. Hence, the existence of several such anomalous sites within the Obed property are equivalent to "*the better preliminary reconnaissance sampling results that have been found at some other definitely anomalous diamond indicator mineral sample sites in Alberta*" (Ibid).

CONCLUSIONS

Gold and Other Metallic Mineral Anomalies

Within the Obed property, there exist 22 stream sample sites which have produced a gold anomaly in either stream silts (from 6 up to 132 ppb Au at 4 sites) or superpanned heavy mineral stream sediments (from 6 up to 26 gold grains at 19 sites, with 1 site coincident with a stream silt sample) (Figure 8). As well, there are 5 superpanned till sample that have produced a gold anomaly (from 6 up to 15 gold grains). The anomalous gold-bearing stream sediment and till samples exist throughout the Obed property, but the highest gold concentrations tend to be clustered near the central part of the property, or just east of the McLeod River near the eastern margins of the Obed property. The reasons for these anomalous gold concentrations in the surficial sediments within the Obed property are uncertain, but one explanation is that the gold may be derived from one or more gold-bearing zones in bedrock. Alternatively, because some of the steam drainages with the higher gold anomalies are spatially related to till samples which also contain high gold contents (e.g., east of McLeod River and along Corral Creek), it is possible that the anomalous gold in creeks within the Obed property it derived from gold anomalies in the tills. Therefore, because outcrop is sparse, there is relatively wide spacing between most of the stream silt and heavy mineral stream sediment sample sites, and there are relatively

few till sample sites, further detailed follow-up sampling will be required in order better to evaluate the source of the anomalous gold that exists in surficial materials within the Obed property.

Outcrop within the Obed property primarily comprises Paskapoo Formation sandstone, with a few other minor lithologies, including locally coal. In most places, the sedimentary rocks are either not altered or are weakly silicified. In total, five rock grab samples were collected from outcrop. Two rock samples are possibly anomalous: one contains 1.0 g Ag/t, and the other contains elevated levels of lead, zinc, cadmium and, possibly, chromium (Figure 8). Neither rock sample is considered highly anomalous, but if further field work is done within the Obed property, then a small amount of follow-up exploration of these two rock samples sites may be warranted.

Diamond Indicator Mineral Anomalies

At least 13 of the total 46 heavy mineral stream sediment and till samples from the Obed property, have produced indicator oxide or silicate grains with Definitely Anomalous chemistries that indicate they may be derived from possible deep-seated, peridotitic or eclogitic mantle origins, or are from minerals crystallized in kimberlitic or lamproitic magmatic diatremes. In short, for these indicator grains of diamondiferous peridotitic and eclogitic mantle to be at surface, they would have required upward transport, most likely in a kimberlitic or lamproitic intrusion of deep-seated origin, and emplacement in the bedrock strata which underlie or exist proximal to the Obed property. The favourable geochemical evidence from the indicator grains derived from the 35 heavy mineral stream sediment and 11 till samples are summarized in Appendix XII, and the anomalous sites are identified on Figure 9.

Further exploration is required to determine if the anomalous oxide and silicate indicator grains with favourable chemistries are derived from diamondiferous kimberlitic or other ultramafic diatremes that occur within or proximal to the Obed property.

RECOMMENDATIONS

A three phase follow-up exploration program is recommended at the Obed property in order to evaluate the positive diamond indicator mineral grain results which indicate the possible presence of diamondiferous kimberlites or related intrusions, and to explore for possible bedrock source(s) of the anomalous gold contents in stream silt, heavy mineral stream sediment and till samples. The recommended follow-up exploration specifically should comprise:

Phase 1 should comprise a pre-field office compilation of selected data, including an interpretation of LandSat satellite imagery and aerial photographs to search for 'circular'

features which may indicate kimberlitic diatremes. As well, this interpretation should seek to identify possible lineaments that may indicate faults which could have been important in the emplacement of diatremes, or could have controlled the possible deposition of any gold-bearing zones which exist in bedrock. As well, the extent and acquisition cost for any prior aeromagnetic, seismic or oil, gas or water well data which exist within or immediately proximal to the Obed property, should be investigated to evaluate whether such data, if available at a cost effective price, could assist in guiding further follow-up field work.

The estimated cost of the Phase 1 pre-field office studies is about $10,000.

Phase 2 should consist of conducting a detailed airborne geophysical survey of the Obed property. This survey should preferably be helicopter-supported, should capture magnetic, very low frequency electromagnetic (VLF-EM) and, if possible, multi-channel - multi-frequency electromagnetic (AEM) data, and should be flown at a mean terrain clearance of about 30 m and with a line-spacing of about 100 m. In total, about 1,200 line-km, including a provision for two tie-lines, would need to be flown at the recommended line spacing of 100 m intervals.

The intent of this detailed airborne geophysical survey would be twofold: (1) to seek to identify 'circular' geophysical anomalies that may be indicative of kimberlitic diatremes, and (2) to search for possible faulted-related lineaments or other such geologically favourable features. If possible, the recommended Phase 1 and Phase 2 work should be completed during spring 1998, or at least prior to the initiation of the Phase 3 follow-up fieldwork.

The estimated cost for the Phase 2 airborne geophysical survey, assuming about 1,200 line-km are flown, would be about $75,000 for a helicopter-supported survey, or about $25,000 if only a fixed-wing supported aeromagnetic survey is flown. The fixed-wing survey, although lower cost, is technically less effective for exploration because typically the fixed-wing airborne geophysical surveys comprise only magnetics and, possibly, VLF-EM, and are flown at mean terrain clearances of about 100±10 m, which is triple or at least double the mean terrain clearance for helicopter-supported airborne geophysical surveys. Such elevated mean terrain clearances act to significantly reduce the geophysical signatures, and this is important in the search for kimberlitic diatremes because the magnetic signatures from known Alberta kimberlites typically is only a few nanoteslas up to perhaps 10 to 20 nanoteslas (Dufresne, *personal communication, 1998*).

Phase 3 should comprise fieldwork to follow-up the positive results of the 1997 field program, and also any positive results obtained from the recommended Phase 1 office study and Phase 2 airborne geophysical survey. The Phase 3 fieldwork should include detailed follow-up stream silt and heavy mineral stream sediment sampling at intervals of about 500 m or less along selected anomalous creeks which were identified by the 1997 exploration, and systematic till sampling throughout the Obed property. In total, it is estimated that about 110 stream silt samples, 60 heavy mineral stream sediment samples,

and, if possible, 60 till samples will be collected during the Phase 3 fieldwork. In addition, the Phase 3 fieldwork will or may include one or more of the following: (a) systematic prospecting and rock sampling of any anomalous outcrops, (b) gridding and geological mapping, and (c) detailed geochemical surficial sampling surveys and, possibly, (d) ground geophysical surveys at selected targets identified by the Phase 1 and Phase 2 programs, or during the follow-up fieldwork. As well, consideration should be given to having a Quaternary geologist specialist attached to the crew for about 1 field week at the beginning of the Phase 3 fieldwork in order to 'ground truth' the Quaternary geological interpretation of Ms. Balzer (Figure 6), and to initially assist in establishing procedures for the recommended till sampling.

The proposed Phase 3 program will require a four man geological crew for about four field weeks, with the crew using two four-wheel drive trucks and four all-terrain-vehicles for daily crew deployment. To be efficient and effective, the Phase 3 fieldwork should be conducted during the snow-free period from about early May to late September. It is assumed that the crew could be accommodated at the Hunt Creek Motel which is just west of the west boundary of the Obed property, or another motel in Hinton. The estimated cost of the recommended Phase 3 program, including final reporting of the Phase 1 to Phase 3 results, is about $90,000. Finally, assuming the results of the Phases 1 to 3 work are positive, then drill testing of selected targets will be needed, but the cost for any such drilling is not included herein, nor can possible drill targets be identified until the results of the Phases 1 to 3 work are available, compiled and interpreted.

In summary, the total estimated budget for the recommended **Phase 1 to 3** office and field program at the Obed property is $175,000 if the Phase 2 airborne geophysical survey is performed by helicopter, versus about $125,000 if the airborne geophysical survey is performed by fixed-wing.

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L. Chin, B.Sc.

PROFESSIONAL GEOLOGIST ALBERTA
R.A. OLSON
FEBRUARY 11, 1998

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Edmonton, Alberta
February 6, 1998

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CERTIFICATION

I, R. A. OLSON OF [redacted] EDMONTON, ALBERTA, CERTIFY AND DECLARE THAT I AM A GRADUATE OF THE UNIVERSITY OF BRITISH COLUMBIA WITH A B.SC. DEGREE IN GEOLOGY (1968), A GRADUATE OF THE UNIVERSITY OF WESTERN ONTARIO WITH A M.SC. DEGREE IN GEOLOGY (1971) AND A GRADUATE OF THE UNIVERSITY OF BRITISH COLUMBIA WITH A PH.D. DEGREE IN GEOLOGY (1977). I AM REGISTERED AS A PROFESSIONAL ENGINEER WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF BRITISH COLUMBIA, AND AS A PROFESSIONAL GEOLOGIST WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA AND WITH THE NORTHWEST TERRITORIES ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS.

MY EXPERIENCE INCLUDES SERVICE AS AN EXPLORATION GEOLOGIST WITH TEXASGULF INC., VANCOUVER, BRITISH COLUMBIA. BETWEEN 1969 AND 1991 I HAVE CONDUCTED AND DIRECTED PROPERTY EXAMINATIONS, PROPERTY EVALUATIONS AND EXPLORATION PROGRAMS ON BEHALF OF COMPANIES AS A GEOLOGIST IN THE EMPLOY OF TRIGG, WOOLLETT & ASSOCIATES LTD., AND AS A PARTNER IN THE FIRM OF TRIGG, WOOLLETT CONSULTING LTD. AND TRIGG, WOOLLETT, OLSON CONSULTING LTD., EDMONTON, ALBERTA. SINCE 1992 I HAVE BEEN A PRINCIPAL IN THE FIRM OF R.A. OLSON CONSULTING LTD., AND SINCE 1994 IN THE FIRM OF APEX GEOSCIENCE LTD.

I HAVE NO DIRECT OR INDIRECT INTEREST IN ANY OF THE ALBERTA MINERAL PROPERTIES DESCRIBED IN THIS REPORT, NOR DO I EXPECT TO RECEIVE SUCH INTEREST.

THIS REPORT ENTITLED "**EXPLORATION - 1997, OBED PROPERTY, ALBERTA (CLAIM NUMBERS 9395120001 AND 9395120002)**" IS BASED UPON FIELD EXAMINATIONS, AND UPON THE STUDY OF PUBLISHED AND UNPUBLISHED DATA, AND WAS PREPARED UNDER MY DIRECT SUPERVISION OF THE FIELD AND OFFICE WORK.

R. A. OLSON, PH.D., P. GEOL.

FEBRUARY 6, 1998
EDMONTON, ALBERTA

APPENDIX I

FIELD PERSONNEL - 1997 EXPLORATION

APPENDIX I

FIELD PERSONNEL 1997-EXPLORATION

NAME	ADDRESS	POSITION	DAYS
R.A. Olson	756 Wyandi Road, Edmonton, AB	Supervisor	4 (June 2 to June 5)
B. Ryziuk	2401, 8920-100st, Edmonton, AB	Prospector - Field Party Leader	19 (June 2 to June 20)
L. Chin	10452-27 Ave, Edmonton, AB	Geologist	19 (June 2 to June 20)
		TOTAL MANDAYS	**42**

APPENDIX II

SAMPLE PREPARATION AND ANALYTICAL METHODOLOGY, AND DIAMOND MINERAL INDICATOR GRAIN INTERPRETATION

APPENDIX II

SAMPLE PREPARATION AND ANALYTICAL METHODOLOGY, AND DIAMOND MINERAL INDICATOR GRAIN INTERPRETATION

A. SAMPLE PREPARATION AND ANALYTICAL METHODOLOGY

Stream Silt and Rock Grab Samples

The stream silt and rock grab samples which were collected by APEX Geoscience Ltd. (APEX), were sent to Bondar Clegg & Company Ltd. (Bondar Clegg) of North Vancouver, British Columbia for assay for gold and a suite of 34 other elements by Induction Coupled Plasma Spectrometry (ICP) using Bondar Clegg's standard "Gold + 34" analytical package. This package consists of determining the gold content by fire assay using the standard one-assay ton method with an Atomic Absorption finish, and determining the other 34 elements by ICP. The rock grab samples were crushed and pulverized to a minus 150 mesh size fraction prior to being analysed. All stream silt samples were analysed after being dry sieved through a standard minus 80 mesh screen.

The analytical results are presented in the Geochemical Lab Reports included in Appendix V.

Heavy Mineral Stream Sediment and Till Samples

The 35 heavy mineral stream sediment and 11 till samples were sent to the Saskatchewan Research Council, Saskatoon, Saskatchewan, for diamond indicator mineral separation. The heavy mineral stream sediment samples are initially separated into various fractions based upon their magnetic properties and specific gravity. Once each sample has been separated into various fractions, a 'Middle Fraction' with a specific gravity greater than 3.0 and less than 4.1, and a 'Heavy Fraction' with a specific gravity greater than 4.1, are retained for diamond indicator mineral picking. Probable diamond indicator minerals are then manually picked from these selected fractions using a binocular microscope and forceps. That is, the 'Middle Fraction' is picked for possible pyropic garnets and chrome diopsides, and the 'Heavy Fraction' is picked for possible chromites and picro ilmenites. Once the prospective grains were picked from both the Middle and the Heavy Fractions, they were stored in labelled vials and returned to APEX for their review and tabulation, as shown in Appendix VI.

The possible diamond indicator mineral grains were then sent to the University of Saskatchewan, Department of Geological Sciences, Saskatoon, Saskatchewan for analysis by Electron Microprobe (EM). This method provides accurate and detailed information about the chemical composition of each grain that is probed. Following is the procedures used for the EM analysis of the silicate, purple spinels and oxide mineral grains.

2. With respect to the 43 definite and possible silicate indicator grains from the 35 stream sediment samples, and the 15 definite and possible silicate indicator grains from the 11 till samples, all underwent a full EM analysis. However, 8 of the 43 grains from the heavy mineral stream sediment samples and 7 of the 15 grains from the till samples, either were too small to probe with the EM, or their chemical composition showed they were not silicates. In short, 35 of 43 silicate grains from the heavy mineral stream sediment samples and 8 of 15 silicate grains from the till samples, were confirmed as silicates by the full EM analysis, and the results for these 43 silicate grains are summarized in Appendix VIII.

3. With respect to the 106 purple spinels, some of which could be pyropic garnets, which were picked from the 35 heavy mineral stream sediment samples (there were no purple spinels picked from the 11 till samples), all 106 grains were subjected to at least a preliminary EM analysis. The result of this preliminary EM analysis showed that none of the 106 purple grains were possible pyropic garnets, hence a full EM analysis was not done.

4. With respect to the 540 oxide indicator grains which were picked from the 35 stream sediment samples, and the 203 oxide indicator grains which were picked from the 11 till samples, all these grains initially underwent a preliminary EM screening to identify those grains with compositions containing equal to or greater than 3.0% chromium (Cr_2O_3) and 5.0 % magnesium (MgO). As a result, 172 of 540 oxide grains from the heavy mineral stream sediment samples and 57 of 203 grains from the till samples exceeded or equalled these minimum composition levels. All these 229 selected oxide grains then underwent full EM analysis, and the results for these 229 grains are summarized in Appendix VII.

5. During the diamond indicator mineral separation which was initially done by the SRC, macroscopic gold grains were noted in several of the 35 heavy mineral stream sediment samples. In order better to assess the gold content, APEX requested that the various fractions from the 35 heavy mineral stream sediment samples be recombined, superpanned and undergo a gold grain count, once the diamond indicator mineral picking was completed. The 11 till samples were also superpanned and underwent a gold grain count. However, the till samples were superpanned prior to subdivision into various specific gravity fractions due to their later processing date.

   A description of the gold grains found in the heavy mineral stream sediment and till samples, are included in Appendix IX.

B. DIAMOND MINERAL INDICATOR GRAIN INTERPRETATION

The full EM data for the silicate and oxide grains derived from the 35 heavy mineral stream sediment and 11 till samples, were returned to APEX in both paper and digital format (Appendices VII and VIII). The digital results were then processed using the computer programs: MIN-ID, GARCLASS and Microsoft Excel. The intent of this data manipulation is to identify and classify those grains with geochemical compositions that are (a) similar to grains from known kimberlitic intrusions or their extrusive equivalents, (b) similar to grains from either an eclogitic or peridotitic mantle source, and, especially, (c) to identify those grains which may have formed within the 'diamond inclusion field' in the mantle. To facilitate the interpretation of the chemistries for the various diamond indicator mineral grains, a series of selected X-Y plots and one Ternary diagram were prepared for the oxide and silicate grains (Appendices X and XI).

With respect to the interpretation of the various diamond indicator grain chemistries, several criteria were used. These criteria are from a variety of sources, including Dufresne *et al.* (1996), Fipke *et al.* (1995), Thorliefson and Garret (1997), Dunne and Grant (1993), LeCheminant *et al.* (1996), and Dufresne (*personal communications*, January, 1998). In general, the intent with the interpretation of diamond indicator mineral chemistries is to: (a) identify those grains that are or may be derived from a kimberlitic or lamproitic diatreme source, which is the mechanism for moving diamonds from the mantle to the Earth's surface; (b) identify those grains which may be derived from eclogitic or peridotitic mantle sources, which occur as xenoliths in the kimberlitic or lamproitic diatremes; and, most importantly, (c) identify those grains which indicate they are derived from a diamondiferous source. At present, the determination of whether certain chemistries for the various diamond indicator minerals are "anomalous" or "not anomalous" is qualitative, and largely is based on empirical comparison of individual grain chemistries to the chemistries of oxide and silicate minerals that are derived from important diamondiferous deposits in South Africa, Australia, or elsewhere. Typically this is done by the use of X-Y plots or Ternary diagrams, on which grain chemistries from Alberta mineral properties can be compared to the "Diamond Indicator Fields" which have been defined empirically from known diamondiferous deposits. Thus, whether a particular grain's chemistry is "within", "near" or "substantively removed' from the "Diamond Inclusion Field" on the various plots, allows one to subjectively evaluate the "anomalousness" of the indicator grain of interest.

With respect to the interpretation of the diamond indicator mineral grains derived from within the Obed property, the following criteria were used for the identification of " Anomalous" Diamond Indicator oxide and silicate mineral grains.

Direct Indicators of Kimberlite or Lamproite Diatremes

That is, those minerals that were deposited in the kimberlite or lamproite magmas, and did not result from xenoliths or xenocrysts from the mantle which have been brought up to the Earth's surface. The important indicators include:

1. **Silicates**:

   Olivine – High MgO (≥4.0%); ± Elevated Cr_2O_3

   G1 & G2 Pyrope garnets – High TiO_2 (≥0.2%); ± Low to Moderate amounts of Cr_2O_3 (0% to 4%)

2. **Oxides**:

   Chromites – High Cr_2O_3 (≥40%); High TiO_2 (≥2.0%)

   Picro Ilmenites – High MgO (≥8%); Low FeO (≤45%); High Cr_2O_3 (≥1.0%)

3. **Indirect Indicators of Kimberlite and Lamproites**

   In addition to the above direct indicators of kimberlite or lamproite diatremes, some other minerals that only occur in mantle xenoliths may be indirect indicators because they could only, or mainly, have been transported to the Earth's surface by such magmatic activity. These indirect indicators of kimberlite or lamproite included, for example, all the silicate and oxide minerals that indicate diamondiferous eclogite or peridotite as discussed below.

Direct Indicators of Eclogitic or Peridotitic Mantle Xenoliths or Xenocrysts

The kimberlite magma, at depth, has potentially passed through diamondiferous mantle, which can be either peridotitic or eclogitic in composition. Following are the indicators minerals which are indicative of: (a) each of these two mantle rock types, and (b) particularly those that are diamondiferous.

1. **Silicate Minerals Indicative of Peridotitic Mantle**:

   G9, G10, G11 and G12 Pyrope Garnets – High Cr_2O_3 (≥2.0%); Variable CaO (0% to about 30%, but typically up to maximum of about 7 to 8% in G10 pyrope garnets)

   Chrome Diopsides – High Cr_2O_3 (≥1.2%); chrome diopsides with less than 1.2% Cr_2O_3 can come from many sources. Regional work indicates chrome diopsides with 0.5 to <1.2% Cr_2O_3 are common, but those with ≥1.2% are rare.

2. **Silicate Minerals Indicative of <u>Diamondiferous Peridotitic Mantle</u>**:

G10 Pyrope Garnets - High Cr_2O_3 ($\geq$2.0%), but subcalcic. That is, CaO preferably falls below Gurney's 85% line on a Cr_2O_3 – CaO X-Y plot, or generally have about $\leq$7% CaO)

3. **Oxide Minerals Indicative of Peridotitic Mantle**:

Chromites – High Cr_2O_3 ($\geq$40%); High MgO ($\geq$10%); Low TiO_2 ($\leq$1.0%)

4. **Oxide Minerals Indicative of <u>Diamondiferous Peridotitic Mantle</u>**:

Chromites - those chromites that are in or very near the Diamond Inclusion Field typically have High Cr_2O_3 ($\geq$57-58% Cr_2O_3, but preferably $\geq$60% Cr_2O_3); with High MgO ($\geq$11% to about $\leq$17%); and with Low TiO_2 ($\leq$1.0%)

1. **Silicate Minerals Indicative of Eclogitic Mantle**:

G3, G4, G6 and to a lesser extend G5 Eclogitic Garnets – These eclogitic garnets typically must have low iron (<20% total Fe as FeO) and high magnesium (>6.5% MgO). However, High MnO ($\geq$1.5%) typically is considered to indicate a crustal source for these garnets.

Omphacitic Pyroxenes (are a Low Chromium, High Sodium and High Aluminum Augitic monoclinic pyroxene) – High NaO ($\geq$2.0%), and High Al_2O_3 ($\geq$6%) are positive indications of an eclogitic source for these garnets.

2. **Minerals Indicative of <u>Diamondiferous Eclogitic Mantle</u>**:

G3, G4, G5 and G6 Eclogitic Garnets – Must use the CaO-MgO-Feo Ternary Diagram to ensure the grain composition falls precisely within the currently defined Diamond Inclusion Field. In general, this means: CaO between about 10 to 55%; MgO between about 20 to 70%; and FeO between about 20 to 70%.

Omphacitic Pyroxenes - Similarly, use the NaO-Al_2O_3 X-Y Plot to ensure the grain composition falls precisely within the currently defined Diamond Inclusion Field.

The above criteria were used to rank the oxide and silicate mineral grains into "Definite", "Probable" or "Possible (Questionable)" anomalousness, as shown in Appendices XII.A to XII.D, inclusive. Finally, the ranking of anomalous diamond indicator mineral sites in Figure 9 is based on the following criteria:

A. **Definitely anomalous diamond indicator mineral site**

Requires at least two or more silicate or oxide grains of "Definite" inclusion chemistry (Appendix XII) that indicate either (a) the grains were derived from a kimberlite or lamproite diatreme source, or (b) the grains were derived from diamondiferous peridotitic or diamondiferous eclogitic origins, or both.

B. **Probably anomalous diamond indicator mineral site**

Requires at least one or more silicate or oxide grains of "Definite" inclusion chemistry (Appendix XII) exist in the sample.

C. **Possibly anomalous diamond indicator mineral site**

Requires at least one or more silicate or oxide grains of "Possible" inclusion chemistry (Appendix XII) exist in the sample.

Lastly, an "Excellent" diamond indicator mineral site would be one at which there exists: (a) at least one or more grains that are a definite indicator of diamondiferous eclogitic or peridotitic mantle, and (b) at least one or more grains that are definite indicators they were derived from a kimberlite or lamproite diatreme.

APPENDIX III

SAMPLE SUMMARIES

III.A - ROCK GRAB SAMPLES
III.B. - STREAM SILT SAMPLES
III.C - HEAVY MINERAL STREAM SEDIMENT SAMPLES
III.D - TILL SAMPLES

APPENDIX III.A - SAMPLE SUMMARIES
ROCK GRAB SAMPLES

Sample I.D.	UTM Easting	UTM Northing	Rock Type	Sample Description
7BRP001			Conglomerate	Channel conglomerate in Paskapoo Sandstone, 15 m wide and up to 0.5 m in depth; surrounding sandstone exhibits trough crossbedding; cherty clasts with a sandstone matrix; large 2 to 3 m long and up to 1 m tall calcareous concretions in the sandstone.
7BRP002			Sandstone	Conglomerate with greenish grey matrix and limonitic staining; clasts average 2 mm in diameter.
7BRP003			Sandstone	Conglomerate with clasts averaging 2 mm in diameter; fine grained greenish matrix with quartz veins 0.1 to 4 mm wide and limonitic staining.
7BRP004			Conglomerate	Conglomerate with clasts ranging from 0.5 cm to 12 cm in diameter, in a fine to medium grained matrix.
7LCP006 *			Conglomerate	Limonitic stained conglomerate in a medium grained, sandstone matrix.

* Sample Identifiers 7LCP001 to 7LCP005 were not used on this project.

STREAM SILT SAMPLES

	UTM		Sediment Sample Composition				
Sample I.D.	Easting	Northing	Coarse	Sand	Fines	Org	Sample Description
7BRA035	474900	5927210	2	1	1		Taken on Sandstone Creek, 1 km north of Highway 16. Also site of 7BRH032.
7BRA036	474950	5927250	1	1	2		Taken on Sandstone Creek, 1km north of Highway 16. Also site of 7BRH033
7BRA037	480400	5921700					Taken 250 m north of the south property boundary, 1 km west of the Coal Road. Also the site of 7BRH034.

APPENDIX III.C - SAMPLE SUMMARIES

HEAVY MINERAL STREAM SEDIMENT SAMPLES

	UTM		Sediment Sample Composition				
Sample I.D.	Easting	Northing	Coarse	Sand	Fines	Org	Sample Description
7BRH001	474975	5926150	Trace	3	1		Sandstone Creek, 40 m south from Highway 16. Also site of 7BRA001
7BRH002	492030	5924410	1	2	1		From small tributary creek to the east of the McLeod River. Also site of 7BRA003.
7BRH003	491180	5925320	1	2	1		From small tributary creek to the east of the McLeod River. Also site of 7BRA004.
7BRH004	479760	5928400		2	2		Taken north of a series of beaver dams south of Highway 16 on Beaver Creek (between Sandstone and Ponoka Creek). Also site of 7BRA005.
7BRH005	480405	5928430	2	1	1		250 m south of Highway 16 on Ponoka Creek. Also site of 7BRA006.
7BRH006	480980	5928820	1	2	1		Near north property boundary on east tributary of Ponoka Creek. Also site of 7BRA007.
7BRH007	481783	5928832		2	2		Near north property boundary on the east tributary of Ponoka Creekk. Also site of 7BRA008.
7BRH008	478192	5928645	1	2	1		On Beaver Creek north of Highway 16 and south of railway tracks. Also site of 7BRA009
7BRH009	488540	5926820	1	1	2		Small, slow moving swampy creek near north boundary of property. Also site of 7BRA010.
7BRH010	487260	5927150	1	2	1		1.3 km up stream from 7BRH009. Also site of 7BRA011.
7BRH011	485120	5927370	2	2			Small, slow moving creek near north boundary and 500 m west of Coal Road. Also site of 7BRA012.
7BRH012	485120	5925220	1	2	1		East of Coal Road near the west end of Corral Creek. Also site of 7BRA013
7BRH013	475900	5924120	2	2			Taken on Sandstone Creek approximately 3 km south of Highway 16. Also site of 7BRA014
7BRH014	475900	5924150		2	2		Small eastern tributary to Sandstone Creek. Also site of 7BRA015 and 7BRP002 and 7BRP003.
7BRH015	476360	5923410	2	1	1		Small western tributary to Sandstone Creek near the headwaters. Also site of 7BRA016.
7BRH016	476400	5923420		2	2		Small eastern tributary to Sandstone Creek near headwaters. Also site of 7BRA017.

HEAVY MINERAL STREAM SEDIMENT SAMPLES

	UTM		Sediment Sample Composition				
Sample I.D.	Easting	Northing	Coarse	Sand	Fines	Org	Sample Description
7BRH017	475470	5924920	2	1	1		Taken on Sandstone Creek approximately 2 km south of Highway 16. Also site of 7BRA018.
7BRH018	478030	5926920	1	2	1		Taken on Beaver Creek approximately 1.5 km south of Highway 16 and north of tributaries. Also site of 7BRA019.
7BRH019	478010	5926660	2		2		Taken on Beaver Creek approximately 1.5 km south of Highway 16 on west tributary. Also site of 7BRA020.
7BRH020	478140	5926666	1	2	1		Taken on Beaver Creek approximately 1.5 km south of Highway 16 on east tributary. Also site of 7BRA021.
7BRH021	478690	5925170	2	1	1		Taken near headwaters of Beaver Creek approximately 4 km south of Highway 16 on east tributary. Also site of 7BRA022.
7BRH022	480110	5926870	2	1	1		Taken on Ponoka Creek approximately 1.8 km south of Highway 16 on a small west tributary. Also site of 7BRA024.
7BRH023	480850	5926290	2	1	1		Taken on Ponoka Creek approximately 3.3 km south of Highway 16 on a west tributary. Also site of 7BRA026.
7BRH024	480110	5926870	2	1	1		Taken on Ponoka Creek approximately 3.3 km south of Highway 16 on a west tributary. Also site of 7BRA025.
7BRH025	480870	5926290	1	2	1		Taken near headwaters of Ponoka Creek approximately 3.3 km south of Highway 16. Also site of 7BRA027
7BRH026	481290	5927670	1	2	1		On the east tributary of Ponoka Creek. 1.2 km south of north property boundary. Also site of 7BRA029.
7BRH027	484610	5922850	1	2	1		500 m north of the south property boundary on a tributary of the McLeod River. Also site of 7BRA030.
7BRH028	483300	5922650	1	2	1		100 m north of the south property boundary on a tributary of the McLeod River. Also site of 7BRA031.
7BRH029	486900	5925300	2	1	1		On Corral Creek 1.8 km south of north property boundary and 4 km west of the McLeod River. Also site of 7BRA032.
7BRH030	488530	5924550	2	1	1		On Corral Creek 2.3 km south of north property boundary and 2.3 km west of the McLeod River. Also site of 7BRA033.

HEAVY MINERAL STREAM SEDIMENT SAMPLES

	UTM		Sediment Sample Composition				
Sample I.D.	Easting	Northing	Coarse	Sand	Fines	Org	Sample Description
7BRH031	487200	5923130	1	2	1		Taken 1.0 km north of the south property boundary and 3 km west of the McLeod River on a small secondary tributary to the McLeod River. Also site of 7BRA034.
7BRH032	474900	5927210	2	1	1		Taken on Sandstone Creek 1 km north of Highway 16. Also site of 7BRA035
7BRH033	474950	5927250	1	1	2		Taken on Sandstone Creek 1 km north of Highway 16. Also site of 7BRA036
7BRH034	487440	5921700					Taken 250 m north of the south property boundary, 1 km west of the Coal Road. Also the site of 7BRA037.
7BRH035	487440	5923380	1	2	1		Taken 1.0 km north of the south property boundary and 2.8 km west of the McLeod River on a tributary to the McLeod River. Also site of 7BRA038.

APPENDIX III.B - SAMPLE SUMMARIES
TILL SAMPLES

Sample I.D.	UTM Easting	UTM Northing	Bedrock Type	Sample Description
7BRT001	493200	5926509	Sandstone	Basal till sample from Petro-Can borrow pit wall, not far above bedrock. Largest clasts in sample interval are 0.2 to 0.25 m in long axis.
7BRT002	493722	5924793	Sandstone	Till sample taken 0.3 to 0.4 m above bedrock; cobbles in sample interval up to 0.1 m in long axis.
7BRT003	492525	5923635	Sandstone	Till taken from the base of a 6 m high road cut; cobbles range from 5 to 8 cm in diameter.
7BRT004	482570	5928510	Sandstone	Rounded pebbles up to 3 cm in diameter, poor casting, probably not a basal till.
7BRT005	482750	5924600	Sandstone	Taken from the center of a circular low about 100 m in diameter, 500 m northwest of Coal road.
7BRT006	483240	5924300	Sandstone	Taken from the eastern edge of a small swamp near 7BRT005
7BRT007	483500	5924630	Sandstone	Taken from the eastern edge of a small swamp.
7BRT008	484410	5925400	Sandstone	Taken from the eastern edge of a small swamp.
7BRT009	476120	5926680	Sandstone	Along Highway 16 in north-west corner of property 2.0 km east of Sandstone Creek.
7BRT010	477570	5928830	Sandstone	Taken 0.75 km north of Highway 16 just north of railway tracks.
7BRT011	478110	5928000	Sandstone	Taken on Beaver Creek near campground approximately 4.5 km east of Sandstone Creek.

APPENDIX IV

SAMPLE CARDS

IV.A - ROCK GRAB SAMPLES
IV.B. - STREAM SILT SAMPLES
IV.C - HEAVY MINERAL STREAM SEDIMENT SAMPLES
IV.D - TILL SAMPLES

NOTE: The original sample cards are on file with APEX Geoscience Ltd. at their Edmonton, Alberta office.

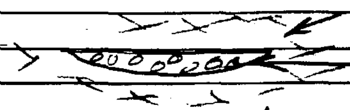
APPENDIX IV.A

ROCK GRAB SAMPLES

Survey type: Rock Grab | Client & Project: 97210 | Area &/or Photo: OBED | Collector(s): BK, LC, RMO | Date: 06/04/97

- NTS: 83F
- Year: 97 | Init.: BR | S.T.: P | Number: 001
- Weathering: Cldy | Relief: Med
- Contamination: None
- Rock type: SNDS + CONG
- Grain size: Med
- Clast size: up to Cobble Cong.
- Strike / Dip: Flat lying
- Material sampled: O/C
- Alt'n intensity: NONE

REMARKS: Conglomeratic channel in Paskapoo Snds.
Channel is 15 m wide, + up to ~0.5m deep.



Cherty clasts. Matrix mainly quartzose.
Large (2-3m long by 1m high) concretions in Snds
Calc cemented concr.

ROCK SAMPLE CARD — APEX Geoscience Ltd

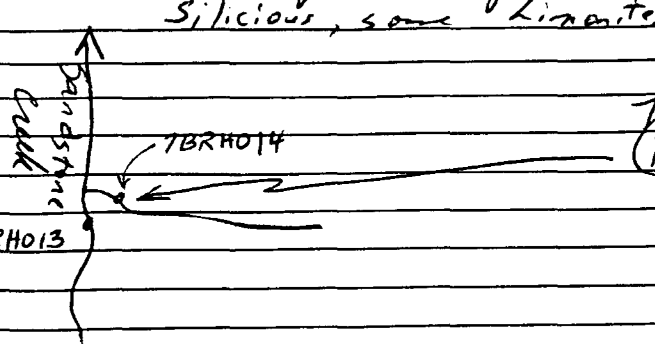
SAMPLE TYPES: M – Drill Core or Percussion chip, N – Chip or Channel, P – Grab, O, Q – Other (define)

Survey type: Rock Grab | Client & Project: 97210 | Area &/or Photo: OBED | Collector(s): BR | Date: June 8/97

- NTS: 83F6
- Year: 97 | Init.: BR | S.T.: P | Number: 002
- Location (Grid Coord. or UTM): 11 | 475900 East | 5924120 North
- Weathering: Clr | Relief: Low/Med
- Composition: Qtz, Mica
- Grain size: Fine, Med
- Clast size: <2
- Material sampled: Bldr
- Alt'n intensity: Fresh

REMARKS: 002 Med grained Qtz blebs? Conglomerate? with greenish grey matrix
- Some mica up to 4mm – Silicious
- Also has Qtz veins up to 2cm wide.

7BRP
003 Fine grained, greenish matrix with Qtz veins up to 4mm
Silicious, some Limonite, mica (fine grains)



These samples taken from creek bed (Float Samples.)

APEX Geoscience Ltd

SURVEY TYPE: Rock Grab CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 8, 97

NTS	YEAR	INIT.	S.T.	NUMBER	LOCATION (Grid Coord. or UTM) Zone / East	North	WTHR	RELIEF
83F6	97	BR	P	003	11 475900	5924120	Clr ✓	Low ✓ Med ✓

ROCK TYPE:
COMPOSITION: Qtz ✓, Mica ✓
GRAIN SIZE: Fine ✓, Med ✓
CLAST SIZE: <2 ✓
MATERIAL SAMPLED: Bldr ✓
ALT'N INTENSITY: Fresh ✓

REMARKS: Fine grained greenish matrix w/ Qtz veins
0.1 to 4mm - Siliceous, Lencnite, Mica

ROCK SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: M - Drill Core or Percussion chip, N - Chip or Channel, P - Grab, O, Q - Other (define)

SURVEY TYPE: Rock Grab CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 12, 97

NTS	YEAR	INIT.	S.T.	NUMBER	LOCATION (Grid Coord. or UTM) Zone / East	North	WTHR	RELIEF
83F6	97	BR	P	004	11 481930	5922500	Cldy ✓	Low ✓

ROCK TYPE: conglom.
COMPOSITION: Qtz ✓, Feld ✓, Mica ✓
CLAST SIZE: 8-16 ✓, 16-32 ✓, 32-64 ✓

REMARKS:
- Conglomerate
- Pebble clasts 1/4" to 6" in size
- sandstone matrix

ROCK SAMPLE CARD

APEX Geoscience Ltd.

SURVEY TYPE: Rock Grab CLIENT & PROJECT: 97210 AREA &/or PHOTO: GBED COLLECTOR(S): L.C. DATE: June 3, 97

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM) Zone / UTM / East	UTM / North	WTHR	RELIEF	CONTAMINATION
83F6	97	LCP	006	11 / 45 / 400	5 9 2 20 50	Clr ✓	Low ✓	none

ROCK TYPE	COMPOSITION	GRAIN SIZE	CLAST SIZE	MAGNETISM	STRIKE	DIP
sst	Qtz ✓, Oxides ✓	Med ✓	8–16 ✓			

FROM	TO	WIDTH	MATERIAL SAMPLED	ALT'N INTENSITY	ALTERATION	ORIGINAL SAMPLE NO.
			O/C ✓			

ANALYTICAL RESULTS

Copper (%)	Lead (%)	Zinc (%)	Silver (g/t)	Gold (g/t)	U3O8 (%)

REMARKS: Samples 7LCP001 - 005 do not exist
Taken at site C-6, lincmtic ~~gen~~ conglomerate in
medium grained sst matrix

ROCK SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: M – Drill Core or Percussion chip, N – Chip or Channel, P – Grab, O, Q – Other (define)

APPENDIX IV.B

STREAM SILT SAMPLES

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: Jun 8/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	A	018	11	475470	5924920	SSt	Clr ✓	Rp/M ✓	Con ✓; Moss

RELIEF	CONTAMINATION	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION (Crse/Sand/Fines/Org)	ORIGINAL SAMPLE NO.	ORIG. DUP. REP.
Med ✓	NONE	2 / 1 / 1	1-5 ✓	.4	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	2 / 1 / 1		ORIG. (circled)

REMARKS: Site of 7BRH017 - Sandstone [illegible]

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: Jun 9/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	A	019	11	478030	5926920	SSt	Clr ✓		Con ✓; Moss ✓
83F6	97	BR	A	020	11	478010	5926660	sst	Clr ✓	Rp/M ✓	Con ✓; Moss (circled)
83F6	97	BR	A	021	11	478140	5926666	sst	Clr ✓	Rp/M ✓	Con (circled) ✓; Moss ✓
83F6	97	BR	A	022	11	478690	5925170	sst	Clr ✓	NONE	Con ✓; Moss ✓

NUMBER	RELIEF	CONTAMINATION	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION (Crse/Sand/Fines/Org)	ORIG. DUP. REP.
019	Low ✓	NONE	2 / 1 / 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	1 / 2 / 1	ORIG. (circled)
020	Low ✓	NONE	2 / 2	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	2 / / 2	
021	Low ✓	None	2 / 1 / 1	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	1 / 2 / 1	ORIG. (circled)
022	Med ✓	NONE	2 / 1 / 1	1-5 ✓	.1	Clr ✓	Light ✓	Wht 1, Brn 2, Blk 1	2 / 1 / 1	ORIG. (circled)

REMARKS (019): Site of 7BRH018

REMARKS (020): Site of 7BRH019

REMARKS (021): Site of 7BRH020

REMARKS (022): Also site of 7BRH021 - sample taken up from Cut Line Road

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 77210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 9/97

NTS	YEAR	INIT.		NUMBER	LOCATION Zone	Easting	Northing	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	A	023	11	474850	5923850	Limestone	Clr ✓		Con ✓

RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Med ✓	None	1 1 2	<1 ✓	.2	✓	✓	Wht 3, Brn 1	Crse 1, Sand 2, Fines 1	ORIG.

REMARKS: No Heavy taken at this site - entire creek is white + full of Limestone pebbles.

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 77210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	YEAR	INIT.		NUMBER	LOCATION Zone	Easting	Northing	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	A	024	11	480110	5926870	SST	Clr ✓		Con ✓, Dec ✓
83F6	97	BR	A	025	11	490110	5926C70	SST	Clr ✓	Rp/M ✓	Con ✓, Dec ✓
83F6	97	BR	A	026	11	480850	5926290	SST	Clr ✓	Rp/M ✓	Con ✓, Moss L
83F6	97	BR	A	027	11	480870	5926290	SST	Clr ✓	Rp/M ✓	Con ✓, Moss L

NUMBER	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
024	Med ✓	Cut Line	Rock 2, Sand 2	<1 ✓	.1	Clr ✓	Hvy ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
025	Med ✓	None	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Hvy ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
026	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Hvy ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
027	Med ✓	NONE	Rock 2, Sand 2	<1 ✓	.2	Clr ✓	Hvy ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	ORIG.

REMARKS (024): Taken from Trib of Ponoka Creek - Also site of 7BRH022

REMARKS (025): Taken from Ponoka Creek - Also site of 7BRH024

REMARKS (026): site of 7BRH023

REMARKS (027): site of 7BRH025

SURVEY TYPE: Stream Sed PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 9/97

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE
83F6	97	BRA	023	11	474850	5923850	Lime/Hard

CONTAMINATION: None; BOTTOM: 1 1 2; DEPTH: .2; SEDIMENT COLOUR: 3 1; COMPOSITION: 2 2 1

REMARKS: No Heavy taken at this site - entire creek is white + full of limestone pebbles.

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	YEAR	INIT.	NUMBER	Zone	East	North	ROCK TYPE	CONTAMINATION	BOTTOM	DEPTH	SEDIMENT COLOUR	COMPOSITION
83F6	97	BRA	024	11	480110	5926870	Sst	Cut line	2 2	.1	1 2 1	2 1 1
83F6	97	BRA	025	11	490110	5926670	Sst	None	2 1 1	.3	1 2 1	2 1 1
83F6	97	BRA	026	11	480850	5926290	Sst	None	2 1 1	.3	1 2	2 1 1
83F6	97	BRA	027	11	480870	5926290	Sst	None	2 2	.2	1 2 1	1 2 1

REMARKS (024): Taken from trib of Ponoka Creek - Also site of 7BRH022

REMARKS (025): Taken from Ponoka Creek - Also site of 7BRH024

REMARKS (026): site of 7BRH023

REMARKS (027): site of 7BRH025

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	YEAR	INIT.	TYPE	NUMBER	Zone	Easting	Northing	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
83F6	97	BR	A	028	11	482130	5926920	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 2, Sand 1, Clay 1	<1 ✓	.2	Clr ✓	Light ✓	Brn 2, Blk 2	Crse 2, Sand 1, Fines 1	ORIG.
83F6	97	BR	A	029	11	481290	5927670	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	None	Rock 2, Sand 2	<1 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	ORIG.

REMARKS (028): Sample taken at jct with New Rd. - No Heavy

REMARKS (029): site of 7BRH026

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gosson; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: StreamSed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	YEAR	INIT.	TYPE	NUMBER	Zone	Easting	Northing	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
83F6	97	BR	A	030	11	484610	5922850	SST		Rp/M ✓	Con ✓, Moss ✓	Med ✓	None	Rock 1, Sand 3	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	ORIG.
83F6	97	BR	A	031	11	483300	5922650	SST Limestone?	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 1, Sand 3	<1 ✓	.1	Clr ✓	Light ✓	Wht 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	ORIG.
83F6	97	BR	A	032	11	486900	5925300	SST O/C	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
83F6	97	BR	A	033	11	488530	5924550	SST	Clr ✓	Rp/M ✓	Con ✓	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.

REMARKS (030): Sample taken above Beaver Pond - also site of 7BRH027

REMARKS (031): Sample taken above New Cut line - Also site of 7BRH028

REMARKS (032): Corral Creek - Also site of 7BRH029 and O/C C-20

REMARKS (033): Corral Creek - sample taken above Beaver Pond - Also site of 7BRH030

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 14/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Zone)	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	A	034	11	487200	5923130	SST	✓	—	—

RELIEF	CONTAMINATION	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Med ✓	Cut line	2 / 1 / 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	2 1 1	

REMARKS: Site of 7BRH031

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR (Clr/Cldy)	WTR SURF. or FLOW (Gs/S, Rp/M, Ch/F)	VEGETATION (Con, Dec, Grs, Moss)

RELIEF (Low/Med/High)	CONTAMINATION (Work/Comp/Road/Cosn)	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH (<1/1-5/>5)	DEPTH	WATER COLOUR (Clr/Yel/Brn)	SUSP. (Hvy/Light)	SEDIMENT COLOUR (Wht/Yel/Grn/Red/Brn/Blk)	COMPOSITION (Crse/Sand/Fines/Org/Col)	ORIG. DUP. REP.

REMARKS:

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR (Clr/Cldy)	WTR SURF. or FLOW (Gs/S, Rp/M, Ch/F)	VEGETATION (Con, Dec, Grs, Moss)

RELIEF (Low/Med/High)	CONTAMINATION (Work/Comp/Road/Cosn)	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH (<1/1-5/>5)	DEPTH	WATER COLOUR (Clr/Yel/Brn)	SUSP. (Hvy/Light)	SEDIMENT COLOUR (Wht/Yel/Grn/Red/Brn/Blk)	COMPOSITION (Crse/Sand/Fines/Org/Col)	ORIG. DUP. REP.

REMARKS:

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR (Clr/Cldy)	WTR SURF. or FLOW (Gs/S, Rp/M, Ch/F)	VEGETATION (Con, Dec, Grs, Moss)

RELIEF (Low/Med/High)	CONTAMINATION (Work/Comp/Road/Cosn)	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH (<1/1-5/>5)	DEPTH	WATER COLOUR (Clr/Yel/Brn)	SUSP. (Hvy/Light)	SEDIMENT COLOUR (Wht/Yel/Grn/Red/Brn/Blk)	COMPOSITION (Crse/Sand/Fines/Org/Col)	ORIG. DUP. REP.

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B – Stream sed./water; C/D – Lake sed./water; E/F – Bog sed./water; G – Gosson; H – Hvy mnrl conc.; I/J – Spring sed./water; K,L – Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 15/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Zone)	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	A	035	11	474900	5923210	SST	Clr ✓		Con ✓, Dec ✓, Grs ✓, Moss ✓
83F6	97	BR	A	036	11	474950	5927250	SST	Clr ✓	Rp/M —	Con ✓, Moss ✓
83F6	97	BR	A	037	11	480400	5921700	SST			Con ✓, Dec ✓, Grs —, Moss —

NUMBER	RELIEF	CONTAMINATION	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION (Crse/Sand/Fines)	ORIG. DUP. REP.
035	Med ✓	Road ✓	3 / 1	1-5 ✓	.4	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	2 1 1	ORIG. (circled)
036	Med ✓	Train wreck	1 / 2 / 1	<1 ✓	.1	Clr ✓	Light ✓	Wht 1, Brn 2, Blk 1	1 1 2	ORIG. (circled)
037	Low ✓	none								ORIG. (circled)

REMARKS (035): Site of 7BRH032

REMARKS (036): poor quality creek – Also site of 7BRH033

REMARKS (037): site of 7BRH034

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR (Clr/Cldy)	WTR SURF. or FLOW (Gs/S, Rp/M, Ch/F)	VEGETATION (Con, Dec, Grs, Moss)

RELIEF (Low/Med/High)	CONTAMINATION (Work/Comp/Road/Cosn)	BOTTOM (Rock/Sand/Clay/Org)	AREA or WIDTH (<1/1-5/>5)	DEPTH	WATER COLOUR (Clr/Yel/Brn)	SUSP. (Hvy/Light)	SEDIMENT COLOUR (Wht/Yel/Grn/Red/Brn/Blk)	COMPOSITION (Crse/Sand/Fines/Org/Col)	ORIG. DUP. REP.

REMARKS:

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 9/97

NTS	YEAR	INIT.	TYPE	NUMBER	ZONE	UTM EAST	UTM NORTH	ROCK TYPE	WTHR	WTR SURF. or FLOW	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SEDIMENT COLOUR	COMPOSITION	ORIG./DUP./REP.
83F6	97	BR	A	023	11	474850	[illegible]	Limestone	Clr ✓	Rp/M ✓	Med ✓	None	Rock 1, Sand 1, Clay 2	<1 ✓	.2	Yel ✓	Wht 3, Brn 1	1 2 1	ORIG.

REMARKS: No Heavy taken at this site – entire creek is white + full of limestone pebbles.

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B – Stream sed./water; C/D – Lake sed./water; E/F – Bog sed./water; G – Gossan; H – Hvy mnrl conc.; I/J – Spring sed./water; K,L – Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	YEAR	INIT.	TYPE	NUMBER	ZONE	UTM EAST	UTM NORTH	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIG./DUP./REP.
83F6	97	BR	A	024	11	480110	5926870	SST	Clr ✓	Rp/M ✓	Con ✓, Dec ✓	Med ✓	Cut line	Rock 2, Sand 2	<1 ✓	.1	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
83F6	97	BR	A	025	11	480110	5926870	SST	Clr ✓	Rp/M ✓	Con ✓, Dec ✓	Med ✓	None	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓		Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
83F6	97	BR	A	026	11	480850	5926290	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
83F6	97	BR	A	027	11	480870	5926290	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 2, Sand 2	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	ORIG.

REMARKS (024): Taken from Trib of Ponoka Creek – Also site of 7BRH022

REMARKS (025): Taken from Ponoka Creek. – Also site of 7BRH024

REMARKS (026): site of 7BRH023

REMARKS (027): site of 7BRH025

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	Year	Init.	Type	Number	Zone	UTM East	UTM North	Rock Type	Wthr	Wtr Surf. or Flow	Vegetation	Relief	Contamination	Bottom	Area or Width	Depth	Water Colour	Susp.	Sediment Colour	Composition	Orig./Dup./Rep.
83F6	97	BR	A	028	11	4821130	5926920	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	None	Rock 2, Sand 1, Clay 1	<1 ✓	.2	Clr ✓	Light ✓	Brn 2, Blk 2	Crse 2, Sand 1, Fines 1	Orig.
83F6	97	BR	A	029	11	481290	5927670	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	None	Rock 2, Sand 2	<1 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	Orig.

REMARKS (028): Sample taken at jct with New Rd. - No Heavy

REMARKS (029): site of 7BRH026

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	Year	Init.	Type	Number	Zone	UTM East	UTM North	Rock Type	Wthr	Wtr Surf. or Flow	Vegetation	Relief	Contamination	Bottom	Area or Width	Depth	Water Colour	Susp.	Sediment Colour	Composition	Orig./Dup./Rep.
83F6	97	BR	A	030	11	484610	5922850	SST		Rp/M ✓	Con ✓, Moss ✓	Med ✓	None	Rock 1, Sand 3	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	Orig.
83F6	97	BR	A	031	11	483300	5922650	SST Limestone?	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 1, Sand 3	<1 ✓	.1	Clr ✓	Light ✓	Wht 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	Orig.
83F6	97	BR	A	032	11	486900	5925300	SST O/C	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	Orig.
83F6	97	BR	A	033	11	488530	5924550	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	Orig.

REMARKS (030): Sample taken above Beaver Pond - also site of 7BRH027

REMARKS (031): Sample taken above New Cut line - Also site of 7BRH028

REMARKS (032): Corral Creek - Also site of 7BRH029 and O/C C-20

REMARKS (033): Corral Creek - sample taken above Beaver Pond - Also site of 7BRH030

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 14/97

NTS	YEAR	INIT.		NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE
83F6	97	BR	A	034	11	487200	5923130	SST

RELIEF: Med ✓; CONTAMINATION: Cut line; BOTTOM: Rock 2, Sand 1, Clay 1; AREA or WIDTH: 1-5 ✓; DEPTH: .3; WATER COLOUR: Clr ✓; SUSP.: Light ✓; SEDIMENT COLOUR: Red 1, Brn 2, Blk 1; COMPOSITION: Crse 2, Sand 1, Fines 1; ORIGINAL SAMPLE NO.:

REMARKS: Site of 7BRH031

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD — APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Stream Sed CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 15/97

NTS	YEAR	INIT.		NUMBER	Zone	East	North	ROCK TYPE
83F6	97	BR	A	035	11	474900	5927210	SST
83F6	97	BR	A	036	11	474950	5927250	SST
83F6	97	BR	A	037	11	480400	5921700	SST

Sample 035 — WTHR: Clr ✓; RELIEF: Med ✓; CONTAMINATION: Road ✓; BOTTOM: Rock 3, Sand 1; AREA or WIDTH: 1-5 ✓; DEPTH: .4; WATER COLOUR: Clr ✓; SUSP.: Light ✓; SEDIMENT COLOUR: Red 1, Brn 2, Blk 1; COMPOSITION: Crse 2, Sand 1, Fines 1

REMARKS: Site of 7BRH032

Sample 036 — WTHR: Clr ✓; RELIEF: Med ✓; CONTAMINATION: Trail wreck; BOTTOM: Rock 1, Sand 2, Clay 1; AREA or WIDTH: <1 ✓; DEPTH: .1; WATER COLOUR: Clr ✓; SEDIMENT COLOUR: Wht 1, Brn 2, Blk 1; COMPOSITION: Crse 1, Sand 1, Fines 2

REMARKS: poor quality creek - Also site of 7BRH033

Sample 037 — RELIEF: Low ✓; CONTAMINATION: none

REMARKS: site of 7BRH034

REMARKS:

APPENDIX IV.C

HEAVY MINERAL STREAM SEDIMENT SAMPLES

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 15/97

NTS	YEAR	INIT.	S/T	NUMBER	LOCATION (Grid Coord. or UTM) Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F	97	BR	H	032	11	474900	5927210	sst	Clr ✓		Con ✓
83F	97	BR	H	033	11	474950	5927250	sst	Clr ✓	Rp/M ✓	Con ✓, Moss ✓

Sample	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
97BRH032	Med ✓		Rock 3	1-5 ✓	.4	Yel ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG.
97BRH033	Med ✓	Train track	Rock 1, Sand 2, Clay 1	<1 ✓	.1	Clr ✓	Light ✓	Wht 1, Brn 2, Blk 1	Crse 1, Sand 1, Fines 2	ORIG.

REMARKS (032): Taken from Sandstone Creek at jct with Trib - Also 7BRA035

REMARKS (033): Taken from very small, poor quality Trib of SS Creek - Also site of 7BRA036 - Poor Creek - underground in Places - HW16, Train Tracks above

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June/16/97

NTS	YEAR	INIT.	S/T	NUMBER	LOCATION (Grid Coord. or UTM) Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	035	11	487440	5923380	sst, Limestone	Clr ✓		Con ✓
83F6	97	BR	H	034	11	480400	5921700	sst			Con ✓, Dec ✓, Grs ✓, Moss ✓

Sample	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
97BRH035	Low ✓	None	Rock 1, Sand 2, Clay 1	<1 ✓	.2	Clr ✓	Light ✓	Wht 2, Brn 1, Blk 1	Crse 1, Sand 2, Fines 1	ORIG.
97BRH034	Low ✓	none								ORIG.

REMARKS (035): Swampy Area, Limestone float in Creek - Also site of 7BRA038

REMARKS:

REMARKS (034): Poor Quality Creek taken also at site is 7BRA037

REMARKS:

SURVEY TYPE: Heavy Mnrl Conc
CLIENT & PROJECT: 97210 Sharafe
AREA &/or PHOTO: OBED
COLLECTOR(S): BR, LC, RAD
DATE: 06/03/

NTS	YEAR	INIT.	S/T/E	NUMBER	LOCATION Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F	97	BRH		001		474975	5926150	3NST	✓ m	✓	✓ ✓ ✓

RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Low ✓ Med ✓	NONE	Rock 3, Sand 1	1-5 ✓	0.1	Clr ✓	Light ✓	Brn 1, Blk 2	Crse T, Sand 3, Fines 1	

REMARKS: Snds Cr ~40 m up from road/Hwy
Same site as 7RBA001

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: A/B – Stream sed./water; C/D – Lake sed./water; E/F – Bog sed./water; G – Gossan; H – Hvy mnrl conc.; I/J – Spring sed./water; K,L – Other (define)

SURVEY TYPE: Heavy Min
CLIENT & PROJECT: 97210
AREA &/or PHOTO: OBED E. of Macleod
COLLECTOR(S): BR, LC
DATE: 06/03/97

NTS	YEAR	INIT.	S/T/E	NUMBER	LOCATION Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	002	11	492030	5925320	Sed	Cldy ✓	Rp/M ✓	Con ✓ Dec ✓
83F6	93	BR	H	003	11	491180	5924410	sst	Cldy ✓	Rp/M ✓	Con ✓ Dec ✓

RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Med ✓	Road 1/2	Rock ✓, Sand ✓	<1 ✓	.05	Clr ✓	Light ✓	Wht 1, Red 1, Brn 2	Crse 1, Sand 2, Fines 1	
Low ✓	None	Rock 2, Sand 1, Clay 1	<1 ✓, 1-5 ✓	<0.1	Clr ✓	Light ✓	Brn 1, Blk 1	Crse 1, Sand 2, Fines 1	

REMARKS (002): ~~Same~~ Site of 7BRH002

REMARKS (003): From small creek, at same site as 7BRA004.

REMARKS:

REMARKS:

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 5 97

NTS	YEAR	INIT.		NUMBER	LOCATION (Grid Coord. or UTM) Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	004	11	479760	5928420	SS.	Cldy	Rp/M	Con, Dec
83F6	97	BR	H	005	11	480405	5928430	SS.	Cldy	Rp/M	Con, Dec
83F6	97	BR	H	006	11	480980	5928820	Sand Fine	Cldy	Rp/M	Con, Dec
83F6	97	BR	H	007	11	481783	5928832	SSt	Cldy	Rp/M	Con, Dec, Moss

NUMBER	RELIEF	CONTAMINATION	BOTTOM (Rock / Sand / Clay / Org)	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION (Crse / Sand / Fines / Org / Gel)	ORIGINAL SAMPLE NO.
004	Med	None	1 / 2 / 1 /	<1	.1	Clr	Light	Wht 1, Brn 2, Blk 1	2 / 2 /	ORIG.
005	Med	None	2 / 1 / 1 /	1-5	.3	Clr	Light	Wht 1, Brn 2, Blk 1	2 / 1 / 1	ORIG.
006	Med	None	1 / 2 / 1 /	<1	.1	Clr	Light	Wht 1, Brn 2, Blk 1	1 / 2 / 1	ORIG.
007	Low	None	1 / 2 / 1 /	<1	.1	Brn	Light	Red 2, Brn 1, Blk 2	/ 2 / 2	ORIG.

REMARKS (004): Sample taken above series of Beaver Dams. - small Creek.

REMARKS (005): Pooka Creek - also site of 7BRA006 - Beaver Dams in Area

REMARKS (006): Walked down from Clearing to creek

REMARKS (007): [illegible] creek sampled after [illegible] Rain with [illegible]

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gosson; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 5 97

NTS	YEAR	INIT.		NUMBER	LOCATION (Grid Coord. or UTM) Zone	UTM East	UTM North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	RR	H	008	11	478192	5928645	SSt	Cldy	Rp/M	

NUMBER	RELIEF	CONTAMINATION	BOTTOM (Rock / Sand / Clay / Org)	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION (Crse / Sand / Fines / Org / Gel)	ORIGINAL SAMPLE NO.
008	High	none	3 / 1 / Tr /	1-5	.2	Clr	Light	Brn 1, Blk 2	1 / 2 / 1	ORIG.

REMARKS:

REMARKS:

REMARKS:

REMARKS:

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 06

Field	Sample 1	Sample 2	Sample 3	Sample 4
NTS	83F6	83F6	83F6	83F6
YEAR	97	97	97	97
INIT.	BR	BR	BR	BR
NUMBER	H009	H010	H011	H012
LOCATION Zone	11	11	11	11
UTM East	485410	487260	485120	495550
UTM North	5926820	5927150	5927370	5925320
ROCK TYPE	sst	sst	SST	Sed'y, SST siltstone
WTHR	Clr ✓	Clr ✓	Clr ✓	Clr ✓, Cldy ✓
WTR SURF. or FLOW	Gs/S ✓	Gs/S ✓	Rp/M ✓	Rp/M ✓
VEGETATION	Con ✓, Dec ✓	Con ✓, Dec ✓	Con ✓, Dec ✓	Con ✓, Dec ✓
RELIEF	Low ✓	Low ✓	Med ✓	Med ✓
CONTAMINATION	none	none	NONE	NONE
BOTTOM	Rock 2, Sand 1	Rock 1, Sand 2	Rock 3, Sand 1	Rock 2, Sand 1, Clay 1
AREA or WIDTH	<1 ✓	<1 ✓	<1 ✓	<1 ✓
DEPTH	.1	.1	.1	.2
WATER COLOUR	Brn ✓	Brn ✓	Clr ✓	Clr ✓
SUSP.	Light ✓	Light ✓	Light ✓	Light ✓
SEDIMENT COLOUR	Brn 2, Blk 1	Brn 2, Blk 2	Red 1, Brn 2, Blk 1	Wht 1, Brn 2, Blk 1
COMPOSITION	Sand 1, Fines 1, Org 2	Crse 1, Sand 2, Fines 1	Crse 2, Sand 2	Crse 1, Sand 2, Fines 1
REMARKS	Slow moving swampy creek.	1.3 km upstream from 97BRH009.	Sample taken at junction of Cut Lines near property boundary (site of 7BRA012)	Site of 7BRA013 in Coral Creek

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: A/B – Stream sed./water; C/D – Lake sed./water; E/F – Bog sed./water; G – Gossan; H – Hvy mnrl conc.; I/J – Spring sed./water; K,L – Other (define)

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: Jun 8/9

Field	Sample 1	Sample 2	Sample 3	Sample 4
NTS	83F6	83F6	83F6	83F6
YEAR	97	97	97	97
INIT.	BR	BR	BR	BR
NUMBER	H013	H014	H015	H016
LOCATION Zone	11	11	11	11
UTM East	475900	475900	476360	476400
UTM North	5924120	5924150	5923410	5923420
ROCK TYPE	Sand stone	sst	Sand stone	Sand stone
WTHR	Clr ✓, Cldy ✓	Cldy ✓	Clr ✓	Clr ✓
WTR SURF. or FLOW	Rp/M ✓	Rp/M ✓	Rp/M ✓	Rp/M ✓
VEGETATION	Con ✓, Dec ✓	Con ✓, Dec ✓	Con ✓	Con ✓
RELIEF	Low ✓, Med ✓	Low ✓, Med ✓	Low ✓	Low ✓
CONTAMINATION	NONE	none	None	NONE
BOTTOM	Rock 2, Sand 2	Rock 2, Sand 1, Clay 1	Rock 2, Sand 1, Clay 1	Rock 1, Sand 2, Clay 1
AREA or WIDTH	1-5 ✓	1-5 ✓	<1 ✓	<1 ✓
DEPTH	.3	.1	.2	.1
WATER COLOUR	Clr ✓	Yel ✓	Clr ✓	Clr ✓
SUSP.	Light ✓	Light ✓	Light ✓	Light ✓
SEDIMENT COLOUR	Red 1, Brn 2, Blk 1	Red 1, Brn 2, Blk 1	Red 1, Brn 2, Blk 1	Wht 1, Brn 2, Blk 1
COMPOSITION	Crse 2, Sand 2	Sand 2, Fines 2	Crse 2, Sand 1, Fines 1	Sand 2, Fines 2
REMARKS	also site of 7BRA014 - Junction of Cut Line + Geelog	also site of 97BRA015 and 97BRP002,003	taken from Sandstone Creek at jct with Trib (this creek flows from SW) Also site of 7BRA016	taken from Trib flowing from SE - site of 7BRA017

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 8/97

NTS	YEAR	INIT.		NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	017	11	475470	5924920	Sand stone			✓ Con, ✓ Dec

RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.4	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG. (circled)

REMARKS: Taken from Sandstone Creek - walked down from end of Cut Line
Also site of 7BRA018

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B - Stream sed./water; C/D - Lake sed./water; E/F - Bog sed./water; G - Gossan; H - Hvy mnrl conc.; I/J - Spring sed./water; K,L - Other (define)

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 9/97

NTS	YEAR	INIT.		NUMBER	Zone	East	North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	018	11	478030	5926920	SSt	Clr ✓	Rp/M ✓	Con ✓, Moss ✓
83F6	97	BR	H	019	11	478010	5926660	SST	Clr ✓	Rp/M ✓	Con ✓, Moss ✓
83F6	97	BR	H	020	11	478140	5926666	SST	Clr ✓	Rp/M ✓	Con ✓, Moss (circled)
83F6	97	BR	H	021	11	478690	5925170	SST	Clr ✓	NONE	Con ✓, Moss

NUMBER	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
018	Low ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	ORIG. (circled)
019	Low ✓	NONE	Rock 2, Sand 2	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand ·, Fines 2	ORIG. (circled)
020	Low ✓	NONE	Rock 2, Sand 1, Clay 1	<1 ✓	.1	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	
021	Med ✓	NONE	Rock 2, Sand 1, Clay 1	1-5 ✓	.1	Clr ✓	Light ✓	Wht 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	ORIG. (circled)

REMARKS (018): Sample taken above Beaver Pond - Also site of 7BRA019

REMARKS (019): Taken from Trib of above Creek - Trib flows from NE - Also site of 7BRA020

REMARKS (020): Taken from trib flowing from SE - also Site of 7BRA021

REMARKS (021): Also site of 7BRA022

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SURVEY TYPE: Heavy   CLIENT & PROJECT: 97210   AREA &/or PHOTO: OBED   COLLECTOR(S): BR/LC   DATE: June 10/9

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	022	11	480110	5926870	sst	Clr ✓		Con ✓, Dec ✓
83F6	97	BR	H	024	11	480110	5926870	sst	Clr ✓	Rp/M ✓	Con ✓, Dec ✓
83F6	97	BR	H	023	11	480850	5926290	sst	Clr ✓	Rp/M ✓	Con ✓
83F6	97	BR	H	025	11	480870	5926290	sst	Clr ✓	Rp/M ✓	Con ✓

NUMBER	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
022	Med ✓	Cut Lines	Rock 2, Sand 2	<1 ✓	.1	Clr ✓	Light ✓	Brn 2	Crse 2	
024	Med ✓	None	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	
023	Med ✓	None	Rock 2, Sand 1, Clay 1	1-5 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1	
025	Med ✓	None	Rock 2, Sand 2	<1 ✓	.2	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	

REMARKS (022): Taken from Trib of Ponoka Creek - Also site of 7BRA024

REMARKS (024): Take from Ponoka Creek - Also site of 7BRA025

REMARKS (023): Taken from Trib of Ponoka Cr. that flows from South site of 7BRA026

REMARKS (025): taken from Trib of Ponoka Cr. That flows from SE also site of 7BRA027

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD   APEX Geoscience Ltd.

SAMPLE TYPES: A/B – Stream sed./water; C/D – Lake sed./water; E/F – Bog sed./water; G – Gossan; H – Hvy mnrl conc.; I/J – Spring sed./water; K,L – Other (define)

SURVEY TYPE: Heavy   CLIENT & PROJECT: 97210   AREA &/or PHOTO: OBED   COLLECTOR(S): BR/LC   DATE: June 10/9

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	026	11	481290	5927670	sst	Clr ✓		Con ✓

NUMBER	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
026	Med ✓	None	Rock 2, Sand 2	<1 ✓	.3	Clr ✓	Light ✓	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1	

REMARKS (026): site of 7BRA029

REMARKS:

REMARKS:

REMARKS:

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR/LC DATE: June 10/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	027	11	484610	5922850	SST	Clr		Con, Moss
83F6	97	BR	H	028	11	483300	5922650	SST / Lm…	Clr	Rp/M	Con, Moss
83F6	97	BR	H	029	11	486900	5925300	SST O/C	Clr	Rp/M	Con, Moss
83F6	97	BR	H	030	11	488530	5924550	SST	Clr	Gs/S–Rp/M	Con, Moss

NUMBER	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.	ORIG./DUP./REP.
027	Med	None	Rock 1, Sand 3	<1	.2	Clr	Light	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1		ORIG.
028	Med	None	Rock 1, Sand 3	<1	.1	Clr	Light	Wht 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1		ORIG.
029	Med	None	Rock 2, Sand 1, Clay 1	1-5	.3	Clr	Light	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1		ORIG.
030	Med	None	Rock 2, Sand 1, Clay 1	1-5	.3	Clr	Light	Red 1, Brn 2, Blk 1	Crse 2, Sand 1, Fines 1		ORIG.

REMARKS (027): Taken above Beaver Pond — Also site of 7BRA030

REMARKS (028): Site of 7BRA031

REMARKS (029): Site of 7BRA032 - Corral Creek - site of outcrop C-20

REMARKS (030): Corral Creek - Sample taken above Beaver Pond - Also site of 7BRA033

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

SAMPLE TYPES: A/B – Stream sed./water; C/D – Lake sed./water; E/F – Bog sed./water; G – Gossan; H – Hvy mnrl conc.; I/J – Spring sed./water; K,L – Other (define)

SURVEY TYPE: Heavy CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 14/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM) Zone	East	North	ROCK TYPE	WTHR	WTR SURF. or FLOW	VEGETATION
83F6	97	BR	H	031	11	487200	5923130	SST	Clr	Rp/M	Con, Moss

NUMBER	RELIEF	CONTAMINATION	BOTTOM	AREA or WIDTH	DEPTH	WATER COLOUR	SUSP.	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.	ORIG./DUP./REP.
031	Med	Cut Line	Rock 2, Sand 1, Clay 1	1-5	.3	Clr	Light	Red 1, Brn 2, Blk 1	Crse 1, Sand 2, Fines 1		ORIG.

REMARKS: Taken from main creek - downstream ~50m from cut line. (site of 7BRA034)

REMARKS:

REMARKS:

REMARKS:

GEOCHEMICAL SEDIMENT AND WATER SAMPLE CARD APEX Geoscience Ltd.

APPENDIX IV.D

TILL SAMPLES

SURVEY TYPE: PROJECT: AREA &/or PHOTO: COLLECTOR(S): DATE:

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F	97	BR	T	001	~50 E of site C-11	TILL	Cldy ✓	Con ✓ Dec ✓

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Mod ✓	Low ✓	Borrow Pit	+1M?	0.3	Till	Mst ✓	Wht 1, Grn 3, Brn 2, Blk 1	Crse 1, Sand 1, Silt 1, Clay 1	ORIG.

REMARKS: Hvy mnrl sample of Till. From borrow pit prob. not far above bedrock. Large cobbles to ~0.2-0.25 m long axis

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F	97	BR	T	002	Across road from site C10	TILL	Cldy ✓	Con ✓ Dec ✓

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Mod ✓	Low ✓	Road ✓	~1M	0.2	Till	Mst ✓	Wht 1, Brn 1, Blk 2	Crse 1, Sand 1, Silt 1, Clay 1	ORIG.

REMARKS: Till ~0.3-0.4 m above bedrock. Some roots.. Cobbles ~0.1 m

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F	97	BR	T	003	492525 5923635	TILL	Cldy ✓	Con ✓ Dec ✓

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Mod ✓	Low ✓	Road Cut	~5m	0.2		Mst ✓	Wht 1, Brn 1, Blk 2	Crse 1, Sand 1, Silt 1, Clay 1	ORIG.

REMARKS: From till near base of ~6 m high road cut. Cobbles ~0.5-0.8m

REMARKS:

GEOCHEMICAL SOIL AND TILL SAMPLE CARD

APEX Geoscience Ltd.

SAMPLE TYPES: S – Soil; T,U,V – Glacial : till, undifferentiated, esker; W – Frost boil; X,Y,Z – Other (define)

SURVEY TYPE: Till CLIENT & PROJECT: 97210 AREA &/or PHOTO: OBED COLLECTOR(S): BR DATE: June 6/97

NTS	YEAR	INIT.	TYPE	NUMBER	LOCATION Zone	UTM East	UTM North	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T	004	11	482570	5928510	Sand/Silt	Clr ✓	Con ✓ Dec ✓

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Mod ✓	Med ✓	None	3.0m			Mst ✓	Yel 1, Red 1, Brn 2	Sand 2, Silt 2	ORIG.

REMARKS: Till sample from Road Cut (New Road) (Round Pebbles up to 3 cm) Poor casting

REMARKS:

REMARKS:

GEOCHEMICAL SOIL AND TILL SAMPLE CARD

APEX Geoscience Ltd.

SURVEY TYPE: Till | CLIENT & PROJECT: 97210 | AREA &/or PHOTO: OBED | COLLECTOR(S): BR/LC | DATE: June 10, 97

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 005	11 Zone 482750 E 5924600 N	SST	Clr ✓	Cldy Con ✓ Dec Grs Moss ✓ Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs Mod ✓ W.F.	Low Med High	Work Camp Road Fuel Gasn	1m			Wet Mst ✓ Dry	Wht Yel Grn Red 1 Brn 3 Blk	Crse Sand 1 Slt 2 Clay Org	ORIG. DUP. REP.

REMARKS: Taken from center of Rand, Low, clear area as on Map

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 006	11 483240 5924300	SST	Clr ✓	Cldy ✓ Con ✓ Dec Grs Moss ✓ Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs ✓ Mod W.F.	Low ✓ Med ✓ High	Work NONE Camp Road Fuel Gasn	1m			Wet ✓ Mst Dry	Wht 1 Yel Grn Red 2 Brn 1 Blk	Crse Sand 1 Slt 1 Clay 2 Org	ORIG. DUP. REP.

REMARKS: Taken on E Edge of small swamp as on map (Near T005) (North of Coal Rd)

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 007	11 483500 5924630	SST	Clr ✓	Cldy ✓ Con ✓ Dec Grs Moss ✓ Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs Mod ✓ W.F.	Low ✓ Med ✓ High	Work NONE Camp Road Fuel Gasn	1m			Wet Mst ✓ Dry	Wht Yel Grn Red 2 Brn 2 Blk	Crse 1 Sand 2 Slt 1 Clay Org	ORIG. DUP. REP.

REMARKS: Taken East of Small Swamp (North of Coal Road)

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 008	11 484410 5925400	SST	Clr ✓	Cldy ✓ Con ✓ Dec Grs Moss ✓ Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs ✓ Mod W.F.	Low ✓ Med ✓ High	Work NONE Camp Road Fuel Gasn	1m			Wet Mst ✓ Dry	Wht Yel Grn Red 2 Brn 2 Blk	Crse 1 Sand 2 Slt 2 Clay Org	ORIG. DUP. REP.

REMARKS: Taken East of small swamp (South of Coal Rd)

GEOCHEMICAL SOIL AND TILL SAMPLE CARD — APEX Geoscience Ltd.

SAMPLE TYPES: S – Soil; T,U,V – Glacial : till, undifferentiated, esker; W – Frost boil; X,Y,Z – Other (define)

SURVEY TYPE: Till | CLIENT & PROJECT: 97210 | AREA &/or PHOTO: OBED | COLLECTOR(S): BR, LC | DATE: June 17, 97

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 009	11 Zone 476120 E 5926880 N	SST	Clr ✓	Cldy Con Dec Grs Moss Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs Mod W.F.	Low ✓ Med High	Work none Camp Road Fuel Gasn	1m			Wet Mst Dry	Wht Yel Grn Red Brn Blk	Crse Sand Slt Clay Org	ORIG. DUP. REP.

REMARKS: Along Highway 16 in NW corner of property 2.0km East of Sandstone Creek

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 010	11 477570 5928830	SST	Clr	Cldy ✓ Con Dec Grs Moss + Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs Mod W.F.	Low Med High	Work Camp Road Fuel Gasn				Wet Mst Dry	Wht Yel Grn Red Brn Blk	Crse Sand Slt Clay Org	ORIG. DUP. REP.

REMARKS: Taken 0.75 km North of Highway 16 just north of new lumber tracks.

NTS	YEAR	INIT.	NUMBER	LOCATION (Grid Coord. or UTM)	ROCK TYPE	WTHR	VEGETATION
83F6	97	BR	T 011	11 478110 5928000		Clr	Cldy ✓ Con Dec Grs Moss Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs Mod W.F.	Low Med High	Work Camp Road Fuel Gasn				Wet Mst Dry	Wht Yel Grn Red Brn Blk	Crse Sand Slt Clay Org	ORIG. DUP. REP.

REMARKS: Taken on 'Beavers Creek' near camp ground approx 4.5 km east of Sandstone Creek

						Clr	Cldy Con Dec Grs Moss Swamp Perm Deser

VEG. INT.	RELIEF	CONTAMINATION	DEPTH	THKNS	HORIZ.	MOISTURE	SEDIMENT COLOUR	COMPOSITION	ORIGINAL SAMPLE NO.
Sprs Mod W.F.	Low Med High	Work Camp Road Fuel Gasn				Wet Mst Dry	Wht Yel Grn Red Brn Blk	Crse Sand Slt Clay Org	ORIG. DUP. REP.

REMARKS:

APPENDIX V

GEOCHEMICAL LAB REPORTS

ITS Intertek Testing Services
Bondar Clegg

Geochemical Lab Report

REPORT: V97-01474.0 (COMPLETE)

REFERENCE:

CLIENT: APEX GEOSCIENCE LTD.

PROJECT: 97210

SUBMITTED BY: B. RYZIUK

DATE RECEIVED: 24-JUN-97 DATE PRINTED: 14-JUL-97

DATE APPROVED	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION	EXTRACTION	METHOD
970702 1	Au30	Gold	43	5 PPB	Fire Assay of 30g	30g Fire Assay - AA
970702 2	Au	Gold - Units convert	43	0.005 GMT		CALCULATION
970702 3	Ag	Silver	43	0.2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 4	Cu	Copper	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 5	Pb	Lead	43	2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 6	Zn	Zinc	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 7	Mo	Molybdenum	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 8	Ni	Nickel	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 9	Co	Cobalt	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 10	Cd	Cadmium	43	0.2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 11	Bi	Bismuth	43	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 12	As	Arsenic	43	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 13	Sb	Antimony	43	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 14	Fe	Iron	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 15	Mn	Manganese	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 16	Te	Tellurium	43	10 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 17	Ba	Barium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 18	Cr	Chromium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 19	V	Vanadium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 20	Sn	Tin	43	20 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 21	W	Tungsten	43	20 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 22	La	Lanthanum	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 23	Al	Aluminum	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 24	Mg	Magnesium	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 25	Ca	Calcium	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 26	Na	Sodium	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 27	K	Potassium	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 28	Sr	Strontium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 29	Y	Yttrium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 30	Ga	Gallium	43	2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 31	Li	Lithium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 32	Nb	Niobium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 33	Sc	Scandium	43	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 34	Ta	Tantalum	43	10 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 35	Ti	Titanium	43	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
970702 36	Zr	Zirconium	43	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
T STREAM SED, SILT	38	1 -80	38	CRUSH/SPLIT & PULV.	5
R ROCK	5	2 -150	5	DRY, SIEVE -80	38

REPORT COPIES TO: DR. REG OLSON
MR. MIKE DUFRESNE

INVOICE TO: DR. REG OLSON

****
This report must not be produced except in full. The data presented in this report is specific to those samples identified under "Sample Number" and is applicable only to the samples as received expressed on a dry basis unless otherwise indicated
****

Intertek Testing Services
Bondar Clegg

Geochemical Lab Report

CLIENT: APEX GEOSCIENCE LTD. PROJECT: 97210

REPORT: V97-01474.0 (COMPLETE) DATE RECEIVED: 24-JUN-97 DATE PRINTED: 14-JUL-97

SAMPLE NUMBER	ELEMENT UNITS	Au30 PPB	Au GMT	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM	Sb PPM	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM	Ga PPM	Li PPM	Nb PPM	Sc PPM	Ta PPM	Ti PCT	Zr PPM
BRA001		<5	<.005	<.2	4	4	28	<1	10	4	<.2	<5	<5	<5	1.25	400	<10	107	9	14	<20	<20	9	0.79	0.60	2.08	<.01	0.05	52	4	<2	8	<1	<5	<10	0.01	1
BRA002		<5	<.005	<.2	4	2	30	<1	11	4	<.2	<5	<5	<5	1.63	670	<10	135	8	14	<20	<20	8	0.67	0.58	2.46	0.01	0.06	67	4	<2	7	<1	<5	<10	0.01	1
BRA003		<5	<.005	<.2	11	6	37	<1	19	6	1.0	<5	<5	<5	1.50	378	<10	74	13	17	<20	<20	9	0.94	0.75	5.79	0.02	0.07	157	5	<2	11	2	<5	<10	0.01	3
BRA004		<5	<.005	<.2	7	3	39	<1	13	5	0.2	<5	<5	<5	1.63	735	<10	126	11	15	<20	<20	7	0.79	0.62	5.13	0.02	0.07	164	5	<2	8	3	<5	<10	<.01	2
BRA005		<5	<.005	<.2	4	3	34	<1	11	4	<.2	<5	<5	<5	1.34	642	<10	130	11	14	<20	<20	8	0.84	0.46	1.00	0.01	0.06	53	4	<2	10	<1	<5	<10	0.01	1
BRA006		<5	<.005	<.2	4	3	32	<1	12	4	<.2	<5	<5	<5	1.23	295	<10	87	11	16	<20	<20	10	0.79	0.76	2.69	<.01	0.06	47	5	<2	9	2	<5	<10	0.02	2
BRA007		<5	<.005	<.2	4	4	34	<1	11	4	<.2	<5	<5	<5	1.27	480	<10	116	12	14	<20	<20	8	0.82	0.54	1.79	<.01	0.05	36	4	<2	9	1	<5	<10	0.01	1
BRA008		<5	<.005	<.2	4	2	24	<1	9	3	<.2	<5	<5	<5	1.02	458	<10	119	7	11	<20	<20	7	0.64	0.39	2.35	<.01	0.05	48	4	<2	8	<1	<5	<10	<.01	1
BRA009		<5	<.005	<.2	3	3	84	<1	9	4	<.2	<5	<5	<5	1.94	1221	<10	148	8	12	<20	<20	9	0.67	0.68	2.56	0.01	0.05	53	4	<2	7	<1	<5	<10	0.01	1
BRA010		<5	<.005	<.2	3	3	30	<1	11	6	0.2	<5	<5	<5	1.62	1442	<10	136	12	18	<20	<20	11	0.88	0.35	0.70	<.01	0.06	22	4	<2	10	<1	<5	<10	0.01	1
BRA011		<5	<.005	<.2	3	2	29	<1	10	5	0.2	<5	<5	<5	2.00	3123	<10	232	8	15	<20	<20	8	0.74	0.28	1.16	<.01	0.04	40	3	<2	9	<1	<5	<10	0.01	1
BRA012		<5	<.005	<.2	4	3	30	<1	10	5	<.2	<5	5	<5	1.77	1011	<10	152	10	17	<20	<20	10	0.85	0.29	1.01	<.01	0.05	25	4	<2	9	<1	<5	<10	<.01	1
BRA013		<5	<.005	<.2	13	4	52	<1	23	7	0.3	<5	<5	<5	2.09	395	<10	125	22	30	<20	<20	11	1.34	0.71	3.09	<.01	0.08	43	6	2	11	1	<5	<10	0.02	3
BRA014		<5	<.005	<.2	3	3	31	<1	10	4	<.2	<5	<5	<5	1.42	444	<10	123	9	14	<20	<20	10	0.79	0.42	0.97	<.01	0.05	41	4	<2	9	<1	<5	<10	0.01	1
BRA015		<5	<.005	<.2	3	2	36	<1	9	4	<.2	<5	5	<5	3.76	1660	<10	222	7	11	<20	<20	7	0.59	0.72	2.28	<.01	0.04	83	4	<2	7	<1	<5	<10	<.01	2
BRA016		<5	<.005	<.2	2	3	28	<1	8	3	<.2	<5	<5	<5	1.49	549	<10	130	6	10	<20	<20	7	0.60	0.57	1.37	<.01	0.04	38	4	<2	8	<1	<5	<10	<.01	1
BRA017		<5	<.005	<.2	3	3	34	<1	11	5	<.2	<5	<5	<5	2.00	1216	<10	151	11	15	<20	<20	12	0.88	0.48	0.95	<.01	0.06	42	4	<2	10	<1	<5	<10	0.01	1
BRA018		<5	<.005	<.2	5	4	32	<1	12	5	<.2	<5	<5	<5	1.44	510	<10	127	10	16	<20	<20	9	0.90	0.60	2.37	0.01	0.06	60	5	<2	9	<1	<5	<10	0.01	1
BRA019		<5	<.005	<.2	3	2	33	<1	12	5	<.2	<5	<5	<5	1.56	573	<10	106	11	18	<20	<20	11	0.92	0.51	0.94	<.01	0.05	31	4	<2	9	<1	<5	<10	0.02	1
BRA020		6	0.006	<.2	2	2	28	<1	8	4	<.2	<5	<5	<5	1.73	829	<10	124	7	12	<20	<20	8	0.61	0.49	1.07	0.01	0.04	39	3	<2	8	<1	<5	<10	<.01	1
BRA021		<5	<.005	<.2	1	<2	20	<1	7	3	<.2	<5	<5	<5	1.07	361	<10	92	5	8	<20	<20	6	0.44	0.58	2.76	<.01	0.03	46	3	<2	6	<1	<5	<10	<.01	<1
BRA022		<5	<.005	<.2	6	4	39	<1	14	5	0.2	<5	<5	<5	1.52	270	<10	86	15	22	<20	<20	14	1.06	0.54	0.77	<.01	0.06	21	5	<2	9	<1	<5	<10	0.02	2
BRA023		<5	<.005	2.0	1	11	15	<1	2	<1	<.2	<5	<5	<5	0.14	59	<10	179	3	1	<20	<20	<1	0.08	0.39	>10.00	0.01	0.01	563	1	<2	2	<1	<5	<10	<.01	<1
BRA024		<5	<.005	0.6	2	<2	17	<1	7	2	<.2	<5	<5	<5	1.23	715	<10	156	4	7	<20	<20	2	0.36	0.49	7.35	<.01	0.03	92	3	<2	5	<1	<5	<10	<.01	1
BRA025		<5	<.005	0.4	7	3	34	<1	14	5	<.2	<5	<5	<5	1.48	493	<10	102	11	18	<20	<20	10	0.90	1.02	4.72	0.01	0.07	75	6	<2	9	<1	<5	<10	0.01	2
BRA026		<5	<.005	<.2	4	4	28	<1	10	4	<.2	<5	<5	<5	1.20	367	<10	88	9	14	<20	<20	9	0.74	0.74	2.98	<.01	0.06	47	5	<2	8	<1	<5	<10	0.01	1
BRA027		<5	<.005	<.2	4	3	29	<1	10	4	<.2	<5	<5	<5	1.45	627	<10	129	9	13	<20	<20	8	0.78	0.57	1.85	<.01	0.06	35	4	<2	9	<1	<5	<10	<.01	1
BRA028		49	0.049	<.2	3	9	26	<1	8	4	<.2	<5	<5	<5	1.35	691	<10	141	7	11	<20	<20	6	0.61	0.39	2.99	<.01	0.04	37	3	<2	8	<1	<5	<10	<.01	1
BRA029		132	0.132	<.2	4	3	34	<1	10	4	<.2	<5	<5	<5	1.34	466	<10	120	9	14	<20	<20	9	0.77	0.51	2.08	<.01	0.06	37	4	<2	9	<1	<5	<10	<.01	1
BRA030		<5	<.005	<.2	5	4	39	<1	11	5	0.2	<5	<5	<5	1.62	736	<10	177	10	16	<20	<20	8	0.96	0.32	0.91	<.01	0.05	29	4	<2	11	<1	<5	<10	<.01	2

CLIENT: APEX GEOSCIENCE LTD. PROJECT: 97210

REPORT: V97-01474.0 (COMPLETE) DATE RECEIVED: 24-JUN-97 DATE PRINTED: 14-JUL-97 PAGE 2 OF 5

SAMPLE NUMBER	ELEMENT UNITS	Au30 PPB	Au GMT	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM	Sb PPM	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM	Ga PPM	Li PPM	Nb PPM	Sc PPM	Ta PPM	Ti PCT	Zr PPM
7BRA031		<5	<.005	0.3	4	7	26	<1	10	3	0.3	<5	<5	<5	1.30	623	<10	190	8	11	<20	<20	4	0.73	0.29	4.16	<.01	0.04	104	3	<2	10	<1	<5	<10	<.01	2
7BRA032		<5	<.005	<.2	6	4	37	<1	17	6	<.2	<5	<5	<5	1.64	326	<10	89	18	25	<20	<20	16	1.04	0.49	0.77	<.01	0.06	25	5	<2	9	1	<5	<10	0.03	2
7BRA033		88	0.088	<.2	6	6	39	<1	17	7	<.2	<5	<5	<5	1.94	2480	<10	179	16	22	<20	<20	12	1.11	0.45	0.94	<.01	0.05	39	5	<2	11	<1	<5	<10	0.01	2
7BRA034		<5	<.005	<.2	2	2	25	<1	8	4	<.2	<5	<5	<5	1.38	1209	<10	169	7	12	<20	<20	9	0.74	0.27	0.74	<.01	0.04	36	3	<2	9	<1	<5	<10	<.01	1
7BRA035		<5	<.005	<.2	5	4	40	<1	12	4	<.2	<5	<5	<5	1.47	404	<10	113	9	14	<20	<20	8	0.78	0.83	3.33	0.01	0.06	70	5	<2	9	<1	<5	<10	<.01	2
7BRA036		<5	<.005	0.3	3	3	25	<1	9	3	<.2	<5	<5	<5	1.29	685	<10	89	6	9	<20	<20	7	0.51	0.87	4.83	0.02	0.04	67	4	<2	7	<1	<5	<10	<.01	1
7BRA037		<5	<.005	<.2	2	<2	30	<1	7	3	<.2	<5	<5	<5	1.32	867	<10	148	7	11	<20	<20	7	0.69	0.21	0.80	<.01	0.04	22	3	<2	8	<1	<5	<10	<.01	<1
7BRA038		<5	<.005	0.6	4	3	24	<1	8	3	<.2	<5	<5	<5	1.02	326	<10	123	6	9	<20	<20	6	0.62	0.67	7.14	0.01	0.04	91	4	<2	8	<1	<5	<10	<.01	2
7BRP001		<5	<.005	<.2	13	6	47	1	28	9	0.5	<5	5	<5	3.51	261	<10	117	58	36	<20	<20	16	1.91	0.99	2.88	0.02	0.19	48	8	4	21	1	<5	<10	0.02	9
7BRP002		<5	<.005	<.2	4	398	603	1	8	3	6.3	<5	<5	<5	1.73	573	<10	71	154	6	<20	<20	11	0.64	0.22	1.81	0.04	0.25	129	3	<2	7	<1	<5	<10	<.01	2
7BRP003		<5	<.005	<.2	4	47	58	<1	12	5	<.2	<5	<5	<5	3.45	1925	<10	98	94	14	<20	<20	5	1.60	0.64	1.78	0.03	0.14	81	7	<2	47	<1	<5	<10	<.01	2
7BRP004		<5	<.005	1.0	3	<2	8	1	9	2	<.2	<5	<5	<5	0.60	165	<10	44	85	7	<20	<20	3	0.37	0.31	>10.00	0.01	0.07	65	3	<2	3	<1	<5	<10	<.01	3
7LCP006		<5	<.005	<.2	12	2	34	<1	18	6	0.3	<5	7	<5	6.62	277	<10	158	79	76	<20	<20	9	2.06	0.87	3.27	0.01	0.13	56	5	5	16	2	<5	<10	0.03	9

Intertek Testing Services
Bondar Clegg

Geochemical Lab Report

CLIENT: APEX GEOSCIENCE LTD. PROJECT: 97210

REPORT: V97-01474.0 (COMPLETE) DATE RECEIVED: 24-JUN-97 DATE PRINTED: 14-JUL-97 PAGE 3 OF 5

STANDARD NAME	ELEMENT UNITS	Au30 PPB	Au GMT	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM	Sb PPM	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM	Ga PPM	Li PPM	Nb PPM	Sc PPM	Ta PPM	Ti PCT	Zr PPM
ANALYTICAL BLANK		<5	-	<.2	<1	<2	<1	<1	<1	<1	<.2	<5	<5	<5	<.01	<1	<10	<1	<1	<1	<20	<20	<1	<.01	<.01	<0.01	<.01	<.01	<1	<1	<2	<1	<1	<5	<10	<.01	<1
ANALYTICAL BLANK		<5	-	<.2	<1	<2	<1	<1	<1	<1	<.2	<5	<5	<5	<.01	<1	<10	<1	<1	<1	<20	<20	<1	<.01	<.01	<0.01	<.01	<.01	<1	<1	<2	<1	<1	<5	<10	<.01	<1
ANALYTICAL BLANK		<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Analyses		3	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mean Value		3	-	0.1	0.5	1	0.5	0.5	0.5	0.5	0.1	3	3	3	.005	0.5	5	0.5	0.5	0.5	10	10	0.5	.005	.005	0.005	.005	.005	0.5	0.5	1	0.5	0.5	3	5	.005	0.5
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		5	0.005	0.2	1	2	1	1	1	1	0.1	2	5	5	0.05	1	.01	.01	1	1	.01	.01	.01	<.01	<.01	<.0001	<.01	<.01	.01	.01	.01	.01	.01	.01	.01	<.01	.01
Bennet Standard		376	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Analyses		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Value		376	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CC GEOCHEM STD 6		-	-	<.2	135	13	127	2	124	29	0.7	<5	126	<5	7.23	1313	<10	7	168	45	<20	<20	<1	1.93	2.55	3.51	0.01	0.05	76	3	<2	19	<1	8	<10	<.01	7
Number of Analyses		-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mean Value		-	-	0.1	135	13	127	2	124	29	0.7	3	126	3	7.23	1313	5	7	168	45	10	10	0.5	1.93	2.55	3.51	0.01	0.05	76	3	1	19	0.5	8	5	.005	7
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		-	-	0.2	140	18	140	4	135	35	0.2	1	145	1	6.50	1450	-	6	170	50	5	12	-	1.80	2.70	4.00	0.01	0.04	70	3	-	24	2	6	1	.003	5
Bennet Standard		2420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Analyses		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Value		2420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		2450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bennet Standard		1037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Analyses		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Value		1037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		1050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CLIENT: APEX GEOSCIENCE LTD. PROJECT: 97210

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STANDARD	ELEMENT	Au30	Au	Ag	Cu	Pb	Zn	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr
AME	UNITS	PPB	GMT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PCT	PCT	PCT	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PPM
BCC GEOCHEM STD 5	-	-	-	0.6	83	5	72	<1	34	20	0.2	<5	6	<5	4.83	693	<10	191	44	122	<20	<20	6	3.32	1.67	1.04	0.06	0.31	39	8	5	24	4	10	<10	0.20	13
Number of Analyses	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mean Value	-	-	-	0.6	83	5	72	0.5	34	20	0.2	3	6	3	4.83	693	5	191	44	122	10	10	6	3.32	1.67	1.04	0.06	0.31	39	8	5	24	4	10	5	0.20	13
Standard Deviation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value	-	-	-	0.7	90	11	80	2	40	18	0.1	1	8	1	4.74	720	0.2	200	54	133	4	2	5	3.09	1.83	1.08	0.06	0.32	39	9	4	-	1	18	1	-	9

LIENT: APEX GEOSCIENCE LTD. PROJECT: 97210

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AMPLE	ELEMENT	Au30	Au	Ag	Cu	Pb	Zn	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr
UMBER	UNITS	PPB	GMT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PCT	PCT	PCT	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PPM
RA005		<5	<.005	<.2	4	3	34	<1	11	4	<.2	<5	<5	<5	1.34	642	<10	130	11	14	<20	<20	8	0.84	0.46	1.00	0.01	0.06	53	4	<2	10	<1	<5	<10	0.01	1
plicate		<5		<.2	4	3	35	<1	11	4	<.2	<5	<5	<5	1.40	685	<10	141	11	15	<20	<20	8	0.88	0.49	1.08	0.01	0.06	57	4	<2	11	1	<5	<10	0.01	1
BRA022		<5	<.005	<.2	6	4	39	<1	14	5	0.2	<5	<5	<5	1.52	270	<10	86	15	22	<20	<20	14	1.06	0.54	0.77	<.01	0.06	21	5	<2	9	<1	<5	<10	0.02	2
uplicate				<.2	6	4	37	<1	14	5	<.2	<5	<5	<5	1.46	267	<10	84	15	21	<20	<20	12	1.04	0.51	0.73	<.01	0.06	20	5	<2	9	<1	<5	<10	0.02	2
BRP004		<5	<.005	1.0	3	<2	8	1	9	2	<.2	<5	<5	<5	0.60	165	<10	44	85	7	<20	<20	3	0.37	0.31	>10.00	0.01	0.07	65	3	<2	3	<1	<5	<10	<.01	3
uplicate		<5		1.0	3	<2	8	1	9	2	<.2	<5	<5	<5	0.62	167	<10	45	87	8	<20	<20	3	0.39	0.32	>10.00	0.01	0.08	67	4	<2	3	<1	<5	<10	<.01	3

APPENDIX VI

SUMMARY OF DIAMOND INDICATOR MINERAL AND GOLD GRAIN COUNTS

VI.A - HEAVY MINERAL STREAM SEDIMENT SAMPLES

VI.B - TILL SAMPLES

APPENDIX VI.A

SUMMARY OF DIAMOND INDICATOR MINERAL AND GOLD GRAIN COUNTS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES TAKEN FROM THE OBED PROPERTY OF SHARATA RESOURCES LTD.

(APEX Project 97210)

Sample Number	Definite		Possible Silicates			Opaques				Total Grains (Incl. Au)	Gold	
	Pyrope	Chrome Diopside	Eclogitic Garnet	Uvarovite*	Diopside**	Purple Spinel***	Possible Chromite	Chromite-Magnetite	Ilmenite		Initial Examin.	Superpan Au Grains
7BRH001						5	7	5		17		8
7BRH002			1			5	15	5		26		11
7BRH003			3			5	15	5		29	1	21
7BRH004			1	3		5	15	5	2	31		26
7BRH005						3	15	5		24	1	7
7BRH006							15	5		20		2
7BRH007			2			5	15	5		27		7
7BRH008							6	5		11		4
7BRH009			2		1	5	15	5		29	1	13
7BRH010					1	1	11	5		18		12
7BRH011			2		1		15	5		26	3	14
7BRH012						5	12	5		22		8
7BRH013					2		15	5		22		5
7BRH014			2			3	9	5	2	21		1
7BRH015			1			5	15	5		26		2
7BRH016						5	9	5		19		8
7BRH017		2	1			5	6	5	1	20		7
7BRH018			2			5	10	5		23	1	7
7BRH019				1		5	2	4		12		0
7BRH020			2			5	11	5		23		5
7BRH021					1	5	15	5		26		6
7BRH022						3	3	5		11		3
7BRH023			2		1		10	5		18		5
7BRH024			1			5	8	5		19		2
7BRH025						5	8	5		18		4
7BRH026						3	7	5		15		4
7BRH027						3	15	5		23		8
7BRH028							8	5		13		0
7BRH029			1	1		6	13	5		26		13
7BRH030							12	5		17		9
7BRH031					1		9	5		15		10
7BRH032							7	5		12		4
7BRH033							2	2		4		2
7BRH034		1			1		5	5		12		1
7BRH035		1	1		1	4	9	5		21		19
Totals	**0**	**4**	**24**	**5**	**10**	**106**	**364**	**171**	**5**	**696**	**7**	**258**

NOTE: *Uvarovite includes some grains listed as "possible uvarovite/chrome diopside".
**Diopside includes some grains listed as possible "chrome diopside/augite" or a "green mineral".
***Sample 7BRH029 includes 1 grain listed as "possible spinel/pyrope".

APPENDIX VI.B

SUMMARY OF DIAMOND INDICATOR MINERAL AND GOLD GRAIN COUNTS FROM TILL SAMPLES TAKEN FROM THE OBED PROPERTYOF SHARATA RESOURCES LTD.

(APEX Project 97210)

Sample Number	Definite		Possible Silicates				Opaques				Total Grains	Gold
	Pyrope	Chrome Diopside	Pyropes	Eclogitic Garnet	Olivine	Diopside	Purple Spinel	Possible Chromite	Chromite-Magnetite	Ilmenite		Superpan Au Grains
7BRT001						2		11	11		24	7
7BRT002								3	15		18	7
7BRT003								5	14		19	14
7BRT004			1			1		15	14		31	13
7BRT005			2					7	6		15	0
7BRT006	1			2		2			6		11	0
7BRT007	1							6	12		19	0
7BRT008								8	16		24	15
7BRT009				1	2			5	17		25	3
7BRT010								7	9		16	4
7BRT011								5	11		16	3
Totals	**2**	**0**	**3**	**3**	**2**	**5**	**0**	**72**	**131**	**0**	**218**	**66**

APPENDIX VII

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS

VII.A - HEAVY MINERAL STREAM SEDIMENT SAMPLES

VII.B - TILL SAMPLES

APPENDIX VII.A

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% SiO2	wt% Al2O3	wt% MnO	wt% NiO	ppm Ni	wt% ZnO	ppm Zn	Total
7BRH - 001	1	UNKNOWN	1.21	34.51	37.63	13.86	0.00	0.06	11.25	0.30	0.09	0.00	0.03	0.00	98.96
7BRH - 001	2	PICRO CHROMITE	0.24	45.95	27.78	14.23	0.00	0.10	11.11	0.28	0.14	1100.12	0.04	321.36	99.91
7BRH - 001	3	UNKNOWN	0.46	54.77	19.68	15.48	0.00	0.05	8.95	0.22	0.09	707.22	0.05	401.70	99.78
7BRH - 002	4	SUB PICRO CHROMITE	0.51	35.02	39.79	14.22	0.00	0.04	7.23	0.22	0.22	1728.76	0.00	0.00	97.33
7BRH - 002	5	UNKNOWN	0.15	57.53	16.29	16.16	0.03	0.12	8.27	0.28	0.14	1100.12	0.02	160.68	99.03
7BRH - 002	6	UNKNOWN	0.03	59.39	18.62	11.52	0.03	0.00	8.88	0.33	0.04	314.32	0.12	964.08	98.99
7BRH - 002	7	SUB PICRO CHROMITE	1.94	36.67	26.59	13.90	0.02	0.06	17.32	0.27	0.17	1335.86	0.06	482.04	97.04
7BRH - 002	8	PICRO CHROMITE	1.18	46.13	19.74	15.88	0.01	0.05	15.36	0.19	0.17	1335.86	0.04	321.36	98.80
7BRH - 002	9	PICRO CHROMITE	0.11	42.14	19.28	13.81	0.00	0.00	22.92	0.26	0.06	471.48	0.14	1124.76	98.78
7BRH - 002	10	PICRO CHROMITE	0.11	42.53	19.45	13.81	0.00	0.00	23.37	0.23	0.07	550.06	0.16	1285.44	99.78
7BRH - 002	11	SUB PICRO CHROMITE	1.80	39.64	25.88	14.86	0.00	0.10	17.00	0.21	0.17	1335.86	0.06	482.04	99.77
7BRH - 003	12	UNKNOWN	1.02	33.93	38.37	15.38	0.00	0.10	9.30	0.26	0.15	1178.70	0.02	160.68	98.58
7BRH - 003	13	SUB PICRO CHROMITE	0.30	37.44	20.31	14.34	0.02	0.11	27.19	0.28	0.19	1493.02	0.06	482.04	100.30
7BRH - 003	14	PICRO CHROMITE	0.28	42.18	20.63	14.05	0.00	0.00	21.60	0.26	0.08	628.64	0.14	1124.76	99.26
7BRH - 003	15	UNKNOWN	7.28	23.01	39.08	13.34	0.00	0.02	15.51	0.29	0.20	1571.60	0.02	160.68	98.81
7BRH - 003	16	PICRO CHROMITE	1.48	45.96	21.52	15.51	0.00	0.04	13.65	0.20	0.19	1493.02	0.04	321.36	98.66
7BRH - 004	17	PICRO CHROMITE	1.45	40.16	24.59	14.31	0.00	0.04	17.57	0.17	0.16	1257.28	0.05	401.70	98.54
7BRH - 004	18	UNKNOWN	0.18	60.19	14.34	16.32	0.00	0.07	7.08	0.17	0.11	864.38	0.01	80.34	98.50
7BRH - 004	19	PICRO CHROMITE	0.40	46.11	18.59	14.77	0.00	0.07	19.13	0.22	0.12	942.96	0.07	562.38	99.53
7BRH - 004	20	PICRO CHROMITE	1.26	42.07	22.67	15.09	0.00	0.05	17.77	0.25	0.17	1335.86	0.04	321.36	99.41
7BRH - 004	21	SUB PICRO CHROMITE	1.21	38.39	24.36	14.52	0.04	0.06	20.20	0.22	0.17	1335.86	0.06	482.04	99.29
7BRH - 004	22	PICRO CHROMITE	1.86	40.66	27.78	13.81	0.00	0.09	14.83	0.24	0.18	1414.44	0.03	241.02	99.53
7BRH - 004	23	PICRO CHROMITE	1.02	43.33	22.46	14.04	0.00	0.07	16.19	0.30	0.18	1414.44	0.05	401.70	97.68
7BRH - 004	24	UNKNOWN	0.75	29.83	18.98	17.74	0.00	0.07	31.83	0.21	0.13	1021.54	0.08	642.72	99.66
7BRH - 005	25	PICRO CHROMITE	0.12	42.51	13.38	18.69	0.05	0.07	24.27	0.16	0.17	1335.86	0.03	241.02	99.50
7BRH - 005	26	PICRO CHROMITE	0.50	40.28	32.56	14.16	0.01	0.06	10.16	0.32	0.10	785.80	0.05	401.70	98.23
7BRH - 005	27	PICRO CHROMITE	0.42	50.60	23.58	14.61	0.00	0.03	8.63	0.30	0.09	707.22	0.05	401.70	98.34
7BRH - 005	28	SUB PICRO CHROMITE	1.53	36.49	24.83	15.01	0.00	0.05	20.72	0.23	0.16	1257.28	0.05	401.70	99.12
7BRH - 005	29	PICRO CHROMITE	0.52	45.82	27.03	14.25	0.00	0.06	9.68	0.30	0.09	707.22	0.02	160.68	97.80
7BRH - 005	30	PICRO CHROMITE	1.42	43.95	21.82	15.20	0.06	0.02	14.57	0.20	0.16	1257.28	0.04	321.36	97.50
7BRH - 005	31	PICRO CHROMITE	0.50	49.70	20.54	16.15	0.00	0.06	11.72	0.20	0.11	864.38	0.03	241.02	99.06
7BRH - 005	32	PICRO CHROMITE	1.33	46.47	21.71	15.40	0.00	0.10	13.45	0.23	0.19	1493.02	0.03	241.02	98.98
7BRH - 005	33	SUB PICRO CHROMITE	0.89	36.76	33.69	14.34	0.00	0.00	11.85	0.28	0.20	1571.60	0.03	241.02	98.11
7BRH - 005	34	PICRO CHROMITE	1.27	45.66	21.64	15.09	0.00	0.06	14.45	0.22	0.18	1414.44	0.04	321.36	98.67
7BRH - 005	35	PICRO CHROMITE	0.26	55.01	20.15	14.94	0.04	0.05	7.65	0.26	0.12	942.96	0.03	241.02	98.56

APPENDIX VII.A

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

			wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	ppm	wt%	ppm	
Sample Number	**Grain**	**Mineral**	**TiO2**	**Cr2O3**	**FeO**	**MgO**	**CaO**	**SiO2**	**Al2O3**	**MnO**	**NiO**	**Ni**	**ZnO**	**Zn**	**Total**
7BRH - 006	36	UNKNOWN	0.69	22.09	29.55	14.04	0.00	0.03	31.81	0.23	0.16	1257.28	0.11	883.74	98.77
7BRH - 006	37	PICRO CHROMITE	1.30	43.44	23.38	13.61	0.00	0.10	16.43	0.26	0.17	1335.86	0.04	321.36	98.80
7BRH - 006	38	PICRO CHROMITE	0.34	52.45	26.00	13.82	0.00	0.00	5.24	0.27	0.05	392.90	0.04	321.36	98.23
7BRH - 006	39	SUB PICRO CHROMITE	0.11	37.53	13.90	18.73	0.03	0.12	28.04	0.15	0.15	1178.70	0.05	401.70	98.87
7BRH - 006	40	PICRO CHROMITE	0.48	45.58	28.71	15.41	0.00	0.09	7.06	0.27	0.13	1021.54	0.03	241.02	97.79
7BRH - 006	41	PICRO CHROMITE	0.42	50.79	22.21	15.66	0.02	0.06	9.35	0.21	0.10	785.80	0.04	321.36	98.90
7BRH - 007	159	PICRO CHROMITE	0.01	46.41	18.23	13.91	0.00	0.00	20.43	0.25	0.06	471.48	0.11	883.74	99.46
7BRH - 007	160	PICRO CHROMITE	0.32	51.60	28.20	10.14	0.06	0.00	7.87	0.55	0.07	550.06	0.15	1205.10	99.03
7BRH - 007	161	PICRO CHROMITE	0.17	48.78	18.62	15.17	0.01	0.12	15.75	0.25	0.14	1100.12	0.05	401.70	99.13
7BRH - 007	162	PICRO CHROMITE	0.21	48.31	15.44	16.39	0.00	0.01	18.50	0.23	0.12	942.96	0.04	321.36	99.28
7BRH - 007	163	PICRO CHROMITE	1.36	45.79	23.23	14.31	0.00	0.03	14.90	0.26	0.13	1021.54	0.06	482.04	100.11
7BRH - 008	164	UNKNOWN	0.22	58.75	17.57	16.04	0.00	0.02	7.07	0.23	0.15	1178.70	0.01	80.34	100.12
7BRH - 008	165	UNKNOWN	0.05	61.88	16.20	14.14	0.04	0.00	6.89	0.22	0.09	707.22	0.03	241.02	99.57
7BRH - 009	42	PICRO CHROMITE	0.23	40.99	17.64	16.09	0.03	0.10	24.78	0.23	0.14	1100.12	0.04	321.36	100.30
7BRH - 009	43	SUB PICRO CHROMITE	0.29	38.04	17.26	17.23	0.00	0.17	25.20	0.22	0.17	1335.86	0.05	401.70	98.68
7BRH - 009	44	PICRO CHROMITE	0.22	43.96	13.34	18.75	0.00	0.11	21.54	0.17	0.20	1571.60	0.02	160.68	98.37
7BRH - 009	45	PICRO CHROMITE	0.18	40.78	12.93	19.71	0.00	0.08	25.98	0.17	0.19	1493.02	0.00	0.00	100.07
7BRH - 009	46	PICRO CHROMITE	1.40	42.91	21.94	15.71	0.00	0.03	16.35	0.18	0.19	1493.02	0.04	321.36	98.83
7BRH - 009	47	PICRO CHROMITE	1.13	43.04	18.88	17.05	0.07	0.05	18.41	0.18	0.21	1650.18	0.04	321.36	99.12
7BRH - 009	48	UNKNOWN	0.45	30.26	28.68	14.10	0.01	0.00	24.47	0.22	0.06	471.48	0.06	482.04	98.34
7BRH - 009	49	PICRO CHROMITE	1.21	46.33	19.44	16.18	0.02	0.09	15.51	0.20	0.20	1571.60	0.05	401.70	99.30
7BRH - 009	50	PICRO CHROMITE	0.38	47.61	24.46	14.21	0.04	0.00	11.29	0.26	0.06	471.48	0.02	160.68	98.36
7BRH - 009	51	PICRO CHROMITE	0.43	48.19	22.31	14.82	0.13	0.46	11.40	0.22	0.10	785.80	0.01	80.34	98.09
7BRH - 010	52	PICRO CHROMITE	0.96	45.68	20.86	15.06	0.02	0.03	15.80	0.25	0.16	1257.28	0.04	321.36	98.90
7BRH - 010	53	UNKNOWN	0.12	58.89	15.26	16.75	0.04	0.09	9.24	0.22	0.12	942.96	0.05	401.70	100.80
7BRH - 010	54	PICRO CHROMITE	1.10	45.49	19.41	16.32	0.00	0.05	16.59	0.20	0.18	1414.44	0.04	321.36	99.44
7BRH - 010	55	PICRO CHROMITE	0.39	48.48	26.34	15.43	0.00	0.04	6.78	0.23	0.15	1178.70	0.04	321.36	97.92
7BRH - 010	56	PICRO CHROMITE	1.91	41.11	25.22	13.88	0.00	0.03	15.91	0.26	0.20	1571.60	0.06	482.04	98.64
7BRH - 011	57	UNKNOWN	0.81	20.49	30.29	14.19	0.00	0.10	31.87	0.18	0.15	1178.70	0.09	723.06	98.24
7BRH - 011	58	SUB PICRO CHROMITE	1.83	35.66	26.70	14.39	0.05	0.07	19.43	0.29	0.18	1414.44	0.06	482.04	98.71
7BRH - 013	59	SUB PICRO CHROMITE	0.10	39.16	22.95	12.04	0.02	0.00	23.80	0.31	0.06	471.48	0.21	1687.14	98.71
7BRH - 013	60	SUB PICRO CHROMITE	0.72	38.28	32.89	14.48	0.00	0.00	10.89	0.24	0.17	1335.86	0.01	80.34	97.74
7BRH - 013	61	PICRO CHROMITE	0.03	50.95	18.51	13.76	0.00	0.02	16.66	0.27	0.06	471.48	0.09	723.06	100.41
7BRH - 013	62	PICRO CHROMITE	0.38	54.32	25.72	12.81	0.00	0.00	4.61	0.33	0.05	392.90	0.03	241.02	98.29
7BRH - 013	63	PICRO CHROMITE	1.55	45.06	23.02	14.24	0.04	0.01	14.50	0.26	0.14	1100.12	0.04	321.36	98.91
7BRH - 013	64	SUB PICRO CHROMITE	1.82	37.11	28.39	13.52	0.09	0.04	17.48	0.23	0.15	1178.70	0.06	482.04	98.95
7BRH - 013	65	PICRO CHROMITE	0.39	50.58	20.72	15.04	0.00	0.06	11.66	0.26	0.13	1021.54	0.03	241.02	98.92
7BRH - 013	66	PICRO CHROMITE	1.28	40.58	22.72	14.90	0.00	0.06	19.19	0.24	0.14	1100.12	0.05	401.70	99.21

APPENDIX VII.A

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% SiO2	wt% Al2O3	wt% MnO	wt% NiO	ppm Ni	wt% ZnO	ppm Zn	Total
7BRH - 014	67	UNKNOWN	1.17	29.54	32.04	13.96	0.00	0.00	22.37	0.25	0.11	864.38	0.06	482.04	99.54
7BRH - 014	68	SUB PICRO CHROMITE	0.64	38.36	34.83	15.66	0.02	0.00	8.48	0.27	0.20	1571.60	0.01	80.34	98.53
7BRH - 014	69	SUB PICRO CHROMITE	0.66	38.88	34.45	15.54	0.05	0.02	8.53	0.28	0.20	1571.60	0.04	321.36	98.71
7BRH - 014	70	UNKNOWN	1.77	25.96	28.44	14.74	0.00	0.02	27.24	0.22	0.19	1493.02	0.08	642.72	98.71
7BRH - 014	71	PICRO CHROMITE	0.23	46.16	19.54	14.29	0.00	0.10	18.50	0.21	0.14	1100.12	0.06	482.04	99.28
7BRH - 014	72	PICRO CHROMITE	0.32	41.28	18.01	16.71	0.00	0.00	20.22	0.19	0.17	1335.86	0.06	482.04	97.02
7BRH - 015	73	UNKNOWN	1.96	33.94	27.37	13.17	0.08	0.00	19.87	0.22	0.17	1335.86	0.06	482.04	96.91
7BRH - 015	74	PICRO CHROMITE	1.14	42.62	20.02	15.46	0.00	0.03	17.06	0.23	0.20	1571.60	0.03	241.02	96.85
7BRH - 015	75	SUB PICRO CHROMITE	1.78	39.24	28.00	13.08	0.00	0.04	15.94	0.23	0.17	1335.86	0.07	562.38	98.60
7BRH - 015	76	SUB PICRO CHROMITE	0.97	36.73	22.10	15.06	0.00	0.04	23.34	0.25	0.09	707.22	0.07	562.38	98.70
7BRH - 015	77	PICRO CHROMITE	0.10	42.52	23.34	12.74	0.04	0.00	18.98	0.27	0.09	707.22	0.16	1285.44	98.32
7BRH - 015	78	SUB PICRO CHROMITE	2.31	39.61	24.17	16.04	0.02	0.04	16.16	0.21	0.22	1728.76	0.05	401.70	98.90
7BRH - 015	79	PICRO CHROMITE	0.07	47.17	21.07	12.31	0.01	0.00	18.56	0.32	0.06	471.48	0.15	1205.10	99.76
7BRH - 015	80	UNKNOWN	1.80	32.79	30.32	12.45	0.00	0.00	19.56	0.28	0.19	1493.02	0.09	723.06	97.55
7BRH - 016	81	PICRO CHROMITE	1.24	44.29	23.84	14.24	0.01	0.04	15.81	0.21	0.15	1178.70	0.04	321.36	99.92
7BRH - 016	82	UNKNOWN	0.96	30.32	39.04	15.83	0.01	0.05	11.23	0.23	0.24	1885.92	0.01	80.34	98.00
7BRH - 016	83	SUB PICRO CHROMITE	0.12	39.01	19.93	14.47	0.00	0.00	26.38	0.27	0.08	628.64	0.17	1365.78	100.50
7BRH - 016	84	PICRO CHROMITE	0.32	44.91	19.31	16.16	0.05	0.09	18.08	0.24	0.09	707.22	0.03	241.02	99.31
7BRH - 016	85	PICRO CHROMITE	1.30	41.06	25.07	14.07	0.00	0.01	17.20	0.17	0.13	1021.54	0.06	482.04	99.14
7BRH - 016	86	SUB PICRO CHROMITE	1.74	39.57	24.90	14.84	0.00	0.03	17.08	0.16	0.15	1178.70	0.03	241.02	98.56
7BRH - 017	87	PICRO CHROMITE	0.05	43.26	14.03	18.23	0.00	0.13	23.09	0.20	0.14	1100.12	0.07	562.38	99.26
7BRH - 017	88	PICRO CHROMITE	0.39	44.48	23.97	12.45	0.06	0.07	17.88	0.29	0.15	1178.70	0.08	642.72	99.89
7BRH - 017	172	PICRO ILMENITE	50.26	0.32	35.26	12.10	0.00	0.03	0.23	0.27	0.04	314.32	0.03	241.02	98.56
7BRH - 018	89	PICRO CHROMITE	0.50	45.56	27.38	15.30	0.00	0.03	9.52	0.25	0.09	707.22	0.04	321.36	98.69
7BRH - 018	90	PICRO CHROMITE	2.57	41.71	28.19	13.09	0.00	0.06	12.43	0.20	0.17	1335.86	0.07	562.38	98.57
7BRH - 018	91	PICRO CHROMITE	0.50	46.17	30.23	12.44	0.00	0.04	8.10	0.28	0.08	628.64	0.04	321.36	97.91
7BRH - 018	92	PICRO CHROMITE	1.19	47.01	20.80	14.45	0.00	0.06	14.32	0.21	0.17	1335.86	0.05	401.70	98.32
7BRH - 019	93	SUB PICRO CHROMITE	2.16	37.94	28.54	13.12	0.00	0.09	16.40	0.24	0.15	1178.70	0.06	482.04	98.74
7BRH - 020	166	UNKNOWN	0.11	58.37	19.11	12.29	0.00	0.01	9.82	0.27	0.04	314.32	0.13	1044.42	100.19
7BRH - 020	167	SUB PICRO CHROMITE	0.12	36.11	19.32	15.33	0.00	0.00	27.48	0.22	0.11	864.38	0.15	1205.10	98.92
7BRH - 020	168	PICRO CHROMITE	0.02	49.69	19.73	12.20	0.03	0.03	16.78	0.32	0.04	314.32	0.15	1205.10	99.05
7BRH - 021	169	UNKNOWN	0.09	59.95	16.63	13.78	0.00	0.04	9.12	0.27	0.08	628.64	0.07	562.38	100.08
7BRH - 021	170	PICRO CHROMITE	1.20	48.41	20.64	15.70	0.00	0.03	13.83	0.21	0.19	1493.02	0.04	321.36	100.32
7BRH - 021	171	SUB PICRO CHROMITE	0.70	35.36	22.37	16.03	0.00	0.00	23.98	0.25	0.13	1021.54	0.09	723.06	98.97
7BRH - 022	94	UNKNOWN	0.16	58.66	17.86	14.76	0.00	0.03	7.51	0.24	0.14	1100.12	0.02	160.68	99.42
7BRH - 022	95	PICRO CHROMITE	0.03	54.13	18.65	12.72	0.04	0.00	13.11	0.29	0.06	471.48	0.11	883.74	99.20

APPENDIX VII.A

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

			wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	ppm	wt%	ppm	
Sample Number	**Grain**	**Mineral**	**TiO2**	**Cr2O3**	**FeO**	**MgO**	**CaO**	**SiO2**	**Al2O3**	**MnO**	**NiO**	**Ni**	**ZnO**	**Zn**	**Total**
7BRH - 023	96	PICRO CHROMITE	0.45	48.79	27.92	13.96	0.00	0.09	7.15	0.33	0.05	392.90	0.04	321.36	98.82
7BRH - 023	97	PICRO CHROMITE	0.64	41.24	33.08	13.42	0.02	0.00	10.08	0.31	0.14	1100.12	0.06	482.04	99.03
7BRH - 023	98	PICRO CHROMITE	0.67	43.98	26.55	16.09	0.00	0.04	11.46	0.26	0.12	942.96	0.04	321.36	99.24
7BRH - 023	99	PICRO CHROMITE	0.65	44.33	29.50	14.39	0.00	0.06	8.46	0.27	0.14	1100.12	0.02	160.68	97.86
7BRH - 023	100	PICRO CHROMITE	1.03	43.86	25.13	12.37	0.00	0.07	16.18	0.29	0.17	1335.86	0.07	562.38	99.23
7BRH - 023	101	UNKNOWN	0.49	28.78	27.51	14.97	0.00	0.06	27.18	0.21	0.09	707.22	0.05	401.70	99.38
7BRH - 023	102	PICRO CHROMITE	0.26	50.81	16.42	16.16	0.00	0.11	15.73	0.20	0.15	1178.70	0.03	241.02	99.92
7BRH - 023	103	SUB PICRO CHROMITE	0.62	36.74	36.27	15.14	0.05	0.07	8.90	0.30	0.21	1650.18	0.02	160.68	98.37
7BRH - 024	104	PICRO CHROMITE	1.23	42.30	20.05	16.76	0.00	0.04	19.14	0.19	0.21	1650.18	0.04	321.36	100.05
7BRH - 024	105	PICRO CHROMITE	0.36	49.71	25.98	15.25	0.00	0.00	7.58	0.26	0.09	707.22	0.02	160.68	99.28
7BRH - 024	106	PICRO CHROMITE	0.29	45.93	16.58	16.58	0.00	0.11	19.52	0.19	0.17	1335.86	0.04	321.36	99.47
7BRH - 024	107	PICRO CHROMITE	0.54	46.77	25.88	16.08	0.00	0.07	8.50	0.26	0.15	1178.70	0.03	241.02	98.33
7BRH - 024	108	PICRO CHROMITE	0.22	54.67	23.40	12.75	0.04	0.12	8.02	0.32	0.11	864.38	0.04	321.36	99.73
7BRH - 025	109	PICRO CHROMITE	1.56	43.84	25.86	13.04	0.01	0.02	14.62	0.20	0.16	1257.28	0.06	482.04	99.42
7BRH - 025	110	PICRO CHROMITE	0.35	50.18	26.71	13.67	0.00	0.05	8.04	0.30	0.11	864.38	0.04	321.36	99.48
7BRH - 025	111	PICRO CHROMITE	0.38	50.63	29.28	12.81	0.00	0.04	4.89	0.29	0.07	550.06	0.03	241.02	98.44
7BRH - 025	112	SUB PICRO CHROMITE	0.31	38.81	23.22	13.67	0.01	0.01	22.54	0.32	0.10	785.80	0.15	1205.10	99.20
7BRH - 025	113	UNKNOWN	0.00	0.01	0.01	9.80	0.00	0.08	17.44	0.00	0.00	0.00	0.00	0.00	27.34
7BRH - 025	114	PICRO CHROMITE	0.46	54.02	19.14	14.03	0.04	0.00	11.31	0.23	0.10	785.80	0.04	321.36	99.40
7BRH - 026	115	PICRO CHROMITE	0.00	55.89	17.01	12.75	0.00	0.00	12.13	0.25	0.04	314.32	0.15	1205.10	98.27
7BRH - 026	116	UNKNOWN	0.37	28.06	24.63	15.69	0.00	0.01	28.55	0.22	0.12	942.96	0.04	321.36	97.73
7BRH - 026	117	PICRO CHROMITE	1.22	40.70	26.26	12.16	0.00	0.08	17.64	0.29	0.15	1178.70	0.10	803.40	98.67
7BRH - 027	118	PICRO CHROMITE	0.98	46.31	18.43	16.37	0.00	0.04	15.37	0.18	0.16	1257.28	0.03	241.02	97.92
7BRH - 027	119	PICRO CHROMITE	1.32	43.17	23.00	14.02	0.00	0.05	14.50	0.20	0.18	1414.44	0.05	401.70	96.55
7BRH - 027	120	PICRO CHROMITE	0.99	46.57	18.30	16.33	0.00	0.02	15.80	0.20	0.14	1100.12	0.02	160.68	98.41
7BRH - 027	121	UNKNOWN	2.13	23.36	29.36	14.99	0.00	0.04	28.40	0.20	0.17	1335.86	0.07	562.38	98.77
7BRH - 027	122	SUB PICRO CHROMITE	1.15	37.64	24.23	14.36	0.00	0.03	22.15	0.22	0.15	1178.70	0.05	401.70	100.03
7BRH - 027	123	UNKNOWN	0.55	33.83	25.36	15.36	0.03	0.06	23.46	0.21	0.10	785.80	0.05	401.70	99.05
7BRH - 027	124	PICRO CHROMITE	1.11	42.44	23.58	13.94	0.00	0.08	17.28	0.27	0.17	1335.86	0.04	321.36	98.96
7BRH - 027	125	PICRO CHROMITE	0.36	52.90	20.43	16.93	0.04	0.03	8.71	0.18	0.15	1178.70	0.04	321.36	99.82
7BRH - 027	126	PICRO CHROMITE	1.11	40.01	22.37	15.60	0.02	0.03	20.21	0.18	0.18	1414.44	0.06	482.04	99.84
7BRH - 028	127	UNKNOWN	0.15	61.74	14.58	17.25	0.00	0.10	5.57	0.23	0.13	1021.54	0.02	160.68	99.82
7BRH - 028	128	PICRO CHROMITE	1.58	43.15	21.12	16.29	0.04	0.06	17.10	0.18	0.18	1414.44	0.03	241.02	99.78
7BRH - 028	129	PICRO CHROMITE	0.05	44.03	16.71	15.27	0.00	0.00	22.56	0.19	0.09	707.22	0.10	803.40	99.06
7BRH - 028	130	UNKNOWN	0.25	54.38	19.57	17.05	0.00	0.10	7.08	0.26	0.12	942.96	0.02	160.68	98.86
7BRH - 028	131	PICRO CHROMITE	1.38	47.34	22.93	14.01	0.00	0.08	13.55	0.20	0.18	1414.44	0.05	401.70	99.78
7BRH - 028	132	UNKNOWN	0.16	61.70	14.95	16.50	0.00	0.11	5.96	0.22	0.13	1021.54	0.02	160.68	99.77
7BRH - 028	133	PICRO CHROMITE	1.35	43.00	22.25	15.47	0.05	0.04	16.30	0.18	0.18	1414.44	0.04	321.36	98.92

APPENDIX VII.A

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

			wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	ppm	wt%	ppm	
Sample Number	**Grain**	**Mineral**	**TiO2**	**Cr2O3**	**FeO**	**MgO**	**CaO**	**SiO2**	**Al2O3**	**MnO**	**NiO**	**Ni**	**ZnO**	**Zn**	**Total**
7BRH - 029	134	PICRO CHROMITE	1.36	44.24	27.07	13.17	0.01	0.07	13.23	0.23	0.17	1335.86	0.05	401.70	99.64
7BRH - 029	135	PICRO CHROMITE	0.07	46.49	17.77	14.00	0.00	0.00	19.87	0.27	0.06	471.48	0.16	1285.44	98.75
7BRH - 029	136	SUB PICRO CHROMITE	0.65	39.65	31.25	15.29	0.00	0.11	9.38	0.28	0.18	1414.44	0.02	160.68	96.85
7BRH - 029	137	PICRO CHROMITE	0.34	47.77	23.54	13.55	0.05	0.05	11.53	0.35	0.08	628.64	0.06	482.04	97.35
7BRH - 030	138	PICRO CHROMITE	0.30	45.78	30.58	14.19	0.02	0.00	7.24	0.30	0.13	1021.54	0.03	241.02	98.61
7BRH - 030	139	SUB PICRO CHROMITE	1.57	35.60	26.67	13.89	0.06	0.02	19.84	0.24	0.13	1021.54	0.07	562.38	98.15
7BRH - 030	140	SUB PICRO CHROMITE	3.29	37.75	31.69	12.61	0.02	0.07	12.19	0.25	0.18	1414.44	0.07	562.38	98.18
7BRH - 030	141	PICRO CHROMITE	1.05	40.73	22.33	14.23	0.00	0.07	19.67	0.19	0.16	1257.28	0.04	321.36	98.53
7BRH - 030	142	PICRO CHROMITE	0.57	47.03	30.57	13.21	0.05	0.00	6.45	0.38	0.09	707.22	0.04	321.36	98.42
7BRH - 030	143	PICRO CHROMITE	0.30	43.97	32.61	14.44	0.00	0.00	5.71	0.28	0.17	1335.86	0.01	80.34	97.54
7BRH - 031	144	PICRO CHROMITE	0.01	41.30	21.25	14.25	0.00	0.01	20.83	0.19	0.14	1100.12	0.10	803.40	98.15
7BRH - 031	145	PICRO CHROMITE	0.07	46.53	23.87	11.86	0.00	0.00	16.39	0.39	0.07	550.06	0.11	883.74	99.32
7BRH - 031	146	PICRO CHROMITE	0.11	52.32	17.40	12.88	0.02	0.02	16.14	0.22	0.05	392.90	0.09	723.06	99.29
7BRH - 031	147	UNKNOWN	0.24	30.53	24.05	15.74	0.00	0.02	28.40	0.23	0.19	1493.02	0.13	1044.42	99.61
7BRH - 031	148	PICRO CHROMITE	0.17	47.92	20.37	12.78	0.00	0.00	17.96	0.29	0.04	314.32	0.11	883.74	99.69
7BRH - 032	149	UNKNOWN	0.17	54.68	16.57	16.85	0.00	0.11	10.89	0.22	0.14	1100.12	0.04	321.36	99.72
7BRH - 032	150	PICRO CHROMITE	0.15	54.32	19.86	12.49	0.00	0.00	11.59	0.35	0.06	471.48	0.09	723.06	98.95
7BRH - 032	151	PICRO CHROMITE	0.04	49.81	20.77	11.21	0.00	0.00	16.58	0.29	0.04	314.32	0.18	1446.12	98.99
7BRH - 033	152	PICRO CHROMITE	0.13	53.05	17.90	13.26	0.01	0.04	15.74	0.27	0.05	392.90	0.08	642.72	100.57
7BRH - 034	153	SUB PICRO CHROMITE	0.08	37.80	16.82	15.64	0.02	0.00	28.29	0.21	0.11	864.38	0.12	964.08	99.15
7BRH - 034	154	PICRO CHROMITE	0.04	43.39	19.05	13.96	0.00	0.06	21.60	0.23	0.08	628.64	0.09	723.06	98.55
7BRH - 034	155	UNKNOWN	0.05	34.79	16.19	16.53	0.00	0.02	31.34	0.18	0.14	1100.12	0.14	1124.76	99.44
7BRH - 035	156	PICRO CHROMITE	1.61	43.97	25.46	13.62	0.00	0.02	12.80	0.25	0.17	1335.86	0.06	482.04	98.02
7BRH - 035	157	PICRO CHROMITE	0.12	42.89	23.10	11.93	0.00	0.05	20.48	0.33	0.06	471.48	0.19	1526.46	99.22
7BRH - 035	158	PICRO CHROMITE	0.59	41.63	31.93	15.06	0.01	0.05	8.73	0.27	0.19	1493.02	0.02	160.68	98.53

APPENDIX VII.B

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSIS AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM TILL SAMPLES

(APEX Project 97210)

Sample	Grain	Classification	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% SiO2	wt% Al2O3	wt% MnO	wt% NiO	ppm Ni	wt% ZnO	ppm Zn	Total
7BRT-001	3	PICRO CHROMITE	0.06	53.85	23.51	8.75	0.0000	0.0100	10.95	0.4200	0.02	0.00	0.26	0.00	97.90
7BRT-001	4	PICRO CHROMITE	1.39	43.75	22.17	15.29	0.0000	0.0900	16.05	0.2400	0.16	1257.28	0.03	241.02	99.21
7BRT-001	5	PICRO ILMENITE	52.64	1.61	29.73	14.06	0.0500	0.0000	0.50	0.2800	0.10	785.80	0.01	80.34	99.00
7BRT-001	6	SUB PICRO CHROMITE	1.54	36.72	32.64	15.20	0.0100	0.0800	11.18	0.2800	0.17	1335.86	0.01	80.34	97.87
7BRT-001	8	UNKNOWN	0.34	55.15	16.42	17.08	0.0000	0.0100	10.57	0.1700	0.15	1178.70	0.05	401.70	100.01
7BRT-001	9	PICRO CHROMITE	0.37	53.38	18.87	15.95	0.0000	0.0000	9.95	0.2600	0.09	707.22	0.04	321.36	98.96
7BRT-002	10	UNKNOWN	2.63	26.45	34.11	14.86	0.0000	0.0200	19.94	0.2300	0.12	942.96	0.07	562.38	98.47
7BRT-002	11	PICRO CHROMITE	0.22	53.05	23.47	10.28	0.0000	0.0000	9.96	0.3900	0.07	550.06	0.12	964.08	97.60
7BRT-002	12	UNKNOWN	0.37	33.36	30.39	10.95	0.0000	0.0000	22.58	0.2600	0.11	864.38	0.19	1526.46	98.31
7BRT-002	13	PICRO CHROMITE	0.26	41.76	15.60	18.27	0.0000	0.0900	24.01	0.2100	0.11	864.38	0.03	241.02	100.37
7BRT-002	14	SUB PICRO CHROMITE	0.04	38.38	20.00	14.42	0.0000	0.0000	24.48	0.2100	0.10	785.80	0.13	1044.42	97.80
7BRT-002	15	PICRO CHROMITE	0.22	51.21	14.10	17.27	0.0000	0.0300	16.21	0.2000	0.12	942.96	0.02	160.68	99.41
7BRT-003	16	PICRO CHROMITE	0.87	43.57	20.45	16.04	0.0000	0.0500	17.61	0.2300	0.12	942.96	0.04	321.36	99.02
7BRT-003	17	UNKNOWN	0.06	58.44	19.09	12.04	0.0100	0.0100	7.82	0.3000	0.03	235.74	0.09	723.06	97.93
7BRT-003	18	PICRO CHROMITE	1.95	40.16	27.28	13.31	0.0000	0.0200	15.07	0.2800	0.15	1178.70	0.07	562.38	98.34
7BRT-003	19	PICRO CHROMITE	0.09	53.07	21.67	10.54	0.0000	0.0000	11.90	0.2800	0.02	157.16	0.15	1205.10	97.77
7BRT-003	20	UNKNOWN	0.09	33.42	23.57	13.51	0.0000	0.0000	25.91	0.2500	0.12	942.96	0.17	1365.78	97.11
7BRT-004	21	PICRO CHROMITE	1.23	40.78	22.76	15.03	0.0000	0.0400	17.57	0.2200	0.17	1335.86	0.05	401.70	97.91
7BRT-004	22	PICRO CHROMITE	0.95	42.20	20.71	15.90	0.0000	0.1300	16.95	0.2600	0.19	1493.02	0.04	321.36	97.39
7BRT-004	23	PICRO CHROMITE	0.22	48.28	22.88	10.89	0.0000	0.0000	14.86	0.3700	0.07	550.06	0.27	2169.18	97.91
7BRT-004	24	PICRO CHROMITE	1.11	44.13	19.94	16.14	0.0000	0.1000	16.90	0.1600	0.17	1335.86	0.06	482.04	98.77
7BRT-004	25	PICRO CHROMITE	1.42	43.08	20.18	16.75	0.0000	0.0500	17.53	0.1600	0.20	1571.60	0.03	241.02	99.46
7BRT-005	26	PICRO CHROMITE	0.41	47.70	19.31	16.69	0.0000	0.0800	12.35	0.2600	0.06	471.48	0.02	160.68	96.90
7BRT-005	27	PICRO CHROMITE	1.18	42.28	21.70	15.86	0.0000	0.1000	16.99	0.2300	0.19	1493.02	0.04	321.36	98.63
7BRT-005	28	SUB PICRO CHROMITE	1.93	38.05	29.20	12.54	0.0000	0.0700	15.80	0.2800	0.13	1021.54	0.07	562.38	98.13
7BRT-005	29	PICRO CHROMITE	1.23	44.69	22.06	14.17	0.0000	0.1300	15.70	0.2300	0.20	1571.60	0.06	482.04	98.54
7BRT-006	30	PICRO CHROMITE	0.07	51.48	22.29	11.92	0.0000	0.0000	12.62	0.3300	0.08	628.64	0.11	883.74	98.94
7BRT-006	31	PICRO CHROMITE	0.24	54.21	20.56	14.30	0.0000	0.0900	8.08	0.3300	0.13	1021.54	0.04	321.36	98.02
7BRT-006	32	PICRO CHROMITE	0.04	47.33	17.90	13.63	0.0000	0.0200	19.88	0.2400	0.07	550.06	0.14	1124.76	99.29
7BRT-006	33	PICRO CHROMITE	0.02	44.95	17.87	14.00	0.0000	0.0000	20.85	0.2900	0.04	314.32	0.11	883.74	98.18
7BRT-006	34	PICRO CHROMITE	1.59	43.29	25.28	13.80	0.0000	0.0100	13.54	0.2100	0.15	1178.70	0.04	321.36	97.96
7BRT-007	35	PICRO CHROMITE	1.08	45.37	20.16	16.44	0.0300	0.0700	16.07	0.2100	0.20	1571.60	0.03	241.02	99.74
7BRT-007	36	PICRO CHROMITE	0.05	53.76	18.68	12.94	0.0000	0.0100	13.49	0.2900	0.05	392.90	0.13	1044.42	99.45
7BRT-007	37	SUB PICRO CHROMITE	2.08	37.68	25.87	13.59	0.0000	0.0500	17.46	0.2200	0.18	1414.44	0.08	642.72	97.27
7BRT-007	38	PICRO CHROMITE	0.53	43.36	31.07	12.76	0.0000	0.0300	8.99	0.2500	0.18	1414.44	0.03	241.02	97.24

APPENDIX VII.B

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSIS AND MIN-ID CLASSIFICATION OF PICKED OXIDE MINERAL GRAINS FROM TILL SAMPLES

(APEX Project 97210)

Sample	Grain	Classification	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% SiO2	wt% Al2O3	wt% MnO	wt% NiO	ppm Ni	wt% ZnO	ppm Zn	Total
7BRT-008	39	SUB PICRO CHROMITE	0.78	36.84	36.53	13.85	0.0300	0.0000	7.66	0.2400	0.21	1650.18	0.03	241.02	96.23
7BRT-008	40	UNKNOWN	0.28	53.81	20.38	16.44	0.0000	0.0700	6.99	0.2200	0.12	942.96	0.04	321.36	98.40
7BRT-008	41	PICRO CHROMITE	1.65	43.70	23.90	14.69	0.0000	0.0000	14.44	0.2400	0.16	1257.28	0.04	321.36	98.88
7BRT-008	42	PICRO CHROMITE	0.27	46.84	19.16	12.96	0.0000	0.0000	17.53	0.2700	0.06	471.48	0.18	1446.12	97.32
7BRT-008	43	UNKNOWN	0.58	34.81	37.10	14.08	0.0000	0.0400	8.51	0.2200	0.23	1807.34	0.03	241.02	95.67
7BRT-009	44	UNKNOWN	0.29	25.68	21.08	16.96	0.0200	0.0400	33.29	0.1600	0.17	1335.86	0.04	321.36	97.79
7BRT-009	45	PICRO CHROMITE	1.39	40.85	25.63	13.30	0.0000	0.1000	16.79	0.2500	0.19	1493.02	0.06	482.04	98.64
7BRT-009	46	SUB PICRO CHROMITE	1.64	37.44	23.83	15.59	0.0000	0.0100	18.86	0.2500	0.10	785.80	0.04	321.36	97.80
7BRT-009	47	UNKNOWN	0.18	57.12	15.99	15.87	0.0000	0.0800	6.10	0.3000	0.10	785.80	0.04	321.36	95.82
7BRT-010	48	PICRO CHROMITE	1.18	44.52	22.92	14.83	0.0000	0.0500	14.72	0.2100	0.12	942.96	0.01	80.34	98.58
7BRT-010	49	PICRO CHROMITE	0.92	42.40	25.46	12.03	0.0000	0.0600	15.84	0.2200	0.16	1257.28	0.07	562.38	97.21
7BRT-010	50	UNKNOWN	0.06	26.28	13.56	20.28	0.0000	0.0700	37.10	0.1500	0.22	1728.76	0.05	401.70	97.83
7BRT-010	51	SUB PICRO CHROMITE	1.84	39.79	27.29	13.70	0.0000	0.0200	13.40	0.2700	0.15	1178.70	0.03	241.02	96.55
7BRT-010	52	PICRO CHROMITE	0.39	47.00	29.77	10.04	0.0000	0.0200	8.37	0.4400	0.08	628.64	0.13	1044.42	96.30
7BRT-011	53	PICRO CHROMITE	0.05	58.38	19.07	10.97	0.0000	0.0000	8.70	0.3500	0.04	314.32	0.14	1124.76	97.74
7BRT-011	54	PICRO CHROMITE	0.61	44.90	24.85	11.94	0.0000	0.0300	15.57	0.3000	0.08	628.64	0.13	1044.42	98.47
7BRT-011	55	PICRO CHROMITE	0.40	48.05	22.97	12.99	0.0400	0.0300	12.33	0.2800	0.09	707.22	0.04	321.36	97.27
7BRT-011	56	PICRO CHROMITE	0.08	50.85	24.70	9.39	0.0300	0.0000	11.74	0.4100	0.01	78.58	0.20	1606.80	97.45
7BRT-011	57	SUB PICRO CHROMITE	1.56	39.37	23.51	15.90	0.0000	0.0900	18.25	0.2500	0.21	1650.18	0.03	241.02	99.23

APPENDIX VIII

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND MIN-ID CLASSIFICATION OF PICKED SILICATE MINERAL GRAINS

VIII.A - HEAVY MINERAL STREAM SEDIMENT SAMPLES

VIII.B - TILL SAMPLES

APPENDIX VIII.A

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSES AND AND MIN-ID CLASSIFICATION OF PICKED SILICATE MINERAL GRAINS FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

			wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%
Sample #	Grain	Mineral Name	TiO2	Cr2O3	FeO	MgO	CaO	SiO2	Al2O3	Na2O	MnO	K2O	Total
7BRH002	1	G 03 CALCIC PYROPE ALMANDINE	0.24	0.02	20.99	7.50	9.35	39.42	21.89	0.05	0.43	0.00	99.88
7BRH003	2	GROSSULAR	0.00	0.03	12.24	0.05	32.99	37.91	14.40	0.12	0.81	0.00	98.56
7BRH003	3	GROSSULAR	0.00	0.04	13.23	0.04	33.36	37.90	12.91	0.00	0.58	0.00	98.07
7BRH003	4	GROSSULAR	0.03	0.00	13.56	0.04	32.97	37.78	12.50	0.01	0.60	0.00	97.50
7BRH004	5	G 07 FERRO-MAGNESIAN UVAROVITE GROSSULAR	0.21	16.38	4.39	0.04	33.40	36.70	6.79	0.01	0.53	0.00	98.44
7BRH004	6	GROSSULAR	0.00	8.31	4.42	0.00	33.22	37.17	13.53	0.09	1.30	0.00	98.05
7BRH004	7	ANDRADITE	0.20	8.88	11.59	0.06	32.26	35.68	6.89	0.00	0.54	0.00	96.10
7BRH004	8	G 03 CALCIC PYROPE ALMANDINE	0.25	0.01	22.29	8.00	6.85	39.06	21.75	0.11	0.96	0.00	99.29
7BRH007	9	G 05 MAGNESIAN ALMANDINE	0.31	0.00	28.39	3.53	5.52	38.12	21.38	0.07	2.03	0.00	99.35
7BRH007	10	ALMANDINE	0.42	0.00	30.73	2.47	5.99	37.72	21.24	0.00	1.47	0.00	100.04
7BRH009	11	G 03 CALCIC PYROPE ALMANDINE	0.06	0.01	18.99	6.69	12.15	39.72	22.13	0.02	0.52	0.00	100.30
7BRH009	12	CPX 02 DIOPSIDE	0.33	1.43	2.97	15.17	19.69	52.33	4.73	1.48	0.16	0.00	98.29
7BRH009	13	G 03 CALCIC PYROPE ALMANDINE	0.25	0.00	16.83	8.90	10.90	40.24	22.37	0.06	0.36	0.00	99.91
7BRH011	14	G 06 PYROPE GROSSULAR ALMANDINE	0.22	0.05	15.09	8.13	13.60	40.08	22.74	0.03	0.22	0.00	100.16
7BRH011	15	G 03 CALCIC PYROPE ALMANDINE	0.37	0.00	18.03	10.69	8.18	40.13	21.83	0.00	0.81	0.00	100.04
7BRH014	16	G 06 PYROPE GROSSULAR ALMANDINE	0.00	0.01	16.93	1.59	9.38	38.22	21.73	0.00	11.50	0.00	99.36
7BRH014	17	ALMANDINE	0.08	0.00	33.30	1.90	3.81	37.55	21.34	0.04	1.35	0.00	99.37
7BRH015	18	G 03 CALCIC PYROPE ALMANDINE	0.11	0.03	17.38	11.73	7.63	39.78	21.77	0.03	0.83	0.00	99.29
7BRH017	19	G 06 PYROPE GROSSULAR ALMANDINE	0.27	0.01	16.37	6.49	14.18	39.07	20.82	0.03	0.43	0.00	97.68
7BRH017	31	GROSSULAR	0.16	9.37	2.31	0.07	32.78	36.21	14.13	0.00	1.54	0.00	96.56
7BRH017	32	GROSSULAR	0.16	6.84	5.09	0.09	31.46	37.99	15.06	0.00	1.95	0.00	98.64
7BRH018	20	G 05 MAGNESIAN ALMANDINE	0.10	0.03	29.43	1.25	8.15	37.42	21.77	0.01	1.77	0.00	99.92
7BRH018	21	GROSSULAR	0.05	0.04	13.61	0.00	32.01	38.05	13.30	0.00	1.76	0.00	98.81
7BRH020	22	G 05 MAGNESIAN ALMANDINE	0.09	0.05	28.27	1.03	6.84	37.52	21.33	0.01	4.32	0.00	99.46
7BRH020	23	G 05 MAGNESIAN ALMANDINE	0.15	0.00	28.25	1.62	9.95	38.23	21.57	0.00	0.62	0.00	100.39
7BRH023	24	UNKNOWN	0.89	1.35	0.70	0.20	36.00	37.12	15.43	0.00	0.07	0.00	91.75
7BRH023	25	G 05 MAGNESIAN ALMANDINE	0.08	0.03	29.86	1.72	8.03	37.62	21.74	0.06	1.19	0.00	100.32
7BRH023	26	ALMANDINE	0.04	0.05	33.17	2.54	4.32	36.62	21.02	0.00	0.69	0.00	98.45
7BRH024	27	UNKNOWN	0.35	0.00	8.82	0.30	31.93	39.37	19.37	0.07	0.57	0.00	100.78
7BRH029	28	G 06 PYROPE GROSSULAR ALMANDINE	0.38	0.09	15.00	7.70	13.85	39.68	22.32	0.15	0.37	0.00	99.54
7BRH029	29	G 07 FERRO-MAGNESIAN UVAROVITE GROSSULAR	0.41	15.95	3.59	0.20	31.85	36.50	8.54	0.04	0.73	0.00	97.81
7BRH034	33	GROSSULAR	0.05	6.61	3.38	0.00	34.78	38.38	15.14	0.05	0.70	0.00	99.10
7BRH035	30	G 03 CALCIC PYROPE ALMANDINE	0.51	0.00	18.58	7.29	11.45	37.78	21.36	0.07	0.46	0.00	97.50
7BRH035	34	UNKNOWN	0.41	2.57	0.37	0.15	35.33	37.13	11.20	0.00	0.26	0.00	87.40
7BRH035	35	UNKNOWN	0.35	2.67	0.42	0.15	35.04	37.29	11.25	0.00	0.26	0.01	87.45

APPENDIX VIII.B

UNIVERSITY OF SASKATCHEWAN MICROPROBE ANALYSIS AND MIN-ID CLASSIFICATION OF PICKED SILICATE MINERAL GRAINS FROM TILL SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% SiO2	wt% Al2O3	wt% Na2O	wt% MnO	wt% K20	wt% Total
7BRT004	5	GROSSULAR	0.86	6.44	3.14	0.08	35.01	37.55	14.51	0.00	0.27	0.00	97.85
7BRT005	3	G 09 CHROME PYROPE	0.32	3.94	7.53	19.95	5.04	41.34	20.90	0.04	0.35	0.00	99.43
7BRT005	4	G 09 CHROME PYROPE	0.15	5.85	7.10	19.46	5.73	41.51	19.23	0.05	0.45	0.00	99.53
7BRT007	2	G 09 CHROME PYROPE	0.17	5.74	7.29	19.36	5.46	41.35	19.20	0.06	0.46	0.00	99.10
7BRT009	6	UNKNOWN	0.18	0.02	13.20	0.02	27.01	37.87	18.90	0.01	1.19	0.00	98.41
7BRT009	7	G 08 FERRO MAGNESIAN GROSSULAR	0.08	0.00	12.10	0.04	22.64	37.84	23.35	0.01	0.51	0.00	96.56
7BRT009	8	G 08 FERRO MAGNESIAN GROSSULAR	0.08	0.02	13.17	0.02	22.52	36.25	21.79	0.01	0.12	0.00	94.00
7BRT009	9	G 08 FERRO MAGNESIAN GROSSULAR	0.02	0.05	12.67	0.01	22.93	36.93	21.68	0.02	0.23	0.00	94.53

APPENDIX IX

GOLD GRAIN DESCRIPTION REPORTS

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

47.11= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](7)7BRT 1
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	80	A
80	140	I
80	100	I
120	120	A
120	120	A
120	200	A
280	300	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

14.29= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](7)7BRT 2
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	60	I
60	140	A/I
60	200	A/I
80	120	A
100	160	A
100	100	A
120	140	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

49.7= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](14)7BRT 3
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	80	I
20	100	I/D
40	60	A
40	80	I
40	60	A
40	40	A
60	80	A
80	100	I
80	100	I/D
100	180	I/D
100	140	I
120	140	A
200	280	A
200	260	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

12.87= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](13)7BRT 4
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	60	I
20	80	I
20	60	I/D
20	20	D
40	120	I/D
40	40	A
40	40	A
60	60	A
60	140	A/I
80	100	A
80	80	A
100	120	A
160	160	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

46.85= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](15)7BRT 8

1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	40	A
40	80	A
40	80	A
40	40	A
60	80	A
60	80	A
60	120	A
80	180	A/I
80	180	A
80	80	A/I
120	220	A/I
120	140	A
140	160	A
160	200	A
160	260	A

Saskatchewan Research Council Geoanalytical Services
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Phone:306-933-5426 Fax:306-933-5656
12.28= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](3)7BRT 9
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	60	A
100	220	A
100	220	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

5.7= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](4)7BRT 10

1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	60	A
60	100	A
100	160	A/I
100	100	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656
5.35= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M697 CHIN APEX NOVEMBER 21/97 (11) [AU GRAIN COUNT](3)7BRT 11
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	40	A
40	80	A
100	200	A/I

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

95.79= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](8)7BRH 1
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	60	A
60	60	A
100	160	A
160	160	A
160	200	I
220	220	A
220	320	A
280	320	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656
371.38= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT] (11) 7BRH 2
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	60	A
60	60	A
60	120	A
100	260	A
120	360	A
120	140	A
140	220	A
160	160	A
160	260	A
300	360	A
540	700	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

821.24= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](21)7BRH 3
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	140	A
60	120	A
100	100	A
120	140	A
120	140	A
120	160	A
140	160	A
160	200	A/I
160	240	A
200	200	A/I
200	300	A
200	220	A/I
200	260	A
220	260	A
240	240	A
240	380	A
240	240	A
300	400	A
300	400	A
300	460	A
520	1000	A

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Phone:306-933-5426 Fax:306-933-5656
312.46= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](26)7BRH 4
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	80	A
40	100	A
40	60	A
60	60	A
80	120	A
80	140	A
100	140	A
100	140	A
100	220	A
120	200	A
120	200	A
120	120	A
120	220	A
120	160	A
140	220	A
140	140	A
140	160	A
160	300	A
160	300	A
160	180	A
160	220	A
160	340	A
200	280	A
200	300	A
300	480	A
340	400	A/I

Saskatchewan Research Council Geoanalytical Services
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Phone:306-933-5426 Fax:306-933-5656
134.6= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT] (7) 7BRH 5
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
100	100	A
120	120	A
180	180	A
220	280	A
240	260	A
280	360	A
300	300	A

REPORT
======

78.11= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](2)7BRH 6
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
140	280	A
280	460	A

REPORT
======

12.78= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](5)7BRH 7
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	180	A
60	180	I/A
60	120	I
80	200	A/I
100	140	A/I

REPORT
======

6.61= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](4)7BRH 8
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	20	A
40	100	A
60	160	I/A
100	180	A/I

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

150.3= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](13)7BRH 9
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	20	I
40	60	A/I
80	100	A
80	100	I
100	280	A
120	220	A
120	260	I
120	220	A
140	300	A/I
140	140	A
180	200	I
200	240	A
300	460	I

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656
59.23= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](12)7BRH 10
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	40	A
40	40	A
40	80	A
60	80	A
100	140	A
100	180	A
100	120	A
100	140	A
100	200	I
120	160	A
140	260	A
220	320	A

Saskatchewan Research Council Geoanalytical Services
125-15 Innovation Blvd., Saskatoon, SK., S7N 2X8
Phone:306-933-5426 Fax:306-933-5656

604.46= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](14)7BRH 11
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	20	A
40	40	A
60	120	I
120	160	A
120	120	A
120	180	A/I
120	160	A
240	240	A
280	280	A
300	400	A
300	480	A
360	520	I
400	540	A
460	600	A

REPORT

191.81= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](8)7BRH 12
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	100	I/D
40	40	A
40	80	A
60	100	I/A
80	180	A
160	320	A
260	560	A/I
300	500	I

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83.88= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](5)7BRH 13
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	20	A
80	120	A
120	220	A
140	300	A/I
300	420	A

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.28= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](1)7BRH 14

1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	80	A

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2.84= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](2)7BRH 15
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	60	A
100	140	A

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Phone:306-933-5426 Fax:306-933-5656
57.14= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](8)7BRH 16
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	100	A
60	80	A
80	220	A/I
80	140	A/I
100	220	A
140	220	A
160	260	A
240	260	A

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95.90= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT] (7) 7BRH 17
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	60	A
60	80	A
100	140	A
140	200	I
160	200	A
220	240	A
320	400	I

REPORT
======

58.26= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](7)7BRH 18
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
20	20	A
20	40	A
60	140	I/A
80	120	I
100	100	I/A
180	340	I/A
180	380	A/I

REPORT

12.78= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](5)7BRH 20
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	120	A
40	100	A/I
60	120	A
80	80	A
120	260	I/A

REPORT
======

22.22= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](6)7BRH 21
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	100	A
40	80	A
80	120	A
80	120	I
100	240	A
100	300	A

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61.39= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT] (3) 7BRH 22

1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
100	120	A
220	320	A
240	340	A

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9.68= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](5)7BRH 23
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	40	A
40	40	A/I
60	80	A/I
120	160	A
140	160	A

REPORT
======

67.26= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](13)7BRH 29
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	80	A
60	100	A/I
60	100	A
60	120	A
60	80	I/A
80	140	A
80	200	A
100	180	A/I
100	260	I
100	220	A
120	180	A
120	180	I/A
220	340	A/I

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Phone:306-933-5426 Fax:306-933-5656
66.98= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](2)7BRH 24
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
200	200	A
300	400	A

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Phone:306-933-5426 Fax:306-933-5656
351.11= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](4)7BRH 25
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
80	140	A
140	200	A
140	200	A
500	860	I

REPORT
======

24.95= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT] (4) 7BRH 26
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	80	A
100	280	A/I
100	200	I
120	260	I/A

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136.2= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](8)7BRH 27
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	60	A/I
100	160	A
120	240	A
140	280	A/I
140	140	A
200	320	A
240	360	A
260	400	A

REPORT
======

67.26= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT] (13) 7BRH 29
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	80	A
60	100	A/I
60	100	A
60	120	A
60	80	I/A
80	140	A
80	200	A
100	180	A/I
100	260	I
100	220	A
120	180	A
120	180	I/A
220	340	A/I

REPORT
======

41.8= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M482 DUFRESNE APEX GEOSCIENCE AUG. 14/97 (11) [AU GRAIN COUNT](9)7BRH 30
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	160	A/I
40	140	A
60	140	I/A
80	200	A/I
80	160	I
100	160	A
100	140	A
120	240	A
140	320	I/A

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109.02= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT] (10) 7BRH 31
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
100	100	A
100	120	A/I
100	140	A
120	220	A
120	120	A
140	240	A
160	160	A/I
200	320	A
220	320	A
220	320	A

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61.83= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](4)7BRH 32
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
60	160	A
80	100	A
120	140	A
300	400	A

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2.67= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](2)7BRH 33
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
80	80	A
80	140	A

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1.46= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT] (1) 7BRH 34
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
100	100	A

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135.56= ESTIMATED WEIGHT OF Au IN MICROGRAMS

M684 CHIN APEX GEOSCIENCE NOVEMBER 13/97 (24) [AU GRAIN COUNT](19)7BRH 35
1 GOLD GRAIN WIDTH IN MICRONS
2 GOLD GRAIN LENGTH IN MICRONS
3 GOLD GRAIN DESCRIPTION
4 GOLD GRAIN WIDTH IN MICRONS
5 GOLD GRAIN LENGTH IN MICRONS
6 GOLD GRAIN DESCRIPTION
7 GOLD GRAIN WIDTH IN MICRONS
8 GOLD GRAIN LENGTH IN MICRONS
9 GOLD GRAIN DESCRIPTION

W	L	D
40	60	I
60	80	A
60	60	A
60	100	A
60	60	A
60	80	A
80	140	A
80	160	A/I
100	200	A/I
100	120	A
120	260	A
120	120	I
120	120	A
140	140	I
160	260	A
180	220	A
220	300	A/I
240	260	A/I
260	320	I/D

APPENDIX X

X-Y SCATTER PLOTS AND TERNARY PLOTS OF SELECTED DIAMOND INDICATOR MINERAL DATA FROM HEAVY MINERA STREAM SEDIMENT SAMPLES

Abbreviations used in X-Y Plots:

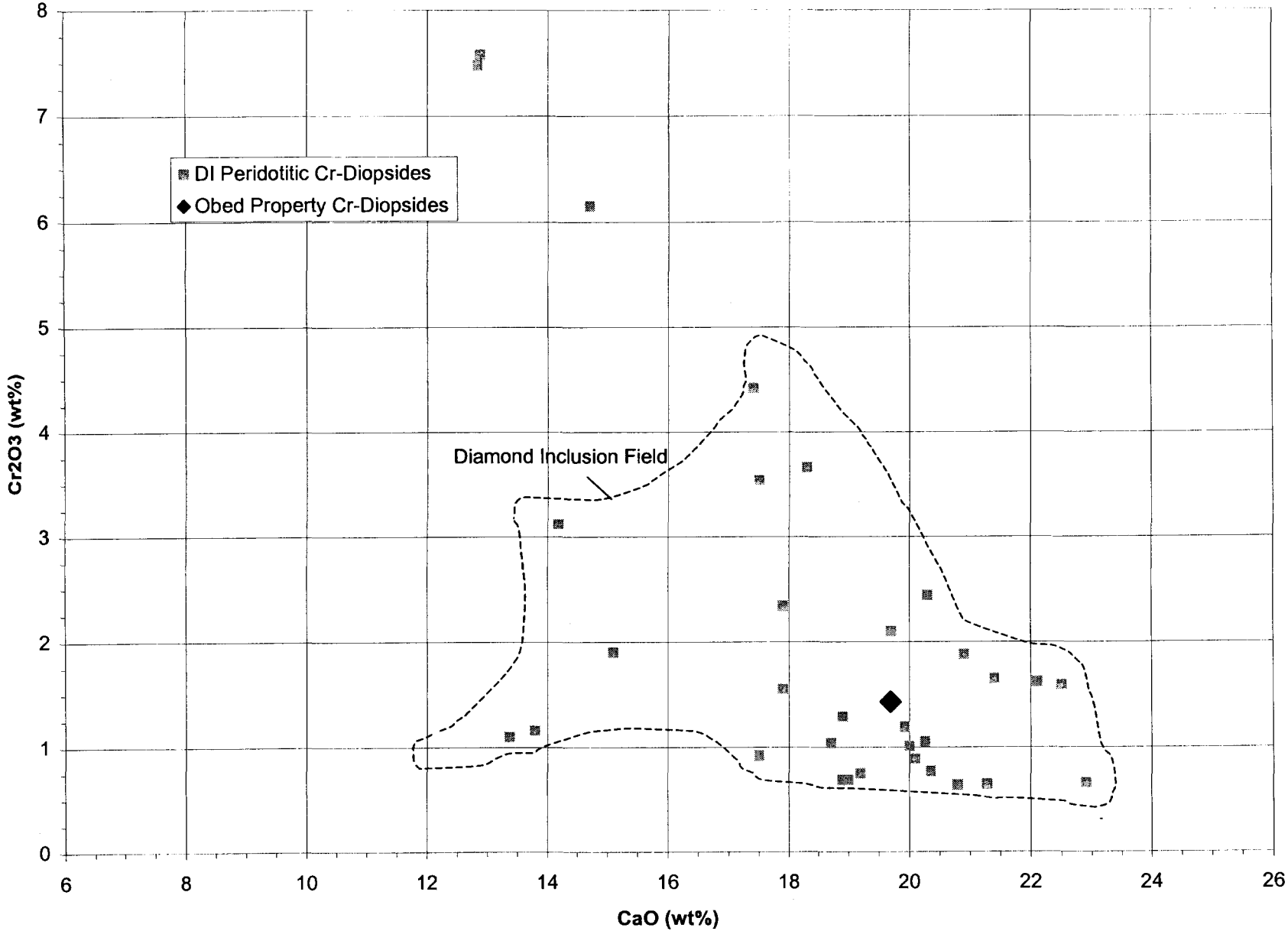
AGS - Alberta Geological Survey

Cr - Chrome

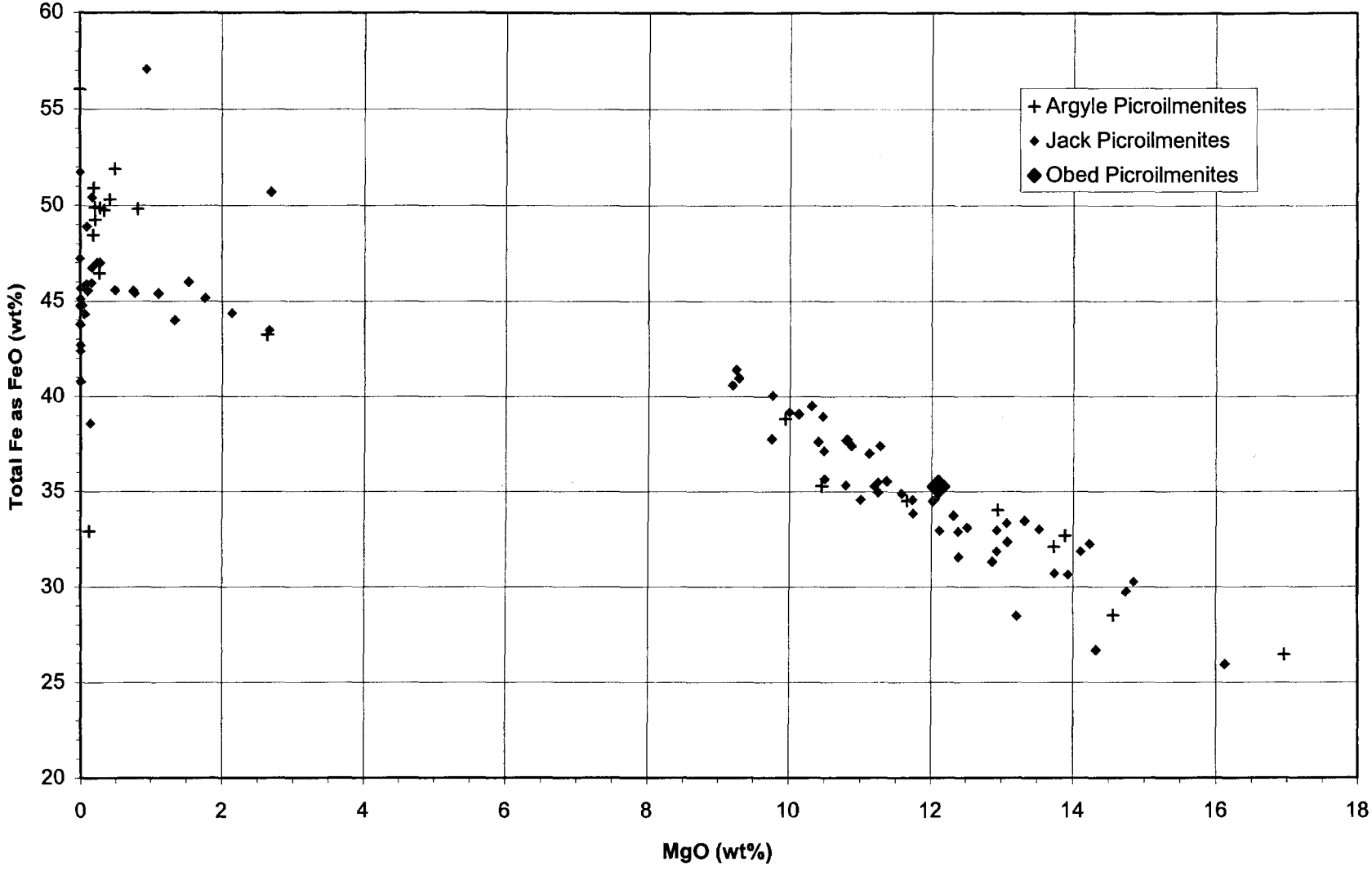
DI - Diamond Inclusion Field

NOTE: Data from Argyle diamondiferous lamproite, Australia; Jack kimberlite diatremes, British Columbia; and Diamond Inclusion Field information from South Africa, are derived from Dufresne et al. (1996).

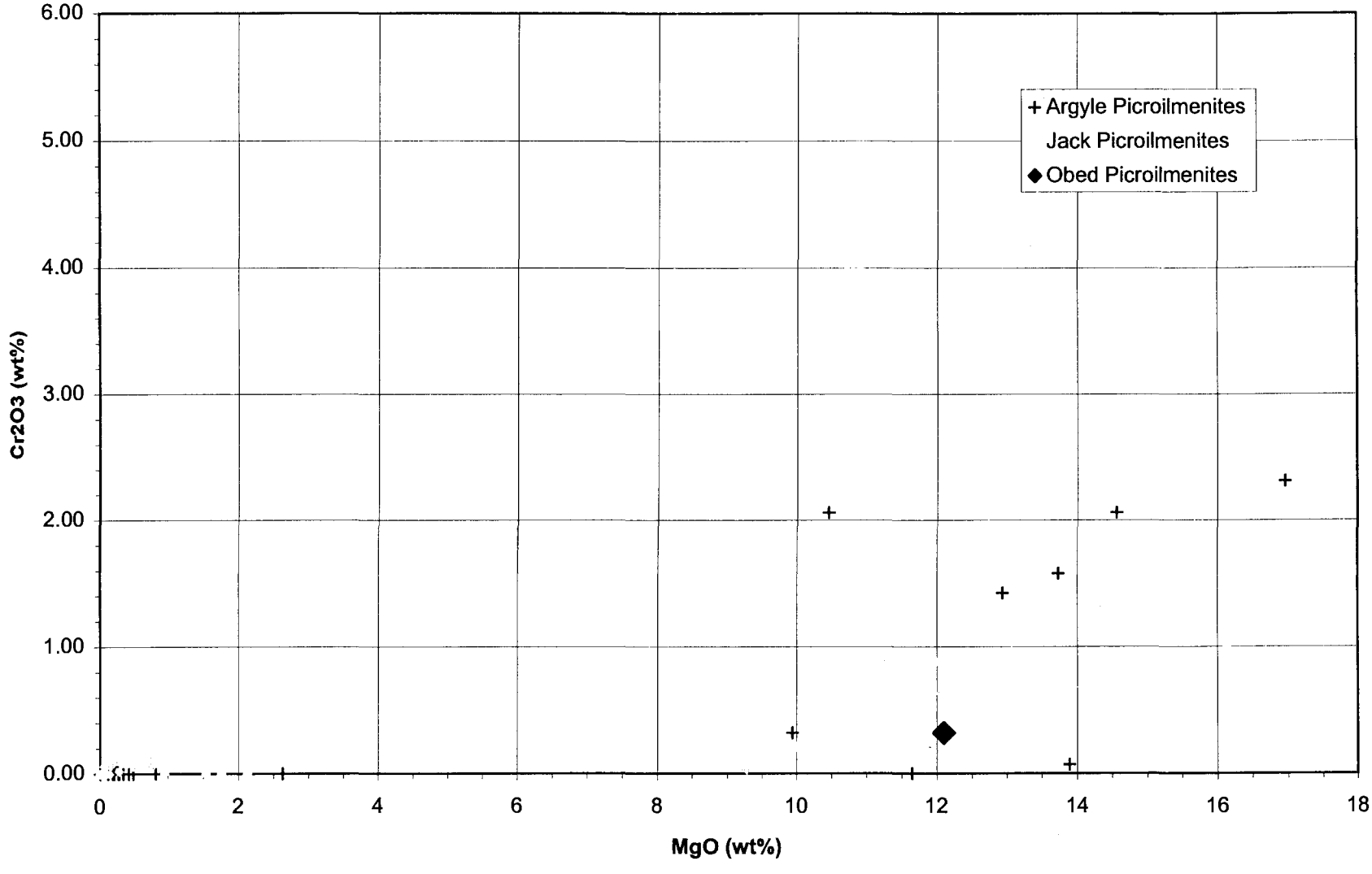
CaO vs Cr2O3 For Peridotitic Cr- Diopsides From The Obed Property - 1997 (Figure X-1)



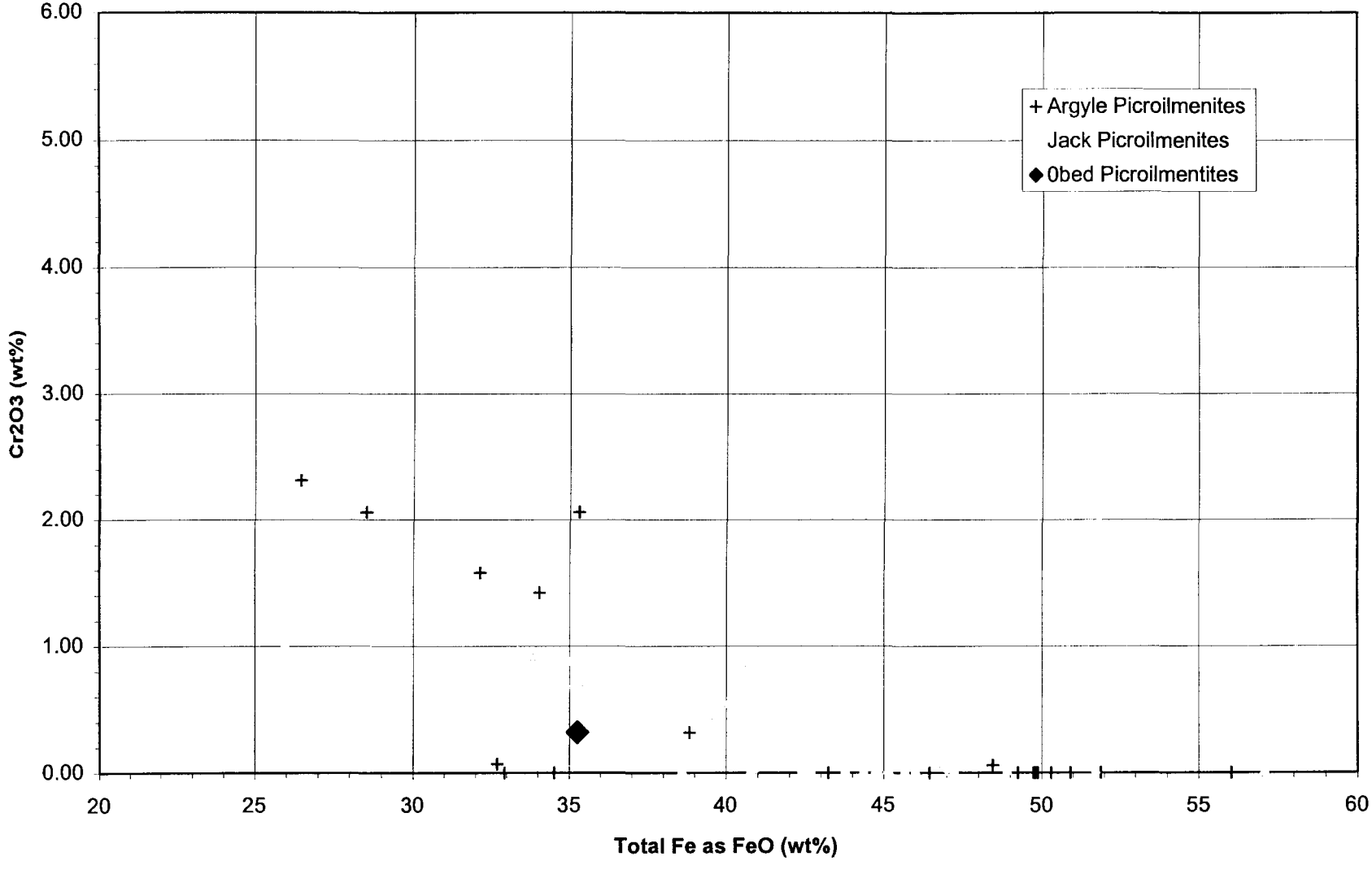
MgO vs Total Fe as FeO For Picroilmenites From The Obed Property - 1997 (Figure X-2)



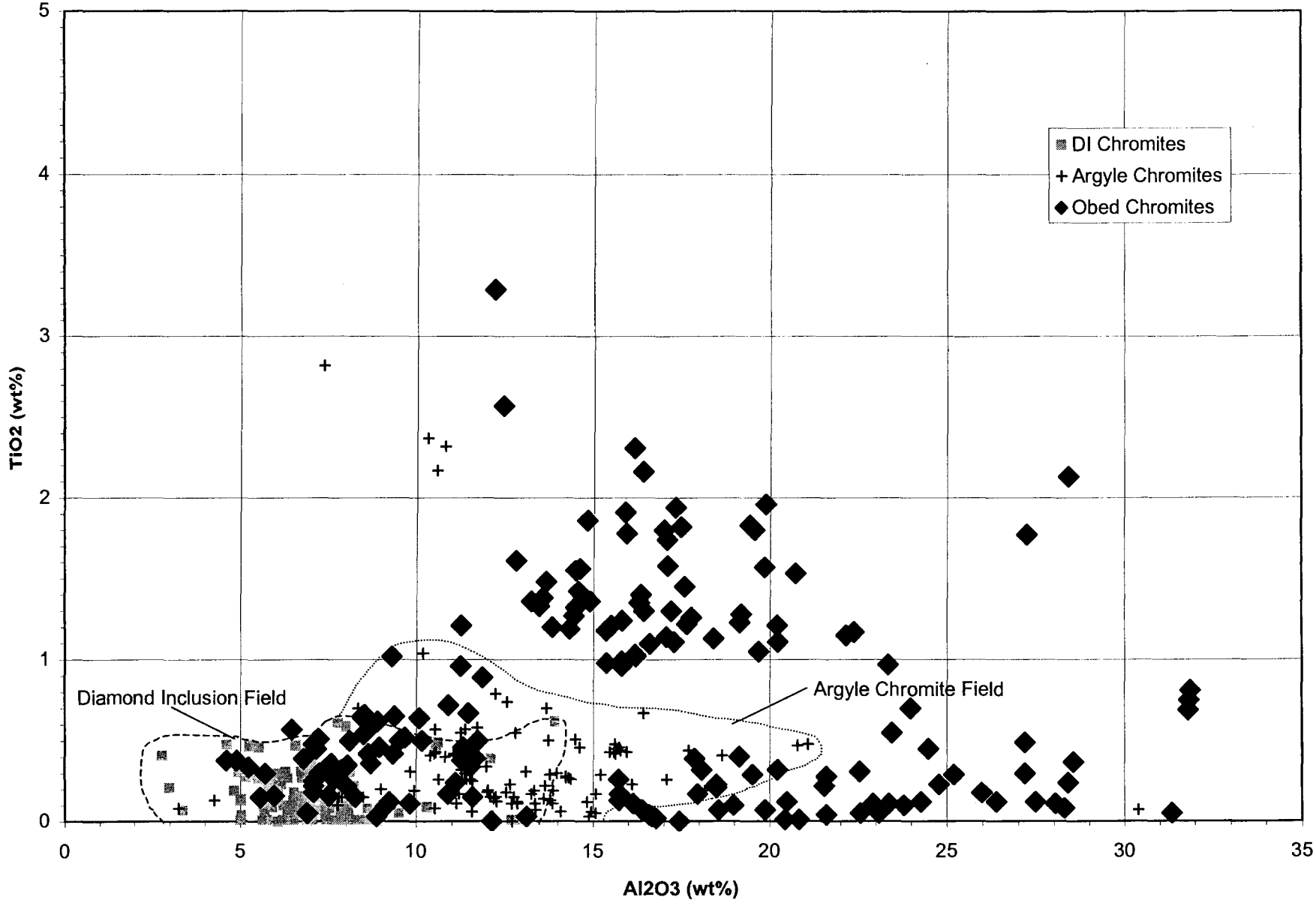
MgO vs Cr2O3 For Picroilmenites From The Obed Property - 1997 (Figure X-3)



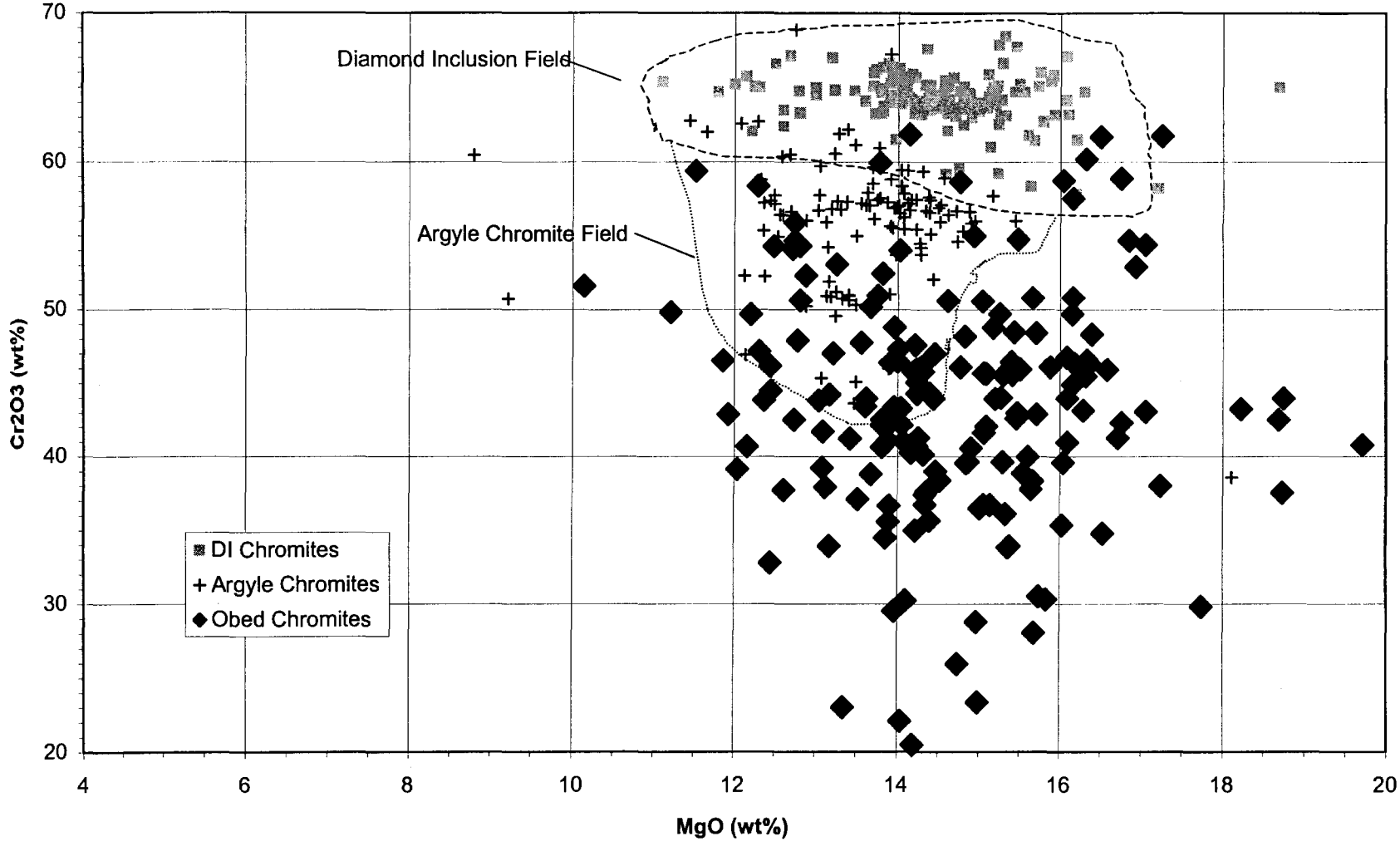
FeO vs Cr2O3 For Picroilmenites From The Obed Property - 1997 (Figure X-4)



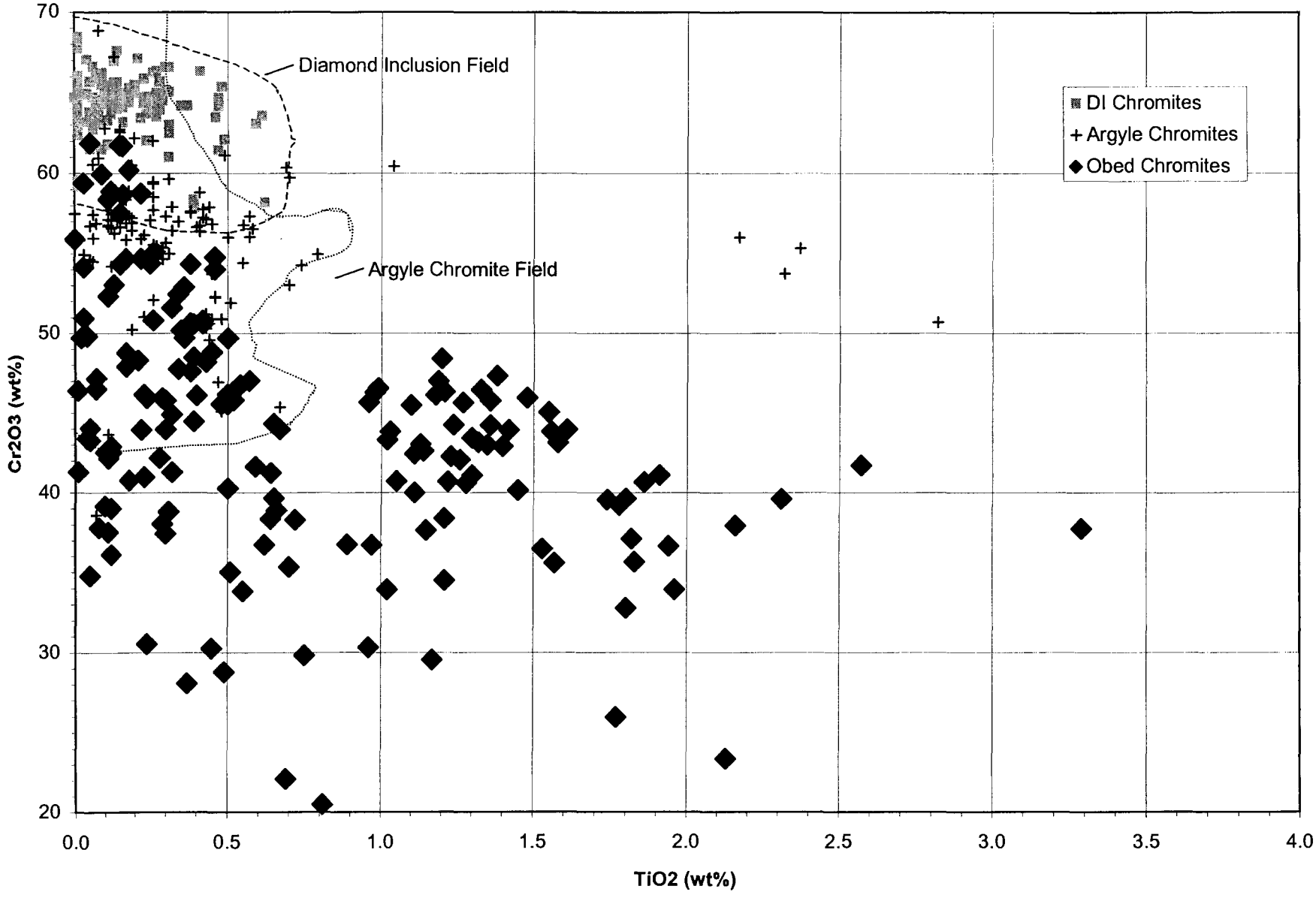
Al2O3 vs TiO2 For Chromites From The Obed Property - 1997 (Figure X-5)



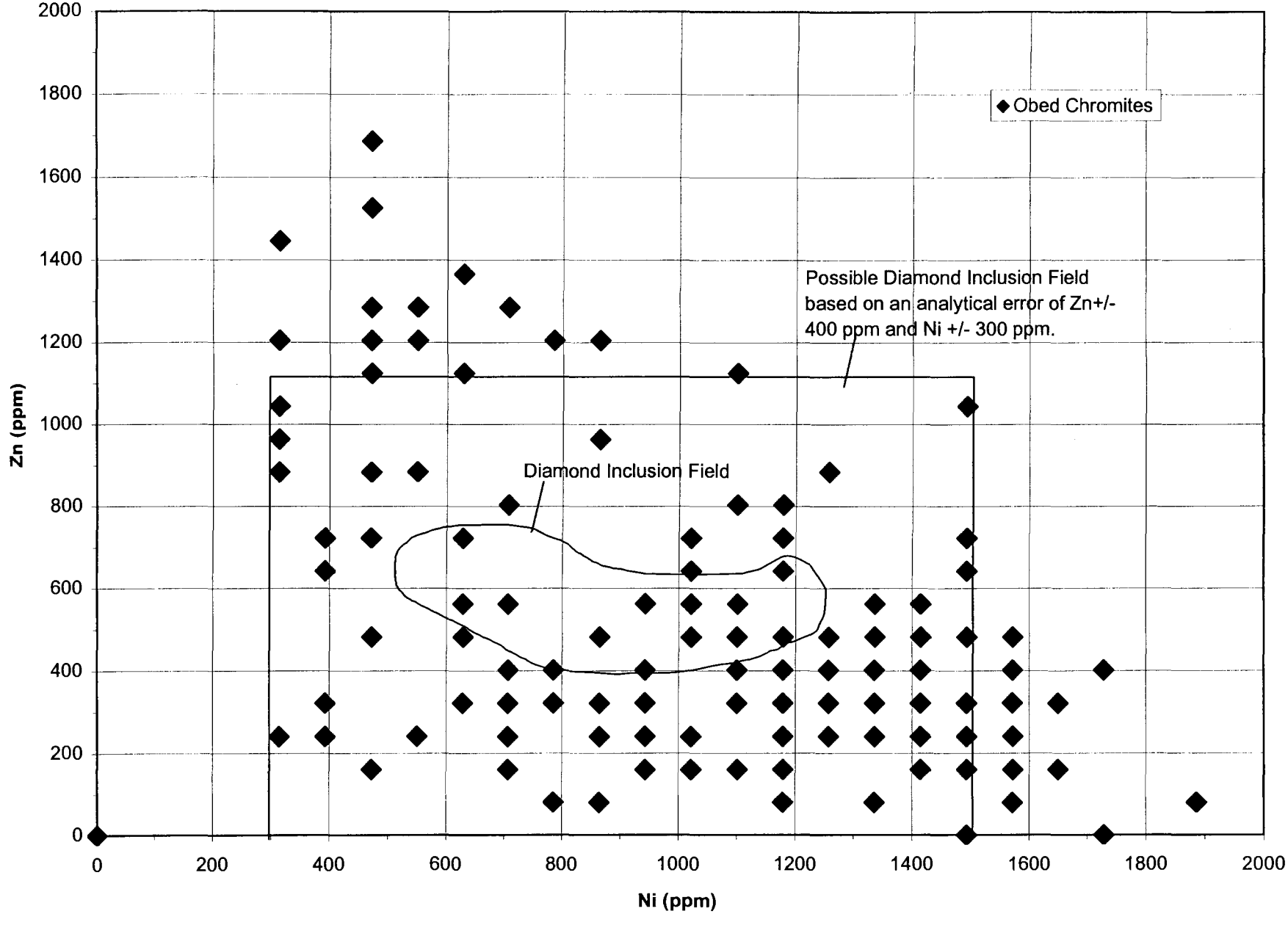
MgO vs Cr2O3 For Chromites From The Obed Property - 1997 (Figure X-6)



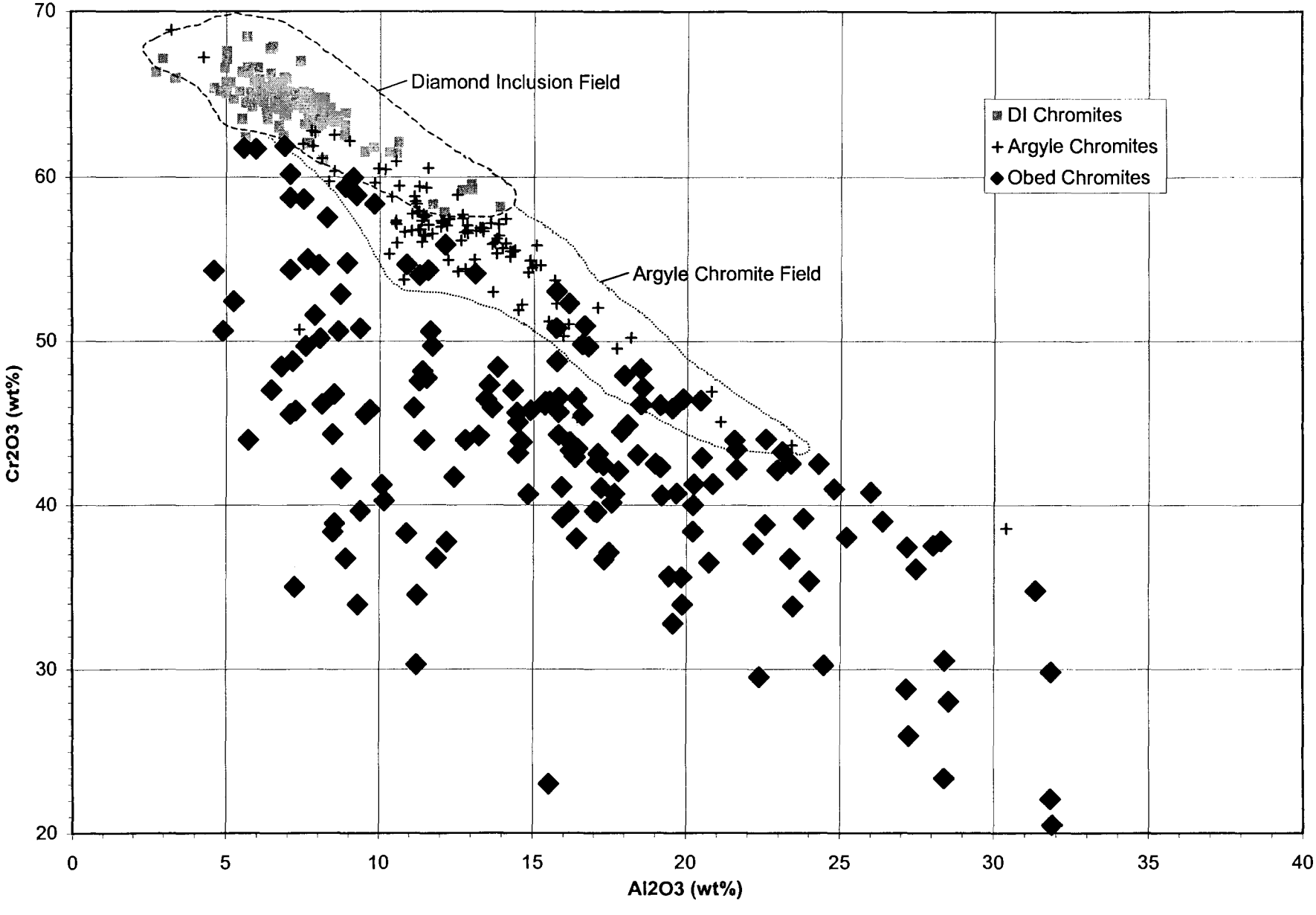
TiO2 vs Cr2O3 For Chromites From The Obed Property - 1997 (Figure X-7)



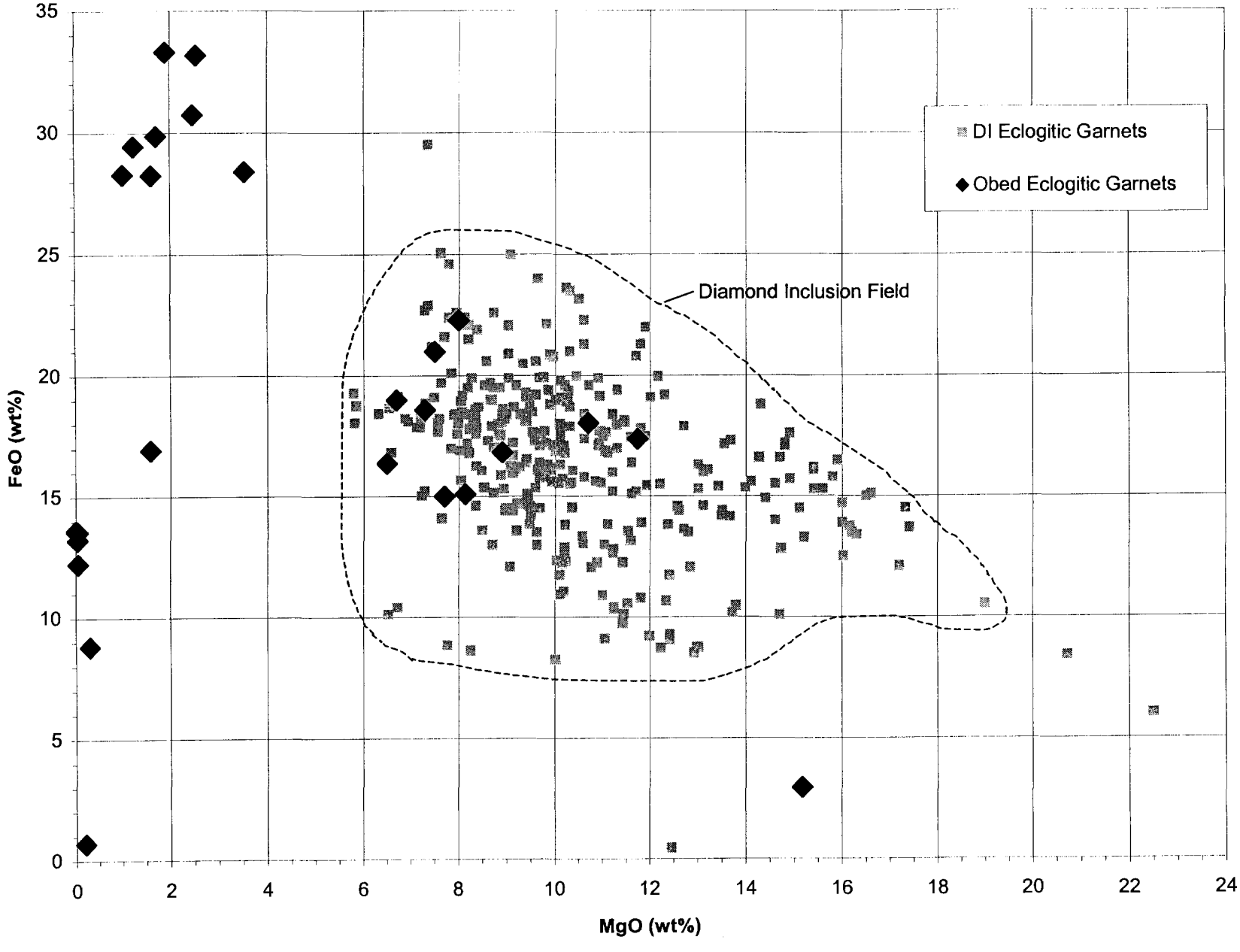
Ni vs Zn For Chromites From The Obed Property - 1997 (Figure X-8)



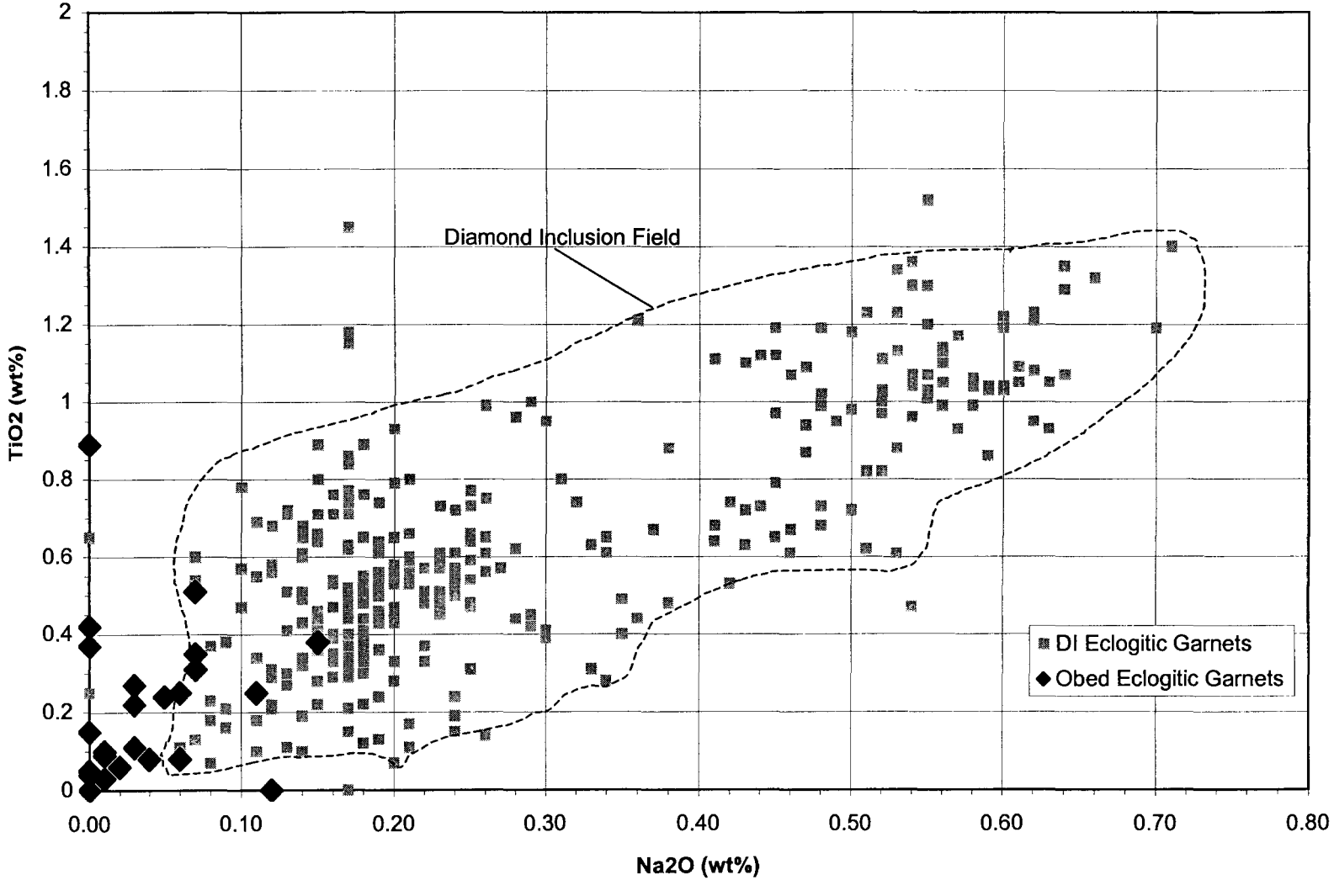
Al2O3 vs Cr2O3 For Chromites From The Obed Property - 1997 (Figure X-9)



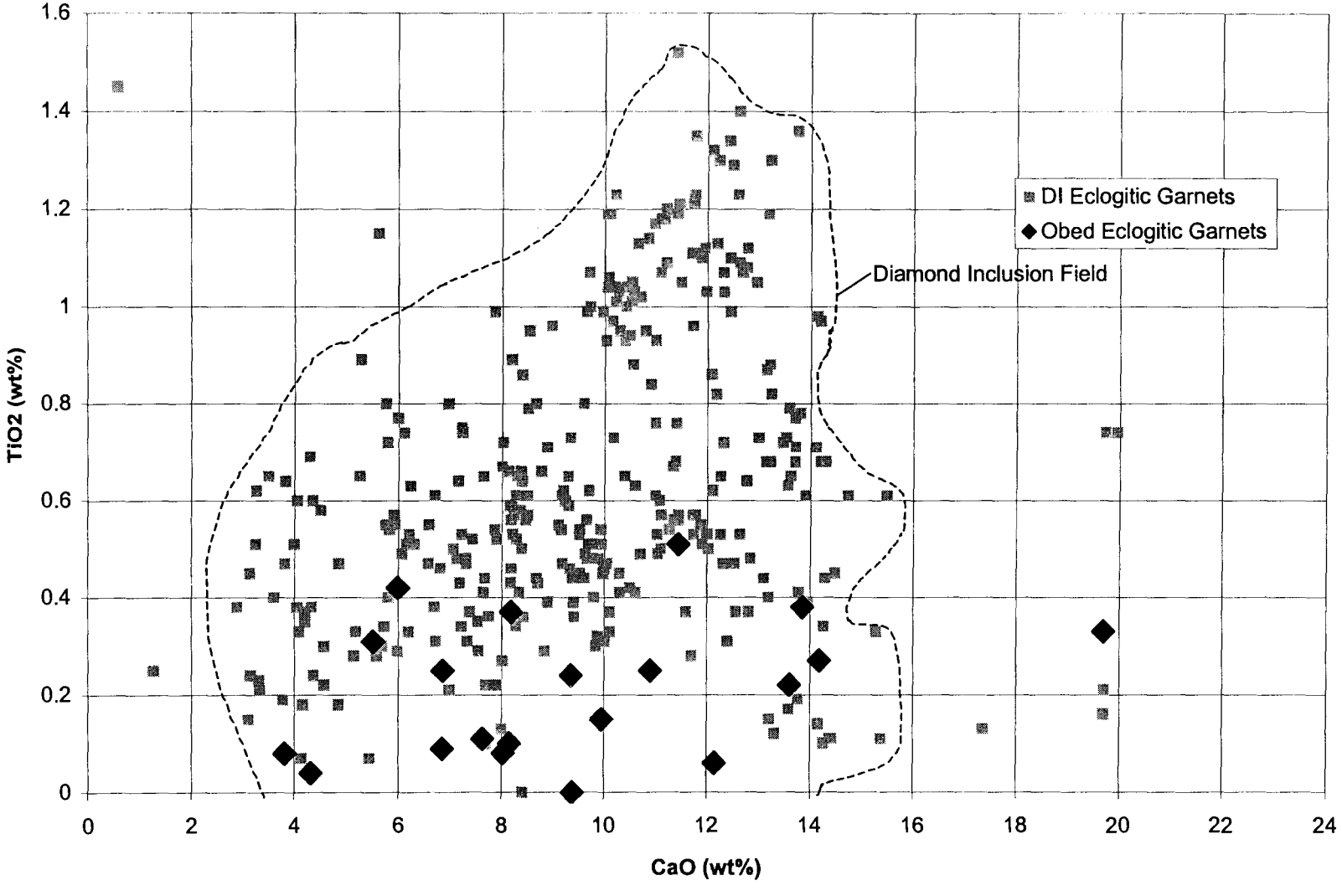
MgO vs FeO For Eclogitic Garnets From The Obed Property - 1997 (Figure X-10)



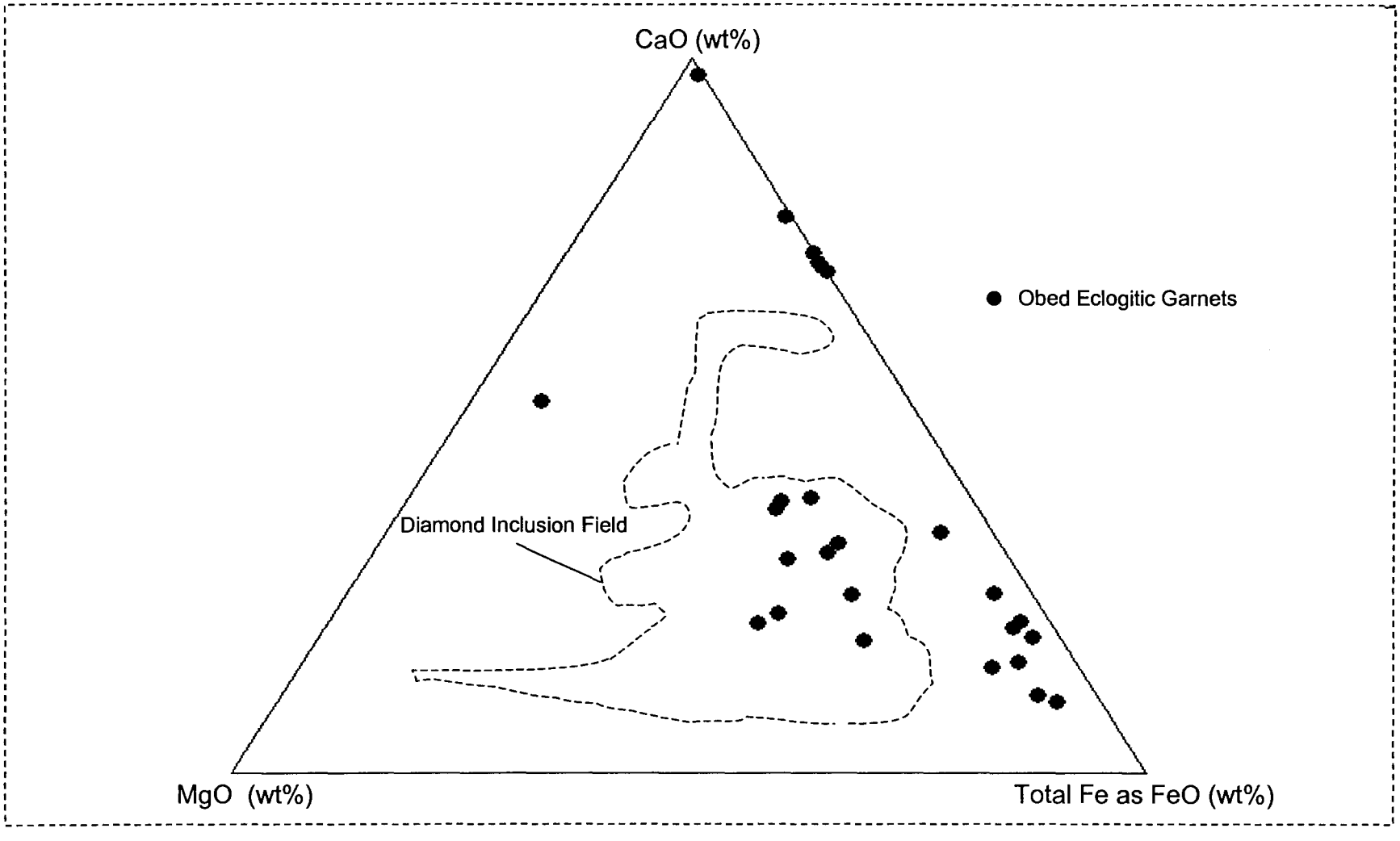
Na2O vs TiO2 For Eclogitic Garnets From The Obed Property - 1997 (Figure X-11)



CaO vs TiO2 For Eclogitic Garnets From The Obed Property - 1997 (Figure X-12)



Ternary Plot of CaO vs. MgO vs FeO as Total Fe For Eclogitic Garnets From The Obed Property - 1997
(Figure X-13)



APPENDIX XI

X-Y SCATTER PLOTS OF SELECTED DIAMOND INDICATOR MINERAL DATA FROM TILL SAMPLES

Abbreviations used in X-Y Plots:

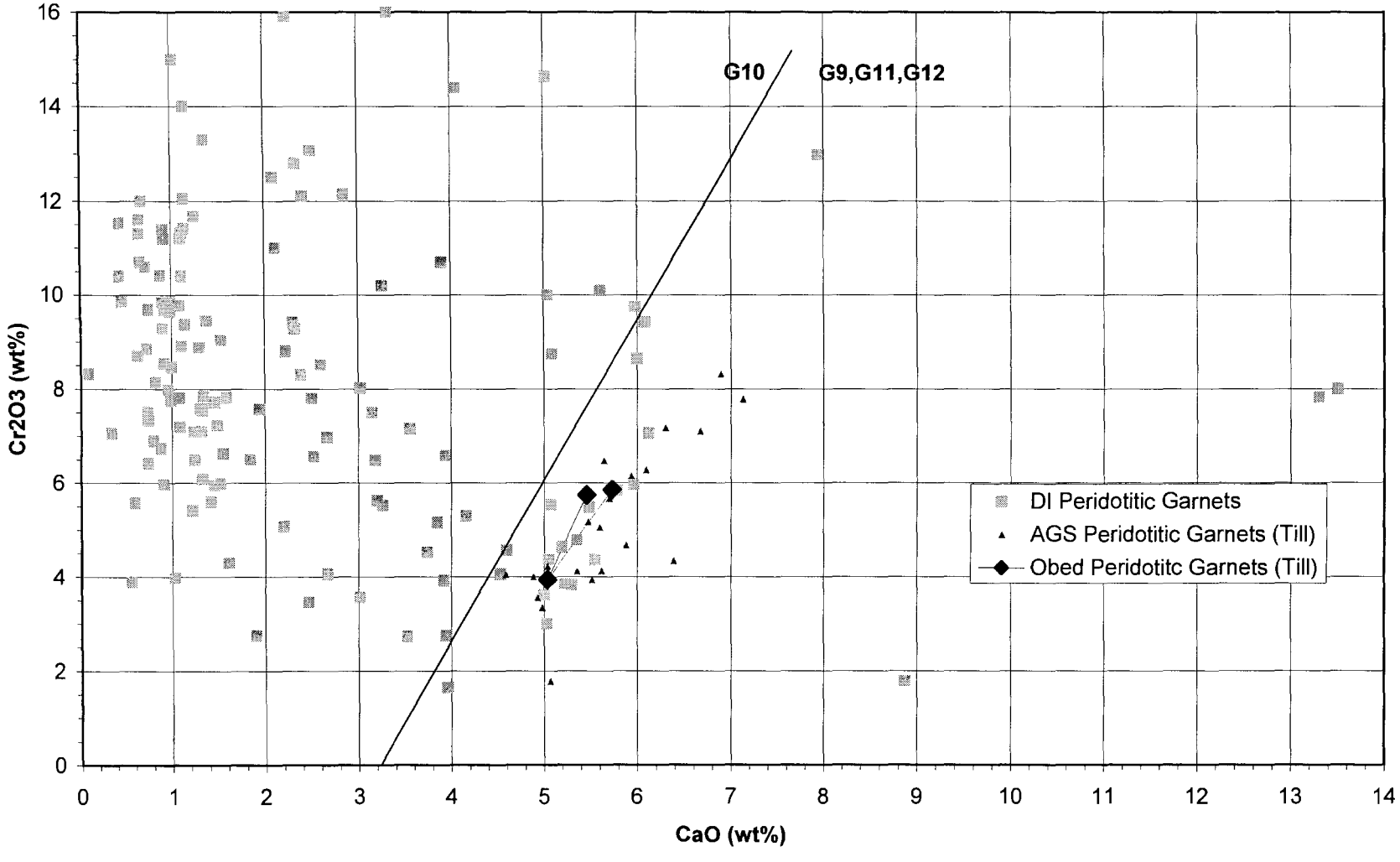
AGS - Alberta Geological Survey

Cr - Chrome

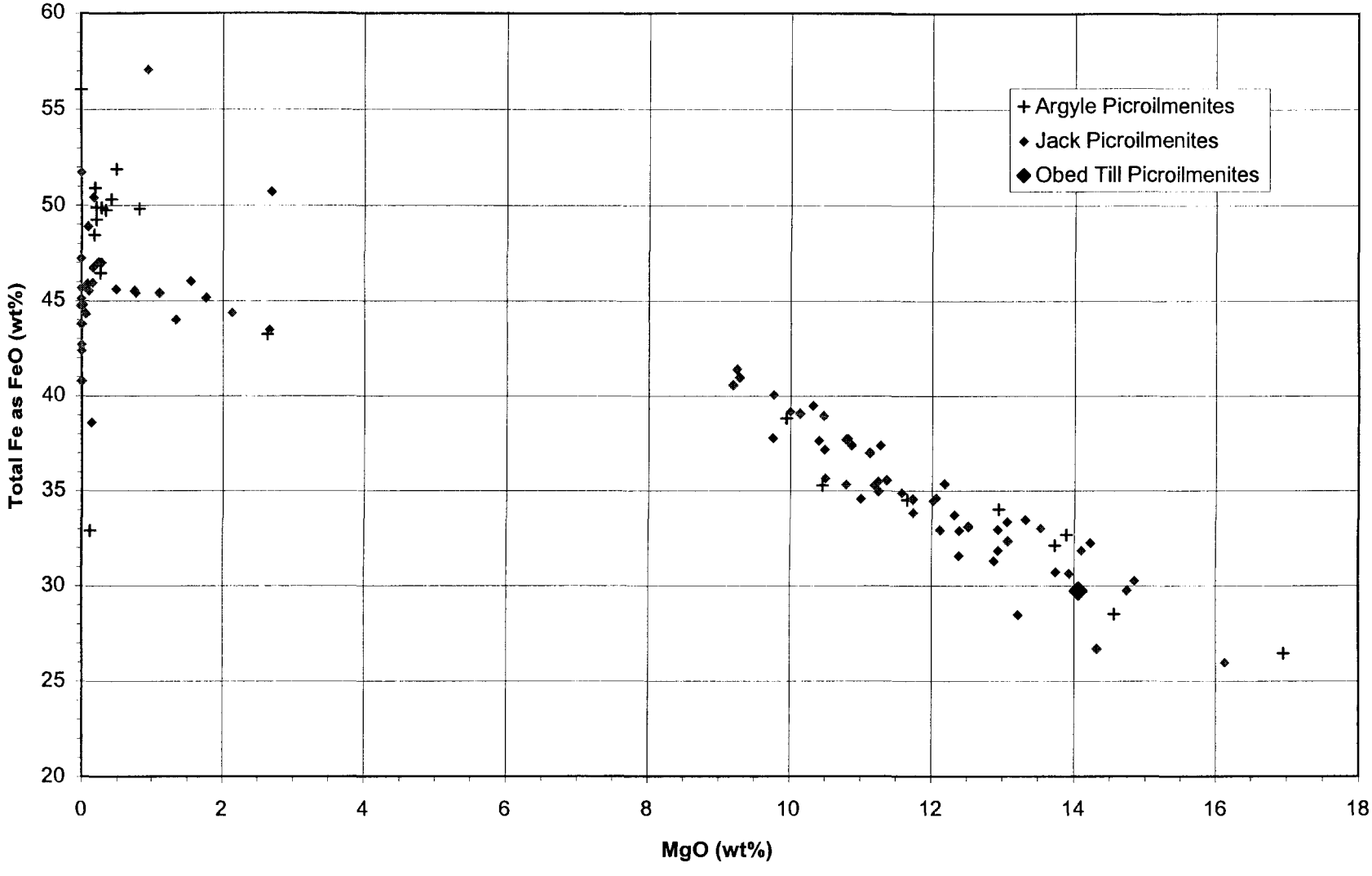
DI - Diamond Inclusion Field

NOTE: Data from Argyle diamondiferous lamproite, Australia; Jack kimberlite diatremes, British Columbia; and Diamond Inclusion Field information from South Africa, are derived from Dufresne et al. (1996).

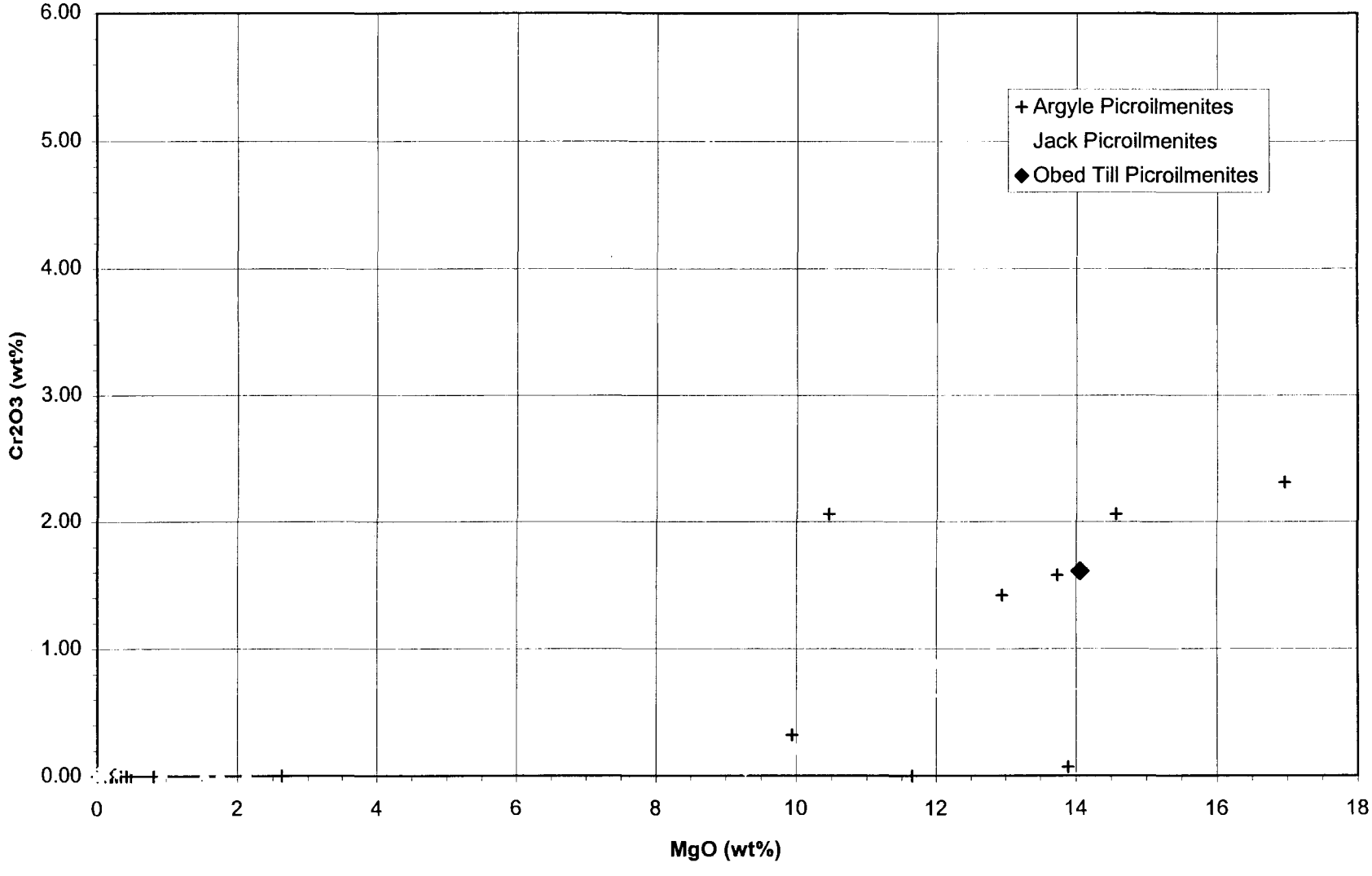
MgO vs Total Fe as FeO For Peridotitic Garnets
From The Obed Property Till Samples - 1997 (Figure XI-1)



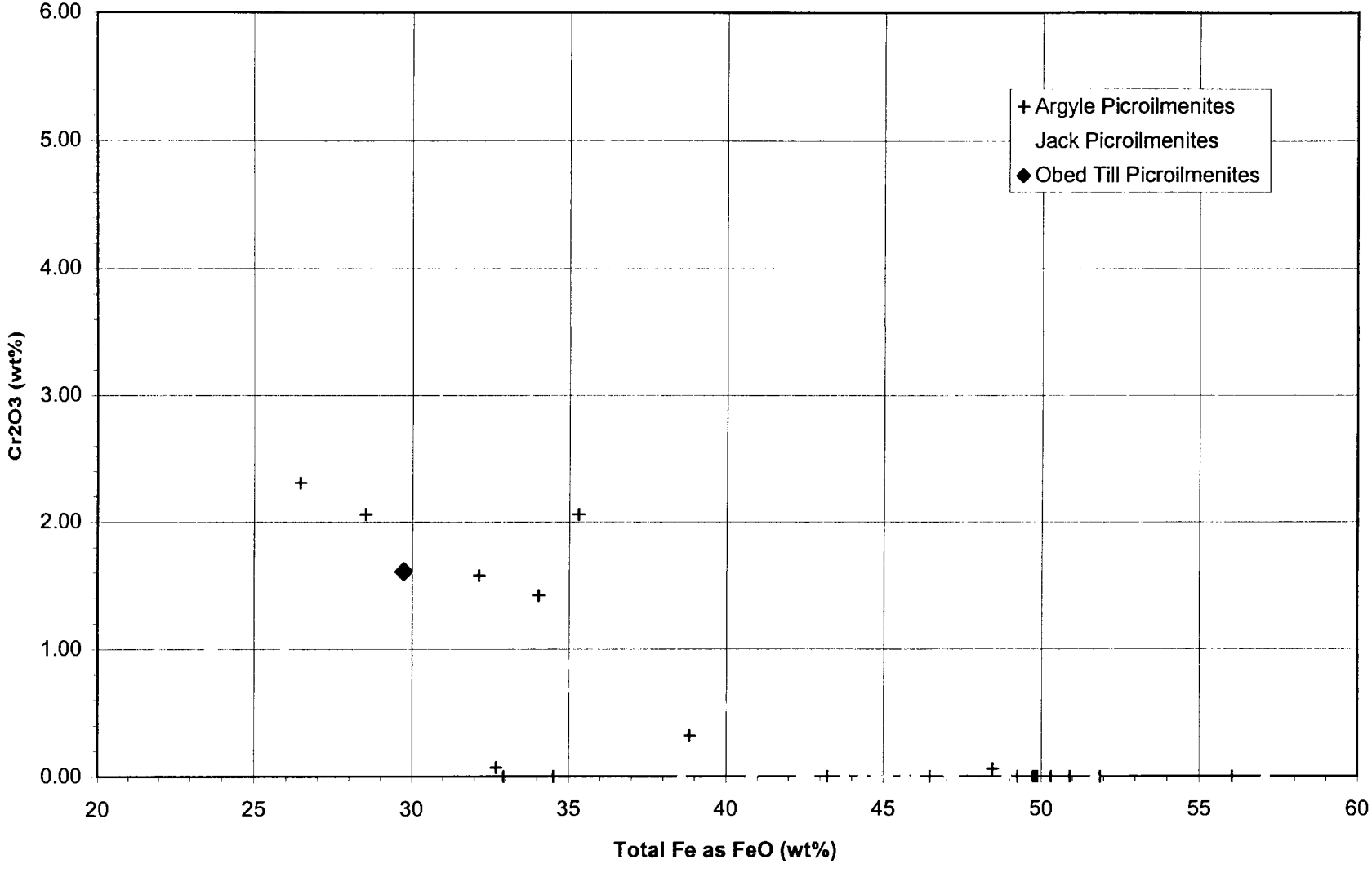
MgO vs Total Fe as FeO For Picroilmenites From The Obed Property Till Samples - 1997
(Figure XI-2)



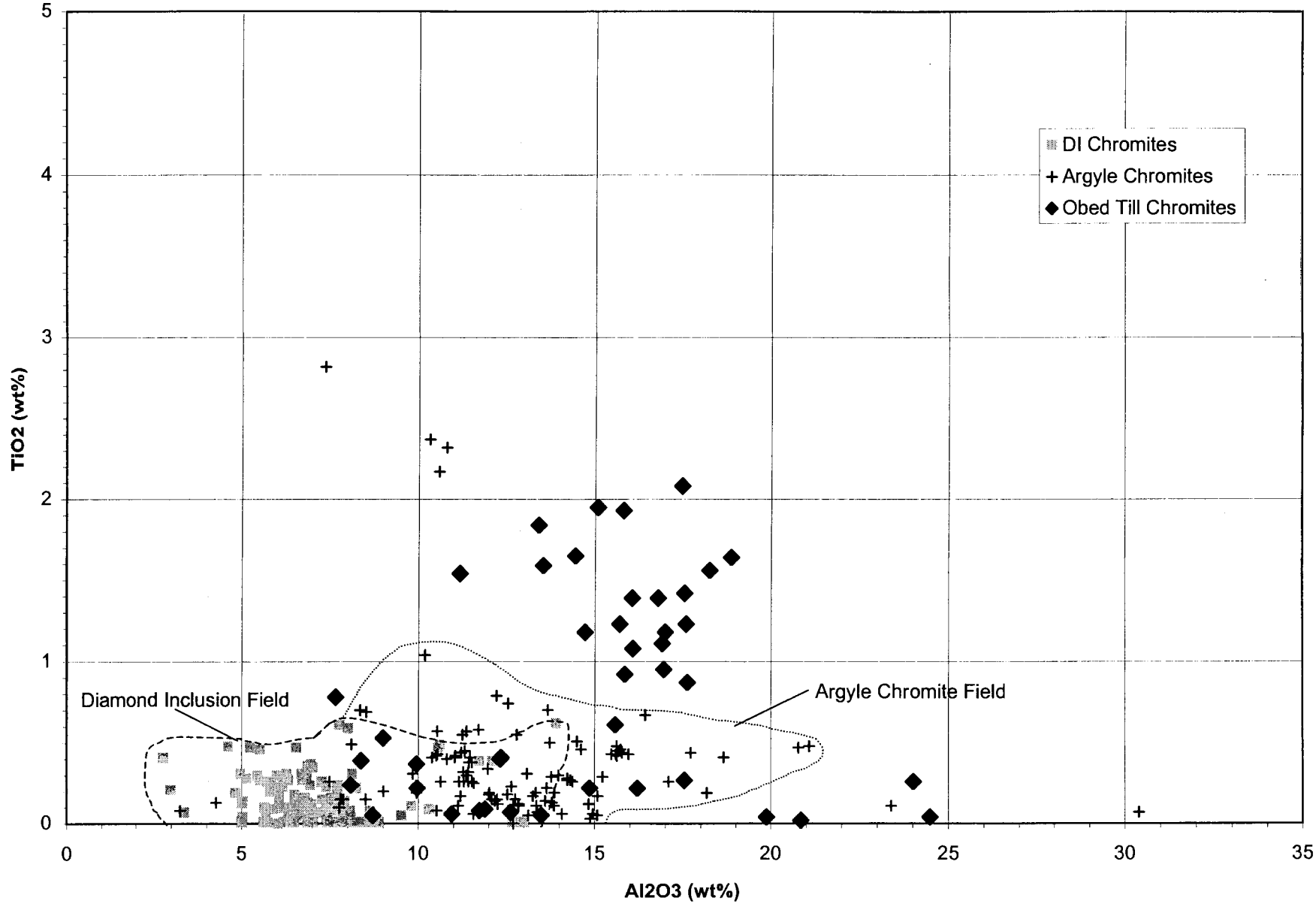
MgO vs Cr2O3 For Picroilmenites From The Obed Property Till Samples- 1997
(Figure XI-3)



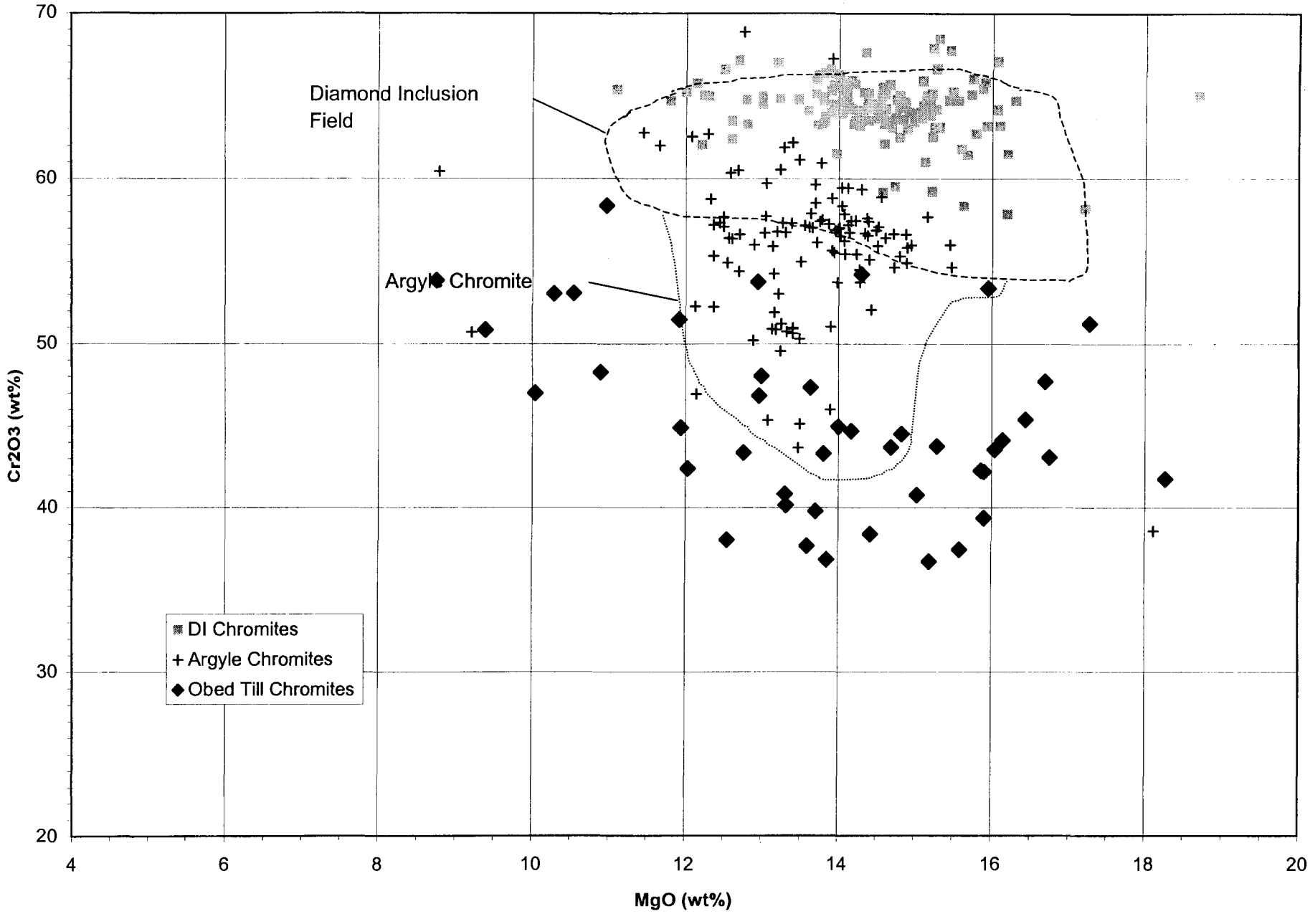
FeO vs Cr2O3 For Picroilmenites From The Obed Property Till Samples- 1997
(Figure XI-4)



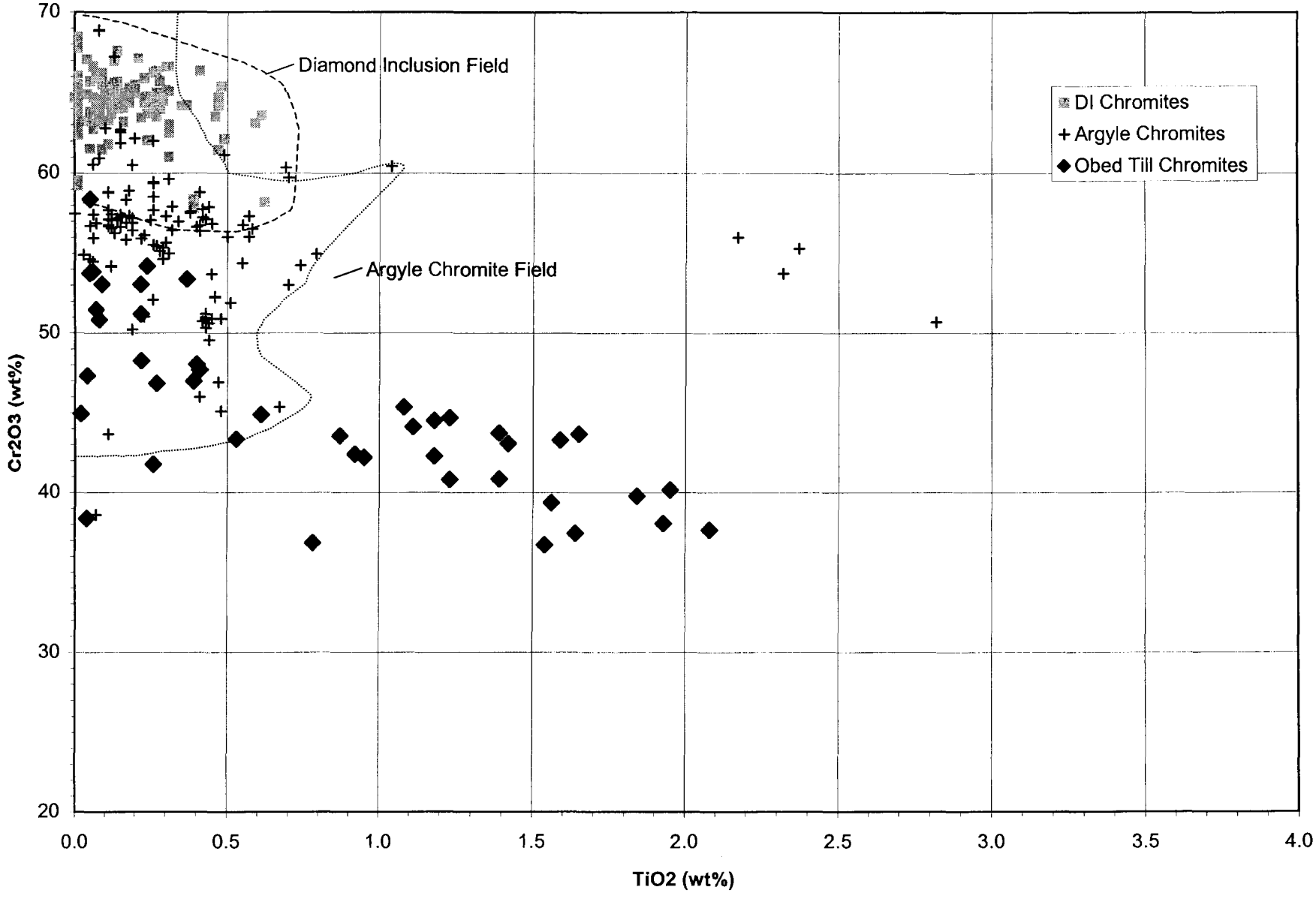
Al2O3 vs TiO2 For Chromites From The Obed Property Till Samples- 1997
(Figure XI-5)



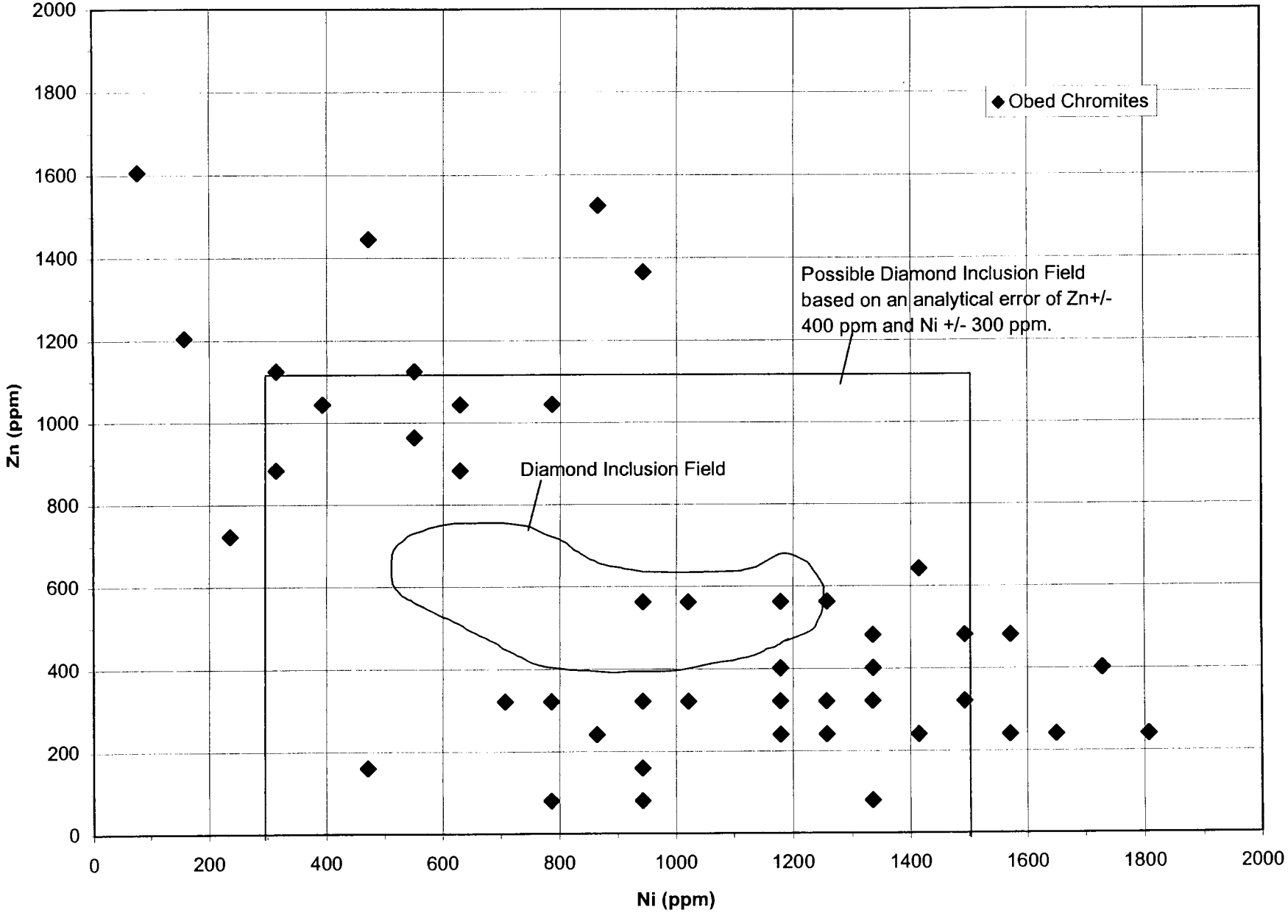
MgO vs Cr2O3 For Chromites From The Obed Property Till Samples - 1997
(Figure XI-6)



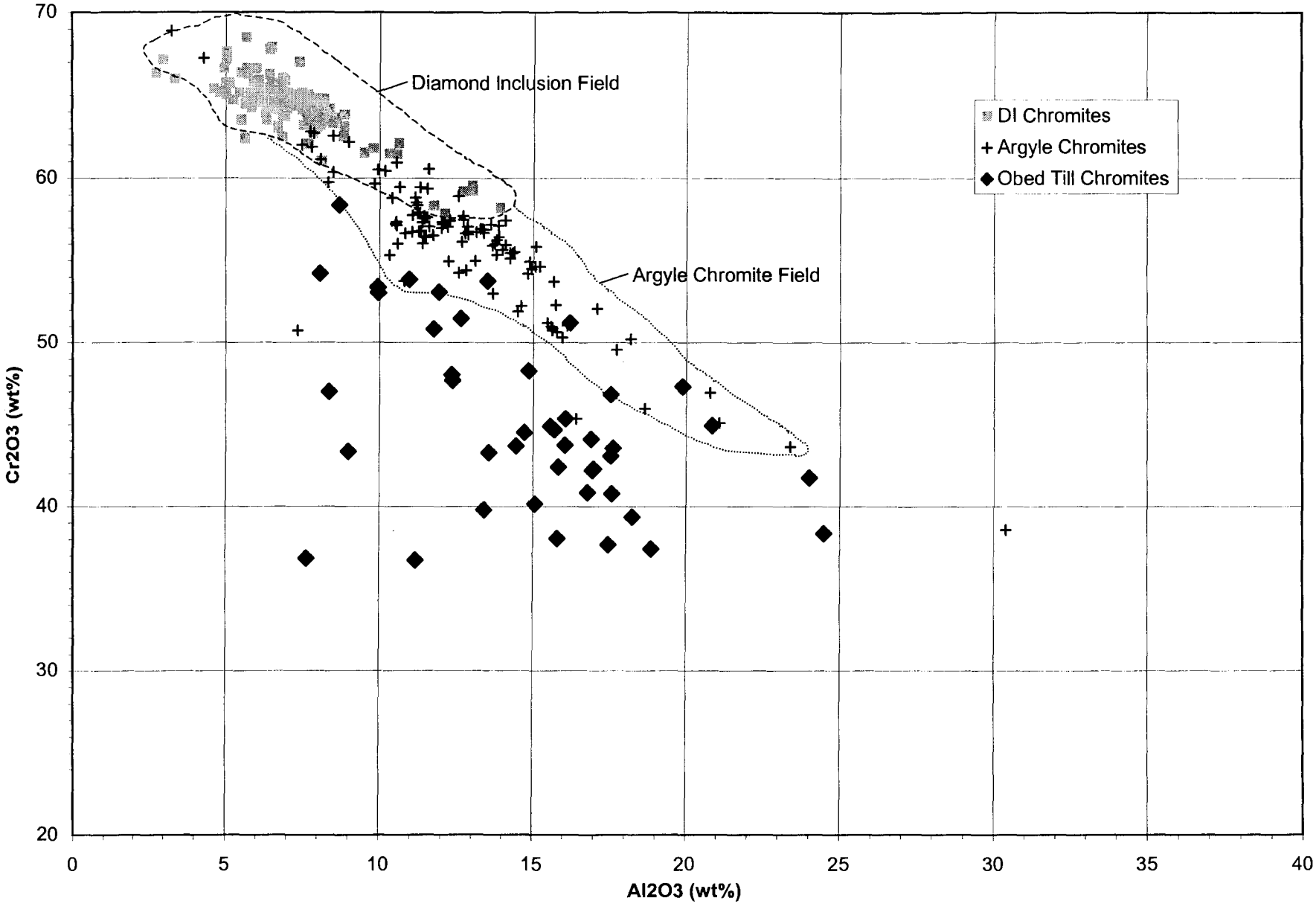
TiO2 vs Cr2O3 For Chromites From The Obed Property Till Samples- 1997
(Figure XI-7)



Ni vs Zn For Chromites From The Obed Property Till Samples - 1997
(Figure XI-8)



Al2O3 vs Cr2O3 For Chromites From The Obed Property Till Samples - 1997
(Figure XI-9)



APPENDIX XII

INTERPRETATION OF DIAMOND INDICATOR MINERAL DATA FROM HEAVY MINERAL STREAM SEDIMENT AND TILL SAMPLES

XII.A INTERPRETATION OF OXIDE MINERAL GRAIN CHEMISTRIES FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

XII.B INTERPRETATION OF OXIDE MINERAL GRAIN CHEMISTRIES FROM TILL SAMPLES

XII.C INTERPRETATION OF SILICATE MINERAL GRAIN CHEMISTRIES FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

XII.D INTERPRETATION OF SILICATE MINERAL GRAIN CHEMISTRIES FROM TILL SAMPLES

XII.E INTERPRETATION OF DIAMOND INDICATOR MINERAL SAMPLE SITES FROM HEAVY MINERAL STREAM SEDIMENT AND TILL SAMPLES

APPENDIX XII.A

INTERPRETATION OF OXIDE MINERAL GRAIN CHEMISTRIES FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% Al2O3	ppm Ni	ppm Zn	Interpretation
7BRH - 002	5	PICRO CHROMITE	0.15	57.53	16.29	16.16	8.27	1100.12	160.68	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 002	6	PICRO CHROMITE	0.03	59.39	18.62	11.52	8.88	314.32	964.08	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 004	18	PICRO CHROMITE	0.18	60.19	14.34	16.32	7.08	864.38	80.34	**DEFINITE indicator of Diamondiferous Peridotite Mantle source for grain**
7BRH - 008	164	PICRO CHROMITE	0.22	58.75	17.57	16.04	7.07	1178.70	80.34	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 008	165	PICRO CHROMITE	0.05	61.88	16.20	14.14	6.89	707.22	241.02	**DEFINITE indicator of Diamondiferous Peridotite Mantle source for grain**
7BRH - 010	53	PICRO CHROMITE	0.12	58.89	15.26	16.75	9.24	942.96	401.70	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 010	56	PICRO CHROMITE	1.91	41.11	25.22	13.88	15.91	1571.60	482.04	POSSIBLE indicator of Kimberlite or Lamproite diatreme source for grain
7BRH - 015	78	SUB PICRO CHROMITE	2.31	39.61	24.17	16.04	16.16	1728.76	401.70	POSSIBLE indicator of Kimberlite or Lamproite diatreme source for grain
7BRH - 017	172	PICRO ILMENITE	50.26	0.32	35.26	12.10	0.23	314.32	241.02	PROBABLE indicator of Kimberlite or Lamproite diatreme source for grain
7BRH - 018	90	PICRO CHROMITE	2.57	41.71	28.19	13.09	12.43	1335.86	562.38	**DEFINITE indicator of Kimberlite or Lamproite diatreme source for grain**
7BRH - 019	93	SUB PICRO CHROMITE	2.16	37.94	28.54	13.12	16.40	1178.70	482.04	POSSIBLE indicator of Kimberlite or Lamproite diatreme source for grain
7BRH - 020	166	PICRO CHROMITE	0.11	58.37	19.11	12.29	9.82	314.32	1044.42	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 021	169	PICRO CHROMITE	0.09	59.95	16.63	13.78	9.12	628.64	562.38	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 022	94	PICRO CHROMITE	0.16	58.66	17.86	14.76	7.51	1100.12	160.68	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRH - 028	127	PICRO CHROMITE	0.15	61.74	14.58	17.25	5.57	1021.54	160.68	**DEFINITE indicator of Diamondiferous Peridotite Mantle source for grain**
7BRH - 028	132	PICRO CHROMITE	0.16	61.70	14.95	16.50	5.96	1021.54	160.68	**DEFINITE indicator of Diamondiferous Peridotite Mantle source for grain**
7BRH - 030	140	SUB PICRO CHROMITE	3.29	37.75	31.69	12.61	12.19	1414.44	562.38	POSSIBLE indicator of Kimberlite or Lamproite diatreme source for grain

APPENDIX XII.B

INTERPRETATION OF OXIDE MINERAL GRAIN CHEMISTRIES FROM TILL SAMPLES

(APEX Project 97210)

Sample Number	Grain	Classification	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% Al2O3	ppm Ni	ppm Zn	Interpretation
7BRT-001	**5**	PICRO ILMENITE	52.64	**1.61**	**29.73**	**14.06**	0.50	785.80	80.34	**DEFINITE indicator of Kimberlite or Lamproite diatreme source for grain**
7BRT-003	**17**	PICRO CHROMITE	**0.06**	**58.44**	19.09	**12.04**	7.82	235.74	723.06	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRT-003	**18**	PICRO CHROMITE	**1.95**	**40.16**	27.28	13.31	15.07	1178.70	562.38	POSSIBLE indicator of Kimberlite or Lamproite diatreme source for grain
7BRT-009	**47**	PICRO CHROMITE	**0.18**	**57.12**	15.99	**15.87**	6.10	785.80	321.36	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain
7BRT-011	**53**	PICRO CHROMITE	**0.05**	**58.38**	19.07	**10.97**	8.70	314.32	1124.76	POSSIBLE indicator of Diamondiferous Peridotite Mantle source for grain

APPENDIX XII.C

INTERPRETATION OF SILICATE MINERAL GRAIN CHEMISTRIES FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral Name	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% Na2O	wt% MnO	Interpretation
7BRH002	**1**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.24**	0.02	**20.99**	**7.50**	**9.35**	**0.05**	0.43	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH004	5	GARNET - G7 Fe-Mg UVAROVITE GROSSULAR	**0.21**	**16.38**	4.39	0.04	33.40	0.01	0.53	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3
7BRH004	6	GARNET - GROSSULAR	0.00	**8.31**	4.42	0.00	33.22	**0.09**	**1.30**	Questionable indicator of mantle source due to elevated Cr2O3 and Na2O, but elevated MnO many indicate crustal source
7BRH004	7	GARNET - ANDRADITE (Grossular?)	**0.20**	**8.88**	11.59	0.06	32.26	0.00	0.54	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3
7BRH004	**8**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.25**	0.01	**22.29**	**8.00**	**6.85**	**0.11**	0.96	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH007	**9**	ECLOGITIC GARNET - G5 MAGNESIAN ALMANDINE	**0.31**	0.00	**28.39**	**3.53**	**5.52**	**0.07**	**2.03**	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figures X-10, X-11 and X-12, but high MnO may indicate crustal source for grain**
7BRH007	10	ECLOGITIC GARNET - ALMANDINE	**0.42**	0.00	30.73	**2.47**	**5.99**	**0.00**	**1.47**	Questionable Indicator of Diamondiferous Eclogitic Mantle due to CaO versus MgO, and elevated Ti2O, but MnO near 1.5% indicates crustal source
7BRH009	**11**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.06**	0.01	**18.99**	**6.69**	**12.15**	0.02	0.02	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH009	**12**	**CLINOPYROXENE - CHROME DIOPSIDE**	0.33	**1.43**	2.97	15.17	**19.69**	**1.48**	0.16	**DEFINITE indicator of Diamondiferous Peridotitic Mantle source for grain on Figure X-1**
7BRH009	**13**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.25**	0.00	**16.83**	**8.90**	**10.90**	**0.06**	0.36	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH011	**14**	ECLOGITIC GARNET - G6 PYROPE GROSSULAR ALMANDINE	**0.22**	0.05	**15.09**	**8.13**	**13.60**	0.03	0.22	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH011	**15**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.37**	0.00	**18.03**	**10.69**	**8.18**	0.00	0.81	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH014	17	ECLOGITIC GARNET - ALMANDINE	**0.08**	0.00	33.30	**1.90**	**3.81**	0.04	**1.35**	Questionable Indicator of Diamondiferous Eclogitic Mantle due to CaO versus MgO, and slightly elevated Ti2O, but MnO near 1.5% indicates crustal source
7BRH015	**18**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.11**	0.03	**17.38**	**11.73**	**7.63**	0.03	0.83	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**

APPENDIX XII.C

INTERPRETATION OF SILICATE MINERAL GRAIN CHEMISTRIES FROM HEAVY MINERAL STREAM SEDIMENT SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral Name	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% Na2O	wt% MnO	Interpretation
7BRH017	**19**	ECLOGITIC GARNET - G6 PYROPE GROSSULAR ALMANDINE	**0.27**	0.01	**16.37**	**6.49**	**14.18**	0.03	0.43	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH017	31	GARNET - GROSSULAR	**0.16**	**9.37**	2.31	0.07	32.78	0.00	**1.54**	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3, but elevated MnO >1.5% indicates crustal source
7BRH017	32	GARNET - GROSSULAR	**0.16**	**6.84**	5.09	0.09	31.46	0.00	**1.95**	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3, but elevated MnO >1.5% indicates crustal source
7BRH018	20	ECLOGITIC GARNET - G5 MAGNESIAN ALMANDINE	**0.10**	0.03	29.43	**1.25**	**8.15**	0.01	**1.77**	Questionable indicator of mantle source because falls within DI field on TiO2 versus CaO plot, but elevated MnO >1.5% indicates crustal source
7BRH020	22	ECLOGITIC GARNET - G5 MAGNESIAN ALMANDINE	**0.09**	0.05	28.27	**1.03**	**6.84**	0.01	**4.32**	Questionable indicator of mantle source because falls within DI field on TiO2 versus CaO plot, but elevated MnO >1.5% indicates crustal source
7BRH020	23	ECLOGITIC GARNET - G5 MAGNESIAN ALMANDINE	**0.15**	0.00	28.25	**1.62**	**9.95**	0.00	0.62	Questionable indicator of mantle source because falls within DI field on TiO2 versus CaO plot; low MnO <1.5% and elevated MgO may support mantle origin for grain
7BRH023	24	UNKNOWN (Possible Low Fe-Mg Grossular)	**0.89**	**1.35**	0.70	0.20	36.00	0.00	0.07	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3; low MnO may support mantle origin
7BRH023	**25**	ECLOGITIC GARNET - G5 MAGNESIAN ALMANDINE	**0.08**	0.03	29.86	**1.72**	**8.03**	**0.06**	1.19	**PROBABLE indicator of eclogitic mantle source because falls within DI field on TiO2 versus NaO, and TiO2 versus CaO plots**, but elevated MnO may indicate crustal source
7BRH023	26	ECLOGITIC GARNET - ALMANDINE	**0.04**	0.05	33.17	**2.54**	**4.32**	0.00	0.69	Questionable indicator of mantle source because falls within DI field on TiO2 versus CaO plot; low MnO <1.5% and elevated MgO may support mantle origin for grain
7BRH024	27	UNKNOWN (Possible Low Fe-Mg Grossular)	**0.35**	0.00	8.82	0.30	31.93	**0.07**	0.57	Questionable indicator of mantle source due to elevated Cr2O3 and Na2O; low MnO may support mantle origin
7BRH029	**28**	ECLOGITIC GARNET - G6 PYROPE GROSSULAR ALMANDINE	**0.38**	0.09	**15.00**	**7.70**	**13.85**	**0.15**	0.37	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH029	29	GARNET - G7 Fe-Mg UVAROVITE GROSSULAR	**0.41**	**15.95**	3.59	0.20	31.85	0.04	0.73	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3; low MnO may support mantle origin
7BRH034	33	GARNET - GROSSULAR	0.05	**6.61**	3.38	0.00	34.78	0.05	0.70	Questionable indicator of mantle source due to elevated Cr2O3; low MnO may support mantle origin
7BRH035	**30**	ECLOGITIC GARNET - G3 CALCIC PYROPE ALMANDINE	**0.51**	0.00	**18.58**	**7.29**	**11.45**	**0.07**	0.46	**DEFINITE indicator of Diamondiferous Eclogitic Mantle source for grain on Figure X-13**
7BRH035	34	UNKNOWN (Possible Low Fe-Mg Grossular)	**0.41**	**2.57**	0.37	0.15	35.33	0.00	0.26	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3; low MnO may support mantle origin
7BRH035	35	UNKNOWN (Possible Low Fe-Mg Grossular)	**0.35**	**2.67**	0.42	0.15	35.04	0.00	0.26	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3; low MnO may support mantle origin

APPENDIX XII.D

INTERPRETATION OF SILICATE MINERAL GRAIN CHEMISTRIES FROM TILL SAMPLES

(APEX Project 97210)

Sample Number	Grain	Mineral	wt% TiO2	wt% Cr2O3	wt% FeO	wt% MgO	wt% CaO	wt% Na2O	wt% MnO	Interpretation
7BRT004	5	GARNET - GROSSULAR	**0.86**	**6.44**	3.14	0.08	35.01	0.00	0.27	Questionable indicator of mantle source due to elevated TiO2 and Cr2O3; low MnO may support mantle origin
7BRT005	**3**	GARNET - G09 CHROME PYROPE	**0.32**	**3.94**	7.53	**19.95**	**5.04**	0.04	0.35	**POSSIBLE indicator of Diamondiferous Peridotitic Mantle for grain because plots near DI field on Figure XI-1, although not left of the "85% line" within the G10 garnet field**
7BRT005	**4**	GARNET - G09 CHROME PYROPE	**0.15**	**5.85**	7.10	**19.46**	**5.73**	**0.05**	0.45	**POSSIBLE indicator of Diamondiferous Peridotitic Mantle for grain because plots near DI field on Figure XI-1, although not left of the "85% line" within the G10 garnet field**
7BRT007	**2**	GARNET - G09 CHROME PYROPE	**0.17**	**5.74**	7.29	**19.36**	**5.46**	**0.06**	0.46	**POSSIBLE indicator of Diamondiferous Peridotitic Mantle for grain because plots near DI field on Figure XI-1, although not left of the "85% line" within the G10 garnet field**

APPENDIX XII.E

INTERPRETATION OF DIAMOND INDICATOR MINERAL SAMPLE SITES FOR HEAVY MINERAL STREAM SEDIMENT AND TILL SAMPLES

(APEX Project 97210)

Sample Number	SITE ANOMALOUSNESS	REASONS FOR INTERPRETATION
HEAVY MINERAL STREAM SEDIMENT SAMPLES		
7BRH - 001	NOT Anomalous	No anomalous grains
7BRH - 002	PROBABLY Anomalous	1 eclogitic garnet Definite indicator of diamondiferous eclogitic mantle, and 2 chromites Possible indicators of peridotite mantle
7BRH - 003	NOT Anomalous	No anomalous grains
7BRH - 004	DEFINITELY Anomalous	1 eclogitic garnet Definite indicator of diamondiferous eclogitic mantle, 3 Questionable garnets indicative of mantle source, and 1 chromite Definite indicator of diamondiferous peridotite mantle
7BRH - 005	NOT Anomalous	No anomalous grains
7BRH - 006	NOT Anomalous	No anomalous grains
7BRH - 007	PROBABLY Anomalous	1 eclogitic garnet Definite indicator of diamondiferous eclogitic mantle, and 1 Questionable garnet indicative of mantle source, but no oxide indicators
7BRH - 008	PROBABLY Anomalous	No silicates indicative of mantle source, but 1 chromite Definite indicator and 1 chromite Possible indicator of diamondiferous peridotite mantle
7BRH - 009	DEFINITELY Anomalous	2 eclogitic garnets Definite indicators of diamondiferous eclogitic mantle, and 1 Chrome Diopside indicative of diamondiferous peridotite mantle, but no oxide indicators
7BRH - 010	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of peridotite mantle and 1 chromite possible indicator of kimberlite or lamproite diatreme
7BRH - 011	DEFINITELY Anomalous	2 eclogitic garnets Definite indicators of diamondiferous eclogitic mantle, but no oxide indicators
7BRH - 012	NOT Anomalous	No anomalous grains
7BRH - 013	NOT Anomalous	No anomalous grains
7BRH - 014	POSSIBLY Anomalous	1 eclogitic garnet Questionable indicator of diamondiferous eclogitic mantle, but no other silicate or oxide indicator grains
7BRH - 015	PROBABLY Anomalous	1 eclogitic garnet Definite indicator of diamondiferous eclogitic mantle, and 1 chromite Possible indicator of kimberlite or lamproite diatreme
7BRH - 016	NOT Anomalous	No anomalous grains
7BRH - 017	PROBABLY Anomalous	1 eclogitic garnet Definite indicator of diamondiferous eclogitic mantle, 2 garnets of Questionable mantle origin, and 1 picro ilmenite Probable indicator of kimberlite or lamproite diatreme

APPENDIX XII.E

INTERPRETATION OF DIAMOND INDICATOR MINERAL SAMPLE SITES FOR HEAVY MINERAL STREAM SEDIMENT AND TILL SAMPLES

(APEX Project 97210)

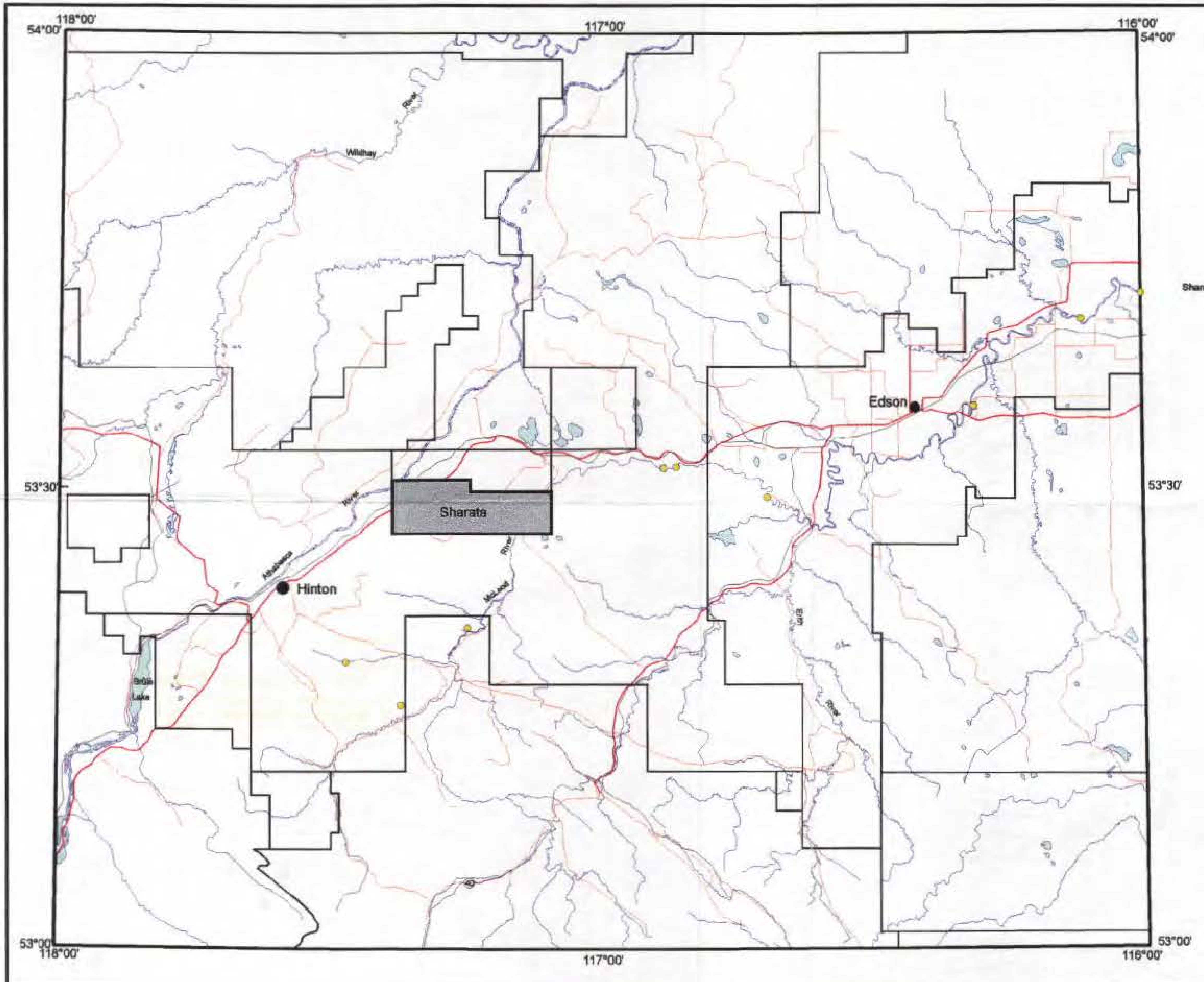
Sample Number	SITE ANOMALOUSNESS	REASONS FOR INTERPRETATION
HEAVY MINERAL STREAM SEDIMENT SAMPLES (Cont.)		
7BRH - 018	PROBABLY Anomalous	1 eclogitic garnet Questionable indicator of diamondiferous eclogitic mantle, and 1 chromite Definite indicator of kimberlite or lamproite diatreme
7BRH - 019	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of f kimberlite or lamproite diatreme
7BRH - 020	POSSIBLY Anomalous	2 eclogitic garnets Questionable indicators of diamondiferous eclogitic mantle, and 1 chromite Possible indicator of diamondiferous peridotite mantle
7BRH - 021	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of peridotite mantle
7BRH - 022	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of peridotite mantle
7BRH - 023	POSSIBLY Anomalous	1 eclogitic garnet Probable indicator and 2 eclogitic garnets Questionable indicators of diamondiferous eclogitic mantle, but no oxide indicators
7BRH - 024	POSSIBLY Anomalous	1 garnet Questionable indicator of mantle source, but no oxide indicators
7BRH - 025	NOT Anomalous	No anomalous grains
7BRH - 026	NOT Anomalous	No anomalous grains
7BRH - 027	NOT Anomalous	No anomalous grains
7BRH - 028	DEFINITELY Anomalous	No silicates indicative of mantle source, but 2 chromites Definite indicators of diamondiferous peridotite mantle
7BRH - 029	PROBABLY Anomalous	1 eclogitic garnet Definite indicator and 1 garnet Questionable indicator of diamondiferous eclogitic mantle, but no oxide indicators
7BRH - 030	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of kimberlite or lamproite diatreme
7BRH - 031	NOT Anomalous	No anomalous grains
7BRH - 032	NOT Anomalous	No anomalous grains
7BRH - 033	NOT Anomalous	No anomalous grains
7BRH - 034	POSSIBLY Anomalous	1 garnet Questionable indicator of mantle origin for grain, but no oxide indicators
7BRH - 035	PROBABLY Anomalous	1 eclogitic garnet Definite indicator and 2 garnets Questionable indicator of diamondiferous eclogitic mantle, but no oxide indicators

APPENDIX XII.E

INTERPRETATION OF DIAMOND INDICATOR MINERAL SAMPLE SITES FOR HEAVY MINERAL STREAM SEDIMENT AND TILL SAMPLES

(APEX Project 97210)

Sample Number	SITE ANOMALOUSNESS	REASONS FOR INTERPRETATION
TILL SAMPLES		
7BRT-001	PROBABLY Anomalous	No silicates indicative of mantle source, but 1 picro ilmenite Definite indicator of kimberlite or lamproite diatreme
7BRT-002	NOT Anomalous	No anomalous grains
7BRT-003	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of diamondiferous peridotite mantle, and 1 chromite Possible indicator of kimberlite or lamproite diatreme
7BRT-004	POSSIBLY Anomalous	1 garnet Questionable indicator of mantle source, but no oxide indicators
7BRT-005	POSSIBLY Anomalous	2 chrome pyrope garnets Possible indicators of diamondiferous peridotitic mantle, but no oxide indicators
7BRT-006	NOT Anomalous	No anomalous grains
7BRT-007	POSSIBLY Anomalous	1 chrome pyrope garnet Possible indicator of diamondiferous peridotitic mantle, but no oxide indicators
7BRT-008	NOT Anomalous	No anomalous grains
7BRT-009	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of diamondiferous peridotite mantle
7BRT-010	NOT Anomalous	No anomalous grains
7BRT-011	POSSIBLY Anomalous	No silicates indicative of mantle source, but 1 chromite Possible indicator of diamondiferous peridotite mantle



SYMBOLS

- Major Highway
- Secondary Road
- CN Railway
- Hinton City, Town
- Sharata Obed Mineral Property of Sharata Resources Limited
- Claim boundary for mineral properties held by others
- Gold Anomaly

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ALBERTA
FEBRUARY 10, 1998

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SHARATA RESOURCES LIMITED

OBED PROPERTY

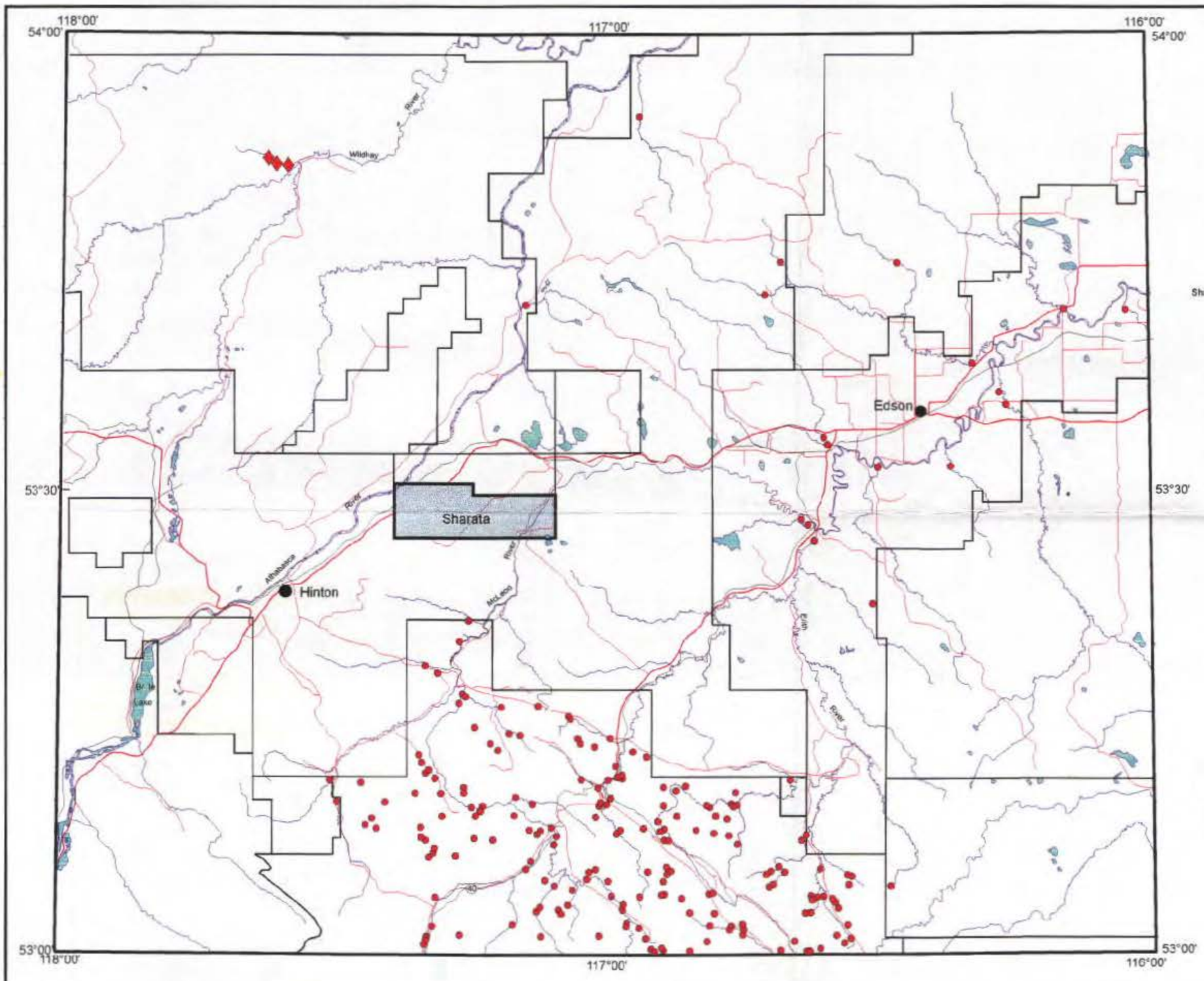
GOLD ANOMALIES IN THE EDSON MAP AREA (NTS 83F)

Scale 0 10 20 Km

APEX Geoscience Ltd.

EDMONTON, ALBERTA JANUARY, 1998

Figure 2



SYMBOLS

- Major Highway
- Secondary Road
- CN Railway
- Hinton — City, Town
- Sharata — Obed Mineral Property of Sharata Resources Limited
- Claim boundary for mineral properties held by others
- Diamond Occurrence in Fluvial Sediment
- Diamond Indicator Mineral Occurrence

From assessment reports (after Balzer and Olson, 1997)

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DIAMOND INDICATOR MINERAL OCCURENCES IN THE EDSON MAP AREA (NTS 83F)

Scale 10 0 20 Km

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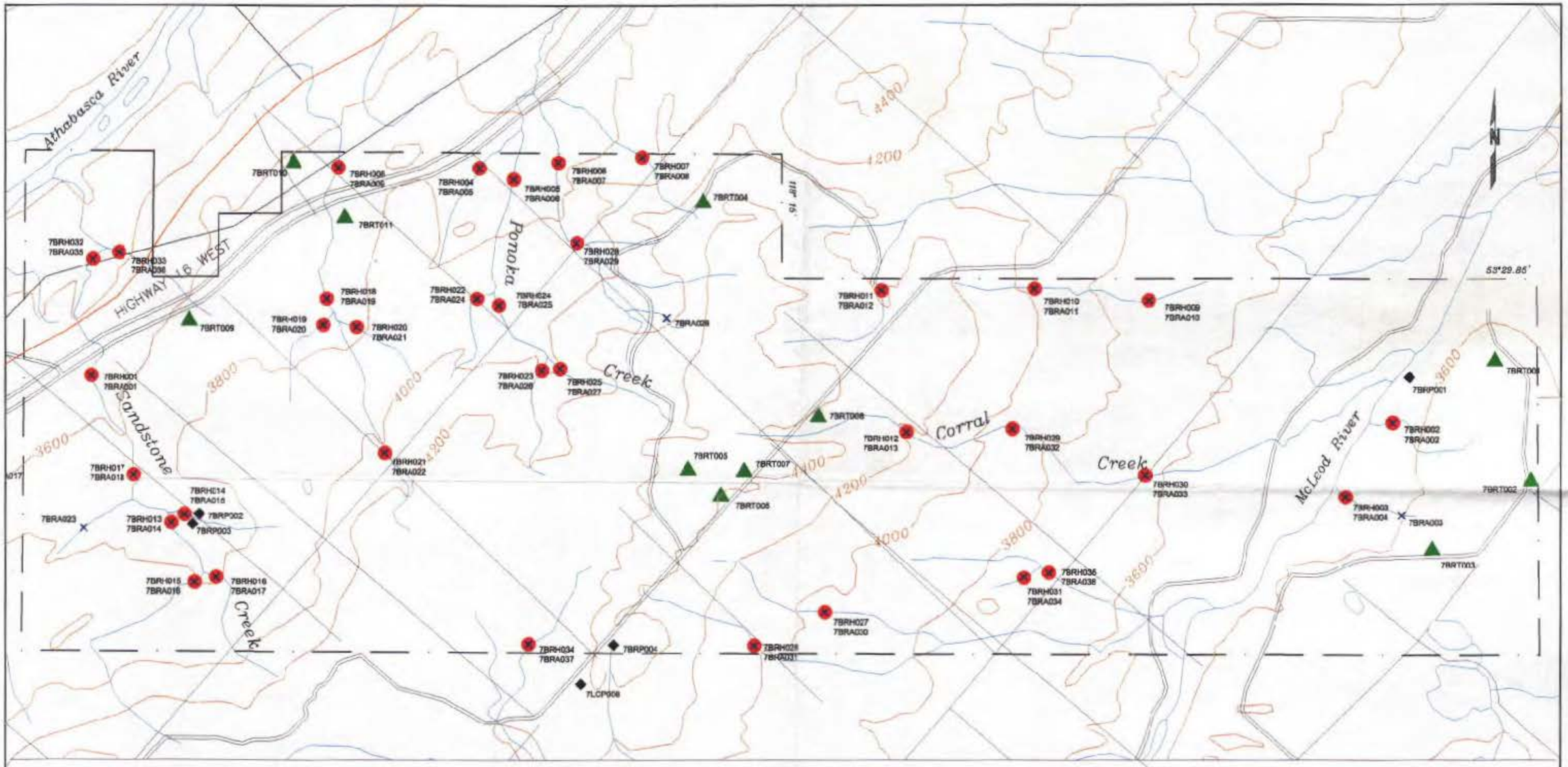
Figure 3



SYMBOLS

- 7BRH001 — Heavy mineral stream sediment sample; identifier
- 7BRA001 — Stream silt sample; identifier
- 7BRP001 — Rock grab sample; identifier
- 7BRT001 — Heavy mineral till sample; identifier
- Property boundary
- All-weather road

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(Topographic contour interval 200 feet)

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SAMPLE LOCATIONS

NTS: 83F/6,11
SCALE 0 2 Km
1:50,000

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Figure 4

118°00'
54°00'
117°00'
116°00'
54°00'

Western Canada Sedimentary Basin

Inferred Extension of the Snowbird Tectonic Zone

Edson

Approximate Axis of the Alberta Syncline

53°30'

Sharata

Hinton

Western Alberta Arch

Rocky Mountain Foothills

Rocky Mountain Front Ranges

53°00'
118°00'
117°00'
116°00'
53°00'

Geology after Price et. al., 1973

Legend and Symbols

- Paskapoo Formation
- Brazeau Formation
- Smoky and Alberta Groups
- Blairmore and Bullhead Groups
- Jurassic and Older
- Thrust, Reverse Fault (teeth on hanging wall)
- Hinton City, Town
- Obed Mineral Property of Sharata Resources Limited

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REGIONAL GEOLOGY OF THE EDSON MAP AREA (NTS 83F)

Scale 10 20 Km

APEX Geoscience Ltd.

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Figure 5

Athabasca River
HIGHWAY 16 WEST
Beaver Creek
Ponoka Creek
Sandstone Creek
Corral Creek
McLeod River
COAL ROAD
118° 15'
53°29.85'
3600
3800
4000
4200
4400

SYMBOLS

- 1 Alluvial sediments (primarily sand and gravel, some flood plain material)
- 2 Glaciofluvial sediments (kame terraces, eskers, etc.)
- 3a Obed Till: very stoney, sandy-clay matrix, high carbonate content; distinct linear features which are mainly flutes and groves
- 3b As for 3a, but few flutes and groves
- 4a Marlboro Till: less stoney than the Obed Till; loamy matrix, moderate carbonate content; may contain Shield clasts (granite); drumlins obvious
- 4b As for 4a; till is thicker (>2m), drumlins less obvious
- Drumlin (ice flow direction known.)
- Drumlin (ice flow direction unknown.)
- Esker (flow direction known.)
- Glacial Lineations
- Geological boundary
- Topographic contours
- All weather road

(Topographic contour interval 200 feet)

SHARATA RESOURCES LIMITED

OBED PROPERTY

QUATERNARY GEOLOGY

NTS: 83F/6,11

Scale 0 2 Km
1:50,000

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Figure 6

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Athabasca River
HIGHWAY 16 WEST
Beaver Creek
Ponoka Creek
Sandstone Creek
Corral Creek
McLeod River
COAL ROAD
55°29.85'
Coal C5

SYMBOLS

- + Drilling area which did not penetrate overburden
- Drilling area with limestone lithology in bedrock
- Drilling area with sandstone lithology in bedrock
- Drilling area with siltstone lithology in bedrock
- Drilling area with abundant coal in bedrock

X C6 Area of outcrop and outcrop identifier
— — Property boundary
All-weather road

Notes: Some drilling areas contain multiple drill holes.
Outcrops C8 and C9 are located outside of the Obed Property map area.

(Topographic contour interval 200 feet)

SHARATA RESOURCES LIMITED

OBED PROPERTY

BEDROCK GEOLOGY

NTS: 83F/8,11
SCALE 0 2 Km
1:50,000

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Figure 7

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PROFESSIONAL GEOLOGIST R.A. OLSEN FEBRUARY 10, 1998 ALBERTA

Athabasca River
HIGHWAY 16 WEST
Beaver Creek
Pontoon Creek
Sandstone Creek
Corral Creek
McLeod River
COAL ROAD
118° 15'
53°29.85'
3600
3800
4000
4200
4400

7BRT010 4
7BRH008 4
7BRH004 26
7BRH005 7
7BRH006 2
7BRH007 0
7BRT004 13
7BRA029 132 Au
7BRH029 4
7BRH033 4
7BRH032 2
7BRT011 3
7BRT009 3
7BRA020 0
7BRH019 6 Au
7BRH018 7
7BRH020 5
7BRH022 3
7BRH024 4
7BRH023 5
7BRH025 4
7BRA028 49 Au
7BRH001 8
7BRH017 7
7BRH021 6
7BRH011 14
7BRH010 12
3123 Mn
7BRH009 13
7BRT001 7
7BRT008 15
7BRH012 6
7BRA013 13 Cu
7BRH029 13
7BRT005 0
7BRT007 0
7BRT006 0
7BRH030 9
88 Au
7BRA033
7BRH002 11
7BRH003 21
1.0 Cd
7BRA003
7BRT002 7
7BRT003 14
7BRA023 2.0 Ag 563 Sr
7BRP002 1
398 Pb
603 Zn
63 Cd
154 Cr
7BRH013 5
7BRH014 1
7BRH015 2
7BRH016 8
7BRH034 1
7BRP004 1.0 Ag
7BRH028 0
7BRH027 8
7BRH031 10
7BRH035 19

SYMBOLS

- 7BRH004 26 — Gold grain count in grains, 11+, sample identifier, superpanned stream sediment sample
- 7BRH018 7 — Gold grain count in grains, 6-10, sample identifier
- 7BRH022 3 — Gold grain count in Grains, 0-5, sample identifier
- 7BRA028 88 Au — Gold in parts per billion, sample identfier, anomalous stream sediment sample
- 7BRA029 3 Au — Element in parts per billion, sample identifier
- 7BRT008 15 — Gold in grains, 11+, sample identifier, superpanned till sample
- 7BRT002 7 — Gold in grains, 6-10, sample identifier
- 7BRT010 3 — Gold in grains, 0-5, sample identifier
- 7BRP004 1.0 Ag — Element in parts per billion, sample identifier, rock grab sample
- All-weather Road
- Property Boundary

(Topographic contour interval 200 feet)

SHARATA RESOURCES LIMITED

OBED PROPERTY

GOLD AND GEOCHEMICAL ANOMALY HIGHLIGHTS

NTS: 83F/6,11

Scale 0 2 Km

1:50,000

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Figure 8

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Athabasca River
HIGHWAY 16 WEST
Beaver Creek
Ponoka Creek
Sandstone Creek
Corral Creek
McLeod River
COAL ROAD
118° 15'
53°29.85'
N
4400
4200
4000
3800
3600
7BRH001
7BRH002
7BRH003
7BRH004
7BRH005
7BRH006
7BRH008
7BRH009
7BRH010
7BRH011
7BRH012
7BRH013
7BRH014
7BRH015
7BRH016
7BRH017
7BRH018
7BRH019
7BRH020
7BRH021
7BRH022
7BRH023
7BRH024
7BRH025
7BRH026
7BRH027
7BRH028
7BRH029
7BRH030
7BRH031
7BRH032
7BRH033
7BRH035
7BRT001
7BRT002
7BRT003
7BRT004
7BRT005
7BRT006
7BRT007
7BRT008
7BRT009
7BRT010
7BRT011
7BRT034

SYMBOLS

7BRH004 — Definitely Anomalous Diamond Indicator Mineral Sample Site which has at least 2 grains (silicate in red and oxide in black, or both) that are "Definite Indicators" (see Appendix XII); sample identifier.

7BRH002 — Probably Anomalous Diamond Indicator Mineral Sample Site which has at least 1 grain (silicate in red or oxide in black) that is a "Definite Indicator" (see Appendix XII); sample identifier.

7BRT003 — Possibly Anomalous Diamond Indicator Mineral Sample Site which has at least 1 grain (silicate in red or oxide in black) that is a "Possible (or Questionable) Indicator" (see Appendix XII); sample identifier.

7BRH010 — Sample site that produced no anomalous indicator mineral grains; sample identifier.

— — Property boundary

All-weather road

(Topographic contour interval 200 feet)

SHARATA RESOURCES LIMITED

OBED PROPERTY

DIAMOND INDICATOR MINERAL ANOMALY HIGHLIGHTS

NTS: 83F/6,11

Scale 0 2 Km
1:50,000

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Figure 9