Exploration Osisko-Baie James Inc.

Poste Lemoyne Extension Property

Quebec

Evaluation of a Surface Gold Grain Anomaly at Depth by Reverse Circulation Drilling

by

Stuart A. Averill

Overburden Drilling Management Limited

Ottawa, Ontario, Canada

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ODM *Exploring Heavy Minerals*

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1. EXECUTIVE SUMMARY

1.1 Introduction

This report documents a 24-hole reverse circulation ("RC") drilling program performed under the direction of Overburden Drilling Management Limited for Exploration Osisko-Baie James Inc. on the Poste Lemoyne Extension or PLEX property on the Trans-Taiga Road near the La Grande River east of James Bay in northern Quebec.

The drilling was performed to resolve a gold grain anomaly that was initially identified in a surface till sampling program in 2007. The anomaly straddles the Trans-Taiga Road, measures ~0.5 x 1.5 km and is defined by six anomalous 10 kg samples that yielded from 25 to 92 gold grains compared to the regional background of <5 grains. It occurs in a broad, E-W trending bedrock valley in which the till is largely covered by glaciofluvial sand and gravel. Most of the recovered gold grains were fully reshaped, indicating >1 km of glacial transport. The drilling was designed to: (a) trace the gold grain anomaly toward its presumed bedrock source by sampling the till beneath the sand and gravel cover; and (b) establish the geology and degree of gold fertility of the bedrock beneath the till.

1.2 Bedrock Geological Setting

Geologically, the PLEX property is located in the eastern part of the Archean Superior Province of the Canadian Shield. It is on the southern edge of the Mesoarchean La Grande Subprovince, a granite-greenstone terrane, near the contact of this subprovince with tectonically accreted paragneisses of the Neoarchean Opinaca Subprovince.

The property covers part of an east-west trending, north-dipping, overturned sequence of Guyer Group supracrustal rocks of the Lac Guyer Greenstone Belt. These rocks were metamorphosed to the lower amphibolite facies, mainly prior to accretion of the Opinaca Subprovince to the La Grande Subprovince. The targeted gold grain anomaly is located where a late-tectonic, post-accretion granitoid pluton of the Bezier suite was emplaced discordantly into the nose of an overturned syncline. The supracrustal rocks in the fold nose are mainly volcanics of a komatiitic to basaltic composition.

Osisko has identified numerous gold showings on the property. The two most significant occurrences are: (1) the Orfée Zone, an iron formation-hosted deposit with a measured gold resource of 88,588 t grading 9.44 g/t Au on the south limb of the overturned syncline 6 km southeast of the drill area; and (2) a porphyry-associated occurrence that was discovered from a stronger gold grain anomaly on the David grid 8 km west of the drill area.

1.3 Glacial Geological Setting

Meltdown of the continental ice sheet in the area of the PLEX property occurred ~7000 years ago. At that time the ice was flowing westerly at ~255° from the New Quebec ice divide to the northeast and meltwater was being discharged westward to the ice front via high-energy, gravel-depositing rivers within tunnels at or near the base of the ice sheet. Meltdown of the ice sheet left a veneer of till on the bedrock surface and gravelly esker ridges along the former river tunnels. Finer silty sand that was carried in suspension in these rivers spread laterally along the receding ice front to form outwatsh aprons along both sides of the eskers.

The gravel and sand that cover the drill area are part of a large esker-outwash system that is traceable for 80 km glacially upstream to the east. This esker-outwash complex is rather unique because: (a) in the 40 km segment ending at the drill area the meltwater river tunnel followed an E-W trending, 1 to 5 km wide x 50 m deep preglacial bedrock valley beneath the ice and, when the ice melted, left an esker ridge down the centre of the valley and flooded the rest of the valley with outwash sand; and (b) approximately 1 km downstream from the drill area, the river tunnel encountered and followed a much narrower and steeper, NW-trending valley within which the river eroded down to bedrock instead of depositing sand and gravel.

1.4 Drilling and Sampling

The drilling covered a 1.5 x 2 km long block straddling the esker and the contact between the Bezier pluton and the supracrustal rocks to the west in the nose of the syncline. Initially 20 holes were planned but 24 were drilled. These holes were sited at 200 m intervals along four lines 500 m apart and oriented roughly N-S, orthogonal to both the average E-W trend of the folded supracrustal rocks and the 255° ice flow direction. The most westerly line overlapped the surface gold grain anomaly. The central esker ridge was avoided because till is normally absent beneath eskers. Access trails were cleared with an excavator, skirting environmentally sensitive areas rather than following straight N-S lines. Osisko's camp 8 km to the east on the Trans-Taiga Road was used as the base of operations.

The drilling was contracted to Steve's Equipment Services Inc. of Kirkland Lake, Ontario. Drilling commenced on July 30, 2015 and was completed on August 3 with no interruptions by mechanical or other issues. All 24 holes were completed into bedrock. Their depths ranged from 2.5 to 31.5 m and averaged 13.9 m for a program total of 333.5 m. All but two holes encountered till between the outwash sediments and bedrock. This till is unoxidized and thus still contains all of the sulphide mineral grains that were present when the till was deposited. The outwash sediments are up to 22.9 m thick and consist mainly of fine silty sand. They thin to the west toward the gold grain anomaly. Further east, they are thicker on the north side of the esker because the underlying bedrock valley is deeper on this side.

Both the till and bedrock were typically sampled over 1.5 m intervals, with a single bedrock sample collected in most holes. In total, 43 high-quality 10 kg overburden samples were obtained including 36 of till, 6 of gravel and 1 of fine, silty outwash sand with pebbly interbeds. These samples were processed to extract their heavy mineral fraction and visually separate any gold grains. The bedrock cuttings were studied in detail by binocular microscope. All of the heavy mineral concentrates ("HMCs") and bedrock samples were analyzed geochemically.

1.5 Program Costs

The total cost of the 24-hole program, excluding the costs of laying out the drill holes and clearing the access trails, was $100,931.81 or $4,205.49 per hole compared to a budgeted total of $140,902.00 for 20 holes, or $7,045.1 per hole, a 28 percent saving. The lower costs were due primarily to the excellent drill performance and fewer samples being obtained than forecast.

1.6 Lithology and Geochemistry of the Bedrock Intercepts

Of the 24 drill holes, 15 intersected the Bezier pluton, 6 intersected komatiite flows, 1 intersected a basalt flow and 2 intersected a subvolcanic gabbro sill.

The Bezier pluton is much less foliated and metamorphosed than the volcanic and subvolcanic rocks, reflecting its late tectonic time of emplacement. Mineralogically, based on the ratio of unaltered alkali feldspar to visibly saussuritized plagioclase, the pluton consists mainly of granodiorite with subordinate quartz monzonite but chemically all samples qualify as quartz monzonite because the plagioclase is very sodic.

The six komatiite intercepts are all of pyroxenite in which the pyroxene has been metamorphosed to amphibole. Five are clinopyroxenites and one is orthopyroxenite. The basalt is Mg-rich and thus probably co-magmatic with the komatiite whereas the gabbro has a Fe-rich tholeiitic composition. The complex structural setting and abundance of komatiite suggest significant potential for gold mineralization of the Kerr Addison type but the komatiites and all other intersected lithologies are unsheared and unaltered and contain negligible sulphides and <2 ppb Au.

1.7 Gold Grain Content and HMC Geochemistry of the Till and Gravel

The till samples contained only background levels of gold grains. Most contained 0 to 5 grains and the two highest responses of 11 and 16 grains demonstrably represent only background noise rather than weak anomalies. Similarly, the HMC Au analyses are all well below the 1000 ppb threshold for a significant anomaly, indicating that negligible Au is present in the pyrite and other sulphide minerals that were recovered along with the gold grains.

The six esker gravel samples yielded 0 to 3 gold grains while the silty outwash sand sample yielded 7 grains. This variability reflects the fact that ~90 percent of gold grains are, by nature, silt sized and thus carried in suspension in high-energy meltwater tunnels in the ice sheet and deposited in the silty outwash sediments, depleting the gravelly riverbed sediments – i.e. the future esker ridge – in gold grains. As well, esker sedimentation is too rapid for the coarsest 10 percent of the gold grains to become concentrated in placers in the gravel as occurs in more mature streams in unglaciated areas.

1.8 Conclusions

The RC drilling clearly showed that: (a) the till beneath the cover of outwash sand contains only background levels of gold grains even where the drilling overlapped the surface gold grain anomaly; and (b) the bedrock beneath the till is not sheared or hydrothermally altered and consistently contains negligible sulphides and <2 ppb Au. It appears, therefore, that the anomalous surface samples were not of till but rather of sand and gravel that resembled till. To confirm this, the original laboratory results for the surface samples were re-examined. It was found that: (a) the magnetite content of the anomalous samples was three to four times higher than that of the till samples collected on either side of the valley to which the gold grain anomaly is confined; and (b) as in till-hosted gold grain dispersal trains, ~90 percent of the gold grains were silt sized; however they were sorted to the coarsest silt sizes indicating a meltwater influence.

The till-like character and high magnetite and gold grain content of the anomalous samples appear to be a consequence of the confinement of the esker-outwash sediments to a long bedrock valley trending in the easterly direction in which the ice front melted back toward the New Quebec ice divide. At a meltback rate of 100 to 200 m per year, 200 to 400 years were required for the ice front to reach the head of the 40-km-long valley. During this long period, meltwater would have continued to flow down the valley as braided streams on the broad outwash aprons on either side of the central esker ridge, reworking and winnowing the silty sand and leaving a stony, till-like, magnetite and gold-enriched lag deposit on the surface. Evidently this gold-enriched lag deposit was mistaken for and sampled as till.

1.9 Recommendations

Due to the consistently negative and very definitive results obtained from both the till and bedrock samples in the RC drilling program, it is recommended that no additional work be performed in or near the drill area.

2. INTRODUCTION

2.1 Subject of the Report

This report documents a program of reverse circulation ("RC") drilling effected by Overburden Drilling Management Limited ("ODM") for Exploration Osisko-Baie James Inc. ("Osisko") on the Poste Lemoyne Extension ("PLEX") gold property near the La Grande River east of James Bay in northern Quebec (Fig. 1). Osisko is the exploration subsidiary of Osisko Gold Royalties Inc. It was incorporated to hold all of the exploration properties in the James Bay region held by Virginia Mines Inc. ("Virginia Mines"), the offspring of the original property owner Virginia Gold Inc. ("Virginia Gold"), before Virginia Mines merged with Osisko Gold Royalties Inc. on February 17, 2015.

The RC drilling was performed in search of bedrock mineralization beneath esker and outwash sediments that cover the apparent head of a till-hosted gold grain anomaly (Fig. 2). This anomaly was identified in reconnaissance-scale heavy mineral till sampling performed by Virginia Mines in 2007, and traced glacially up-ice to the sediment-covered area by follow-up sampling in 2008 and 2009. The RC drilling was designed to both: (a) trace the gold grain anomaly further up-ice by sampling the till beneath the esker/outwash sediments; and (b) determine the geology and prospectivity of the bedrock beneath the till.

2.2 Property Location, Access and Ownership

The PLEX property is described in detail in Virginia Gold's published NI 43-101 technical report on an early, 2003-2004 diamond drilling program on the property (Cayer 2004) and Virginia Mines' report on a 2012 multi-phase work program (Oswald 2013). The most salient features are summarized below.

The property is centered on latitude 53°27' N, longitude 75°13' W. It is in the heart of Hydro Quebec's massive James Bay hydroelectric development project that harnessed the La Grande River, which flows westward into the bay, with four dams – LG1 near the river mouth at James Bay and LG2 to LG4 successively further inland. The hydroelectric project included diversion of the Rupert and Eastmain Rivers northward and the Caniapiscau River westward into the La Grande and extensive reservoir flooding behind the LG2, LG3 and LG4 dams.

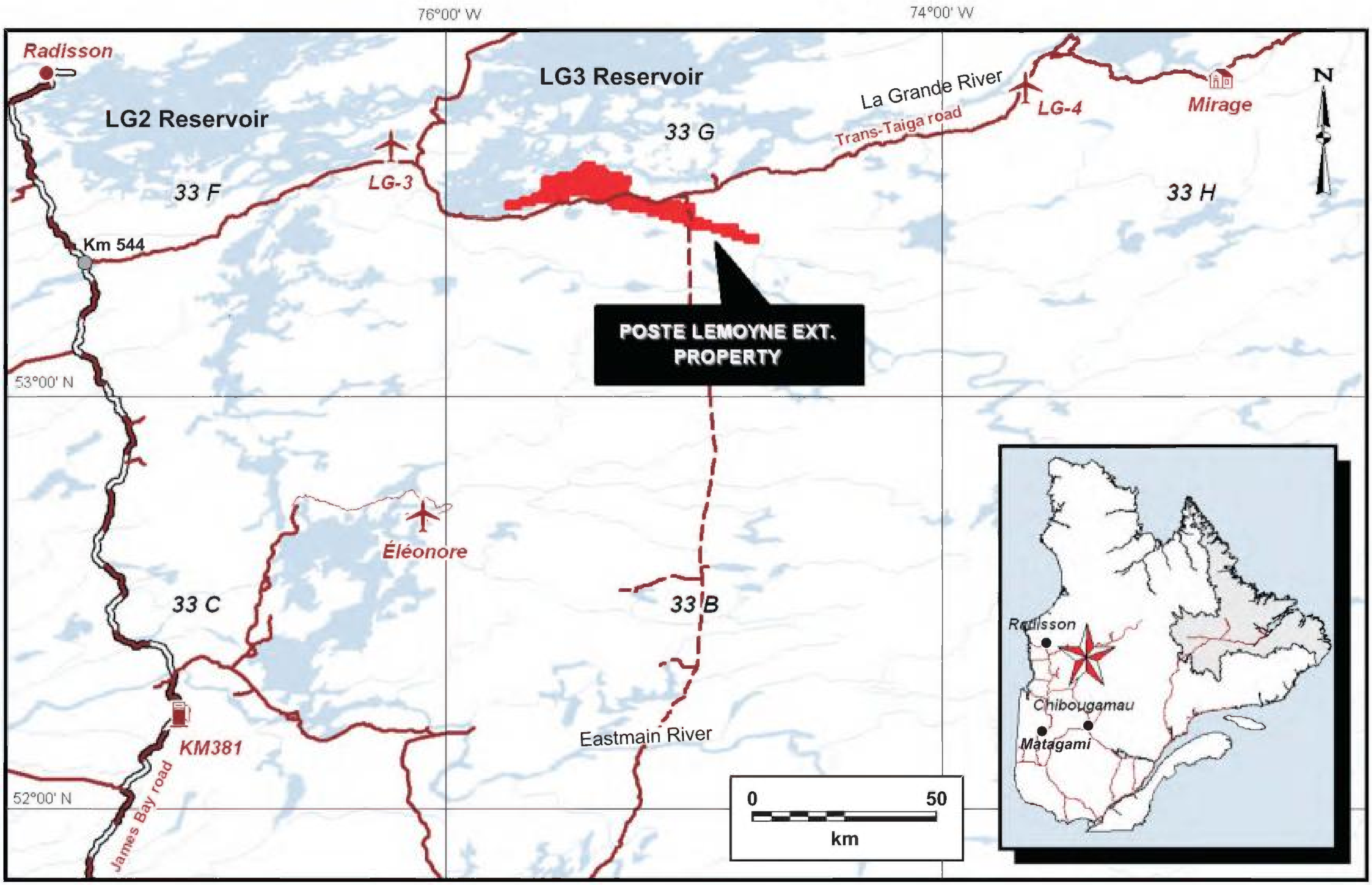

Figure 1 - Geographic location of the PLEX property. Modified from Oswald 2013.

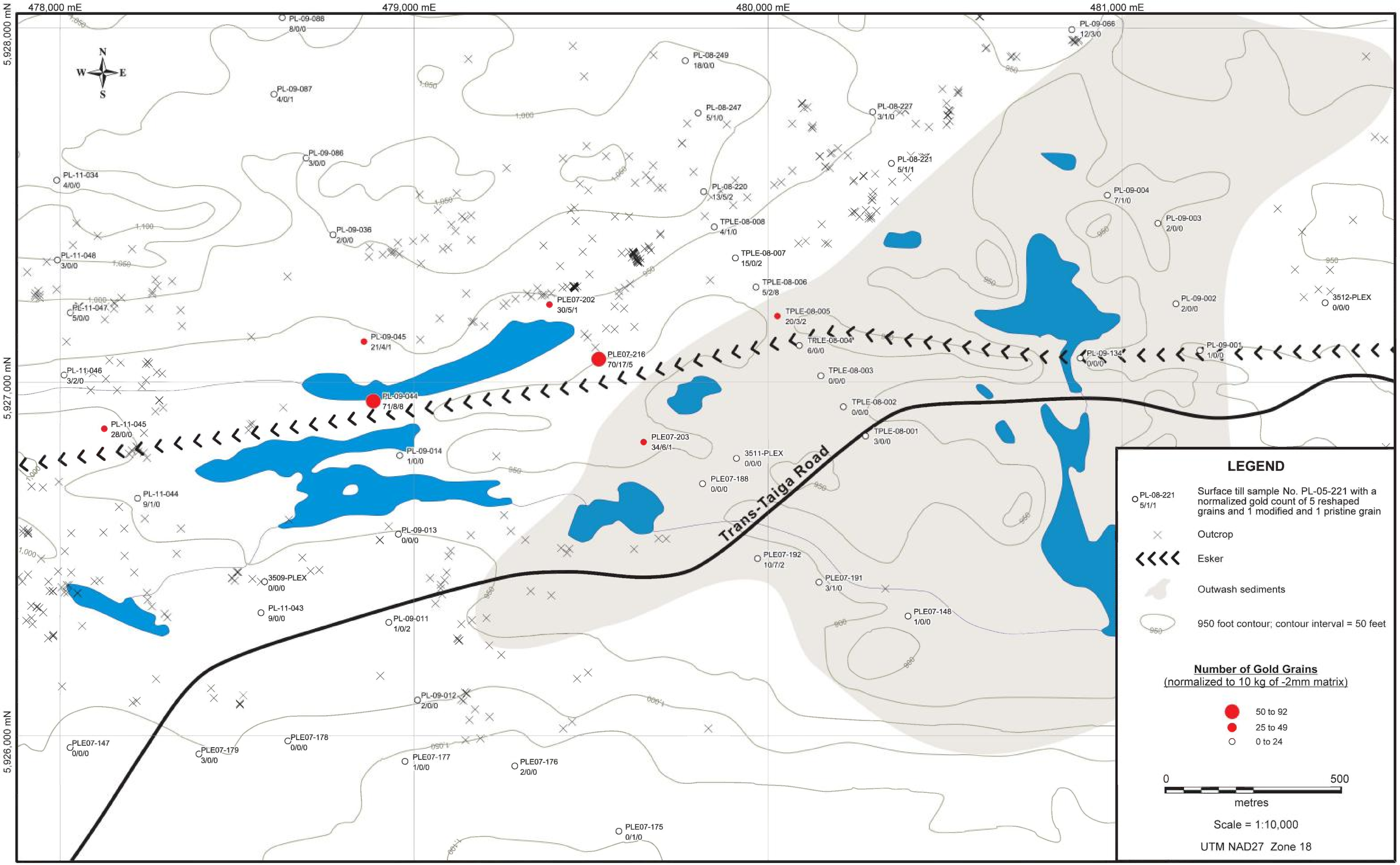

Figure 2 - Strength and physiographic setting of the surficial gold grain anomaly that was investigated by the RC drilling program. Modified from Osisko, (2015).

The PLEX property is on the south side of the LG3 reservoir between LG3 and LG4, ~200 km inland from James Bay and 450 km northeast of Matagami. It is accessed by travelling north from Matagami to Km 544 on the James Bay Highway, which leads to Radisson, Hydro Quebec's townsite at Km 620 near LG2, then turning right onto the Trans-Taiga Road which extends 582 km east-northeast across the property to the Caniapiscau Reservoir. Osisko has an exploration camp on the road at Km 176.5 and Poste Lemoyne, Hydro Quebec's main transformer station on the transmission line to southern Quebec, is 10 km further east along the road.

The property consists of 605 map-designated mineral claims (Fig. 3, Appendix A) covering 30,964.78 ha or 309.65 km2 (Oswald 2013). These claims are wholly owned by Osisko with the exception of a nucleus of 113 original claims in which Globestar Mining Corp. ("Globestar'), a private company, retains a 1 percent net smelter royalty. Globestar acquired these claims in 1995 in a 50:50 joint venture with Virginia Gold. In 2004 Virginia Gold discovered the giant Éléonore gold deposit 100 km south of the property (Fig. 1). Goldcorp Ltd. then purchased Virginia Gold to develop Éléonore but all of Virginia Gold's exploration properties including PLEX were transferred to the new Virginia Mines.

2.3 Physiography and Surficial Geology

The landscape on the PLEX property is relatively flat but uneven, ranging in elevation from the 210 m minimum level of the LG3 reservoir to 400 m (Fig. 4). The topographic grain is E-W reflecting both the strike of the underlying bedrock formations (Goutier 2002) and sculpting by westerly, ~255° ice flow from the New Quebec ice divide toward the James Bay basin during meltdown of the Late Wisconsinan ice sheet ~7000 years ago (Fig. 5). Consequently most streams including the La Grande River drain to the west. Numerous lakes are also present. Most are small but Lac Guyer, ~5 km north of the Trans-Taiga road and only a few metres above the LG3 reservoir, is 30 km long (Figs. 3, 4). Vegetation it typical of the taiga, varying from forested to semi-barren (Figs. 6, 7).

Drumlins occur in scattered fields throughout the region with the closest field lying 3 km southeast of the drill area (Fig. 7). The drumlins are oriented in the final 255° direction of ice flow and are comprised mainly of till. Ribbed moraines, also comprised mainly of till, occur in association with the drumlins as short, transverse ridges. Such moraines are thought to have been deposited seasonally in a manner similar to De Geer moraines – i.e. in crevasses that developed from fracturing along the boundary between meltwater-buoyed frontal ice and the main, grounded ice mass (Blake 2000) – but by near-stagnant ice near an ice divide (Aylsworth & Shilts 1989) rather than in a large lake. Consequently their separation records the annual rate of meltback of the ice front. In the La Grande River region, the separation averages 100 to 200 m.

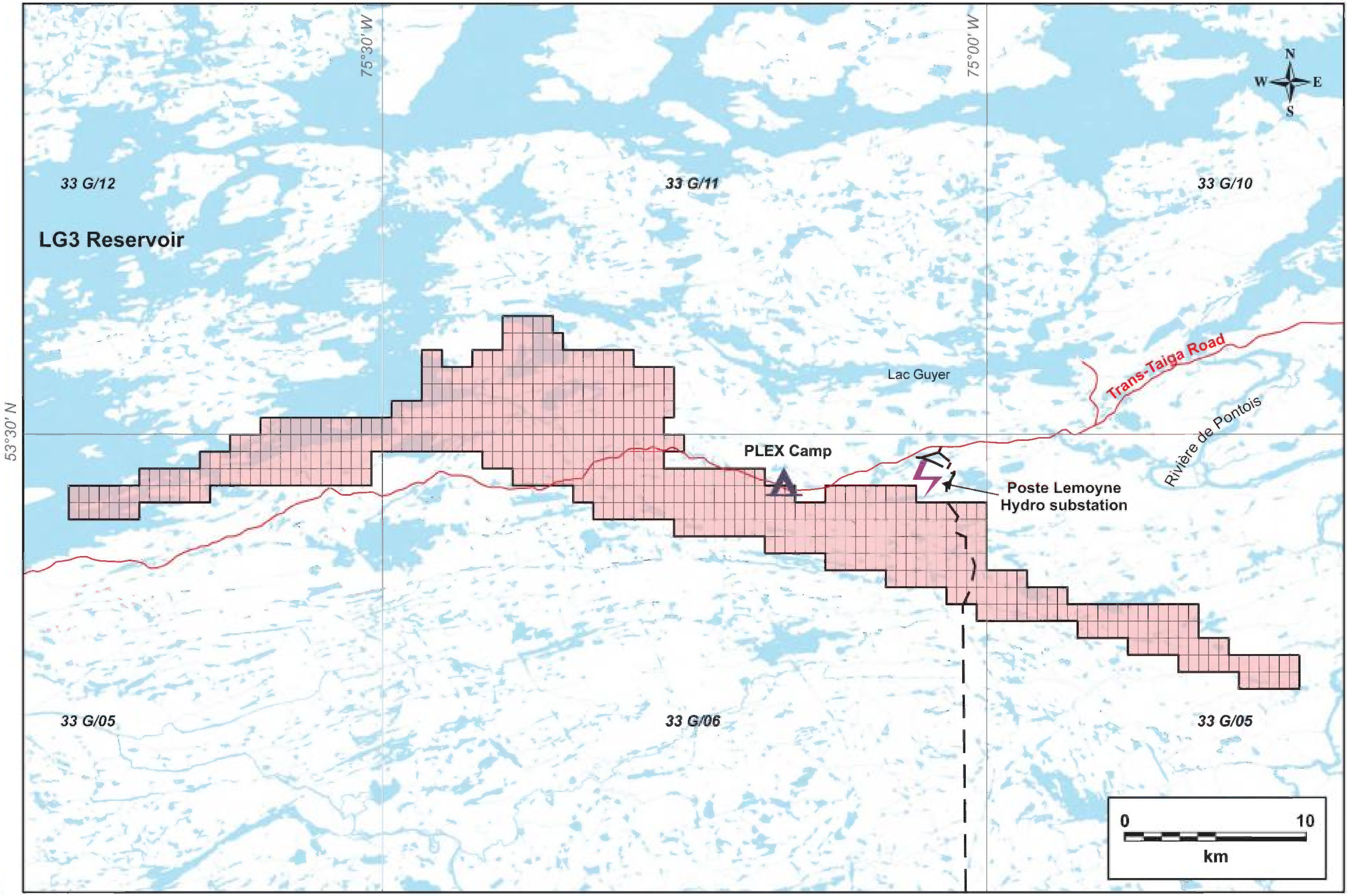

Figure 3 - Mineral claims map of the PLEX property.

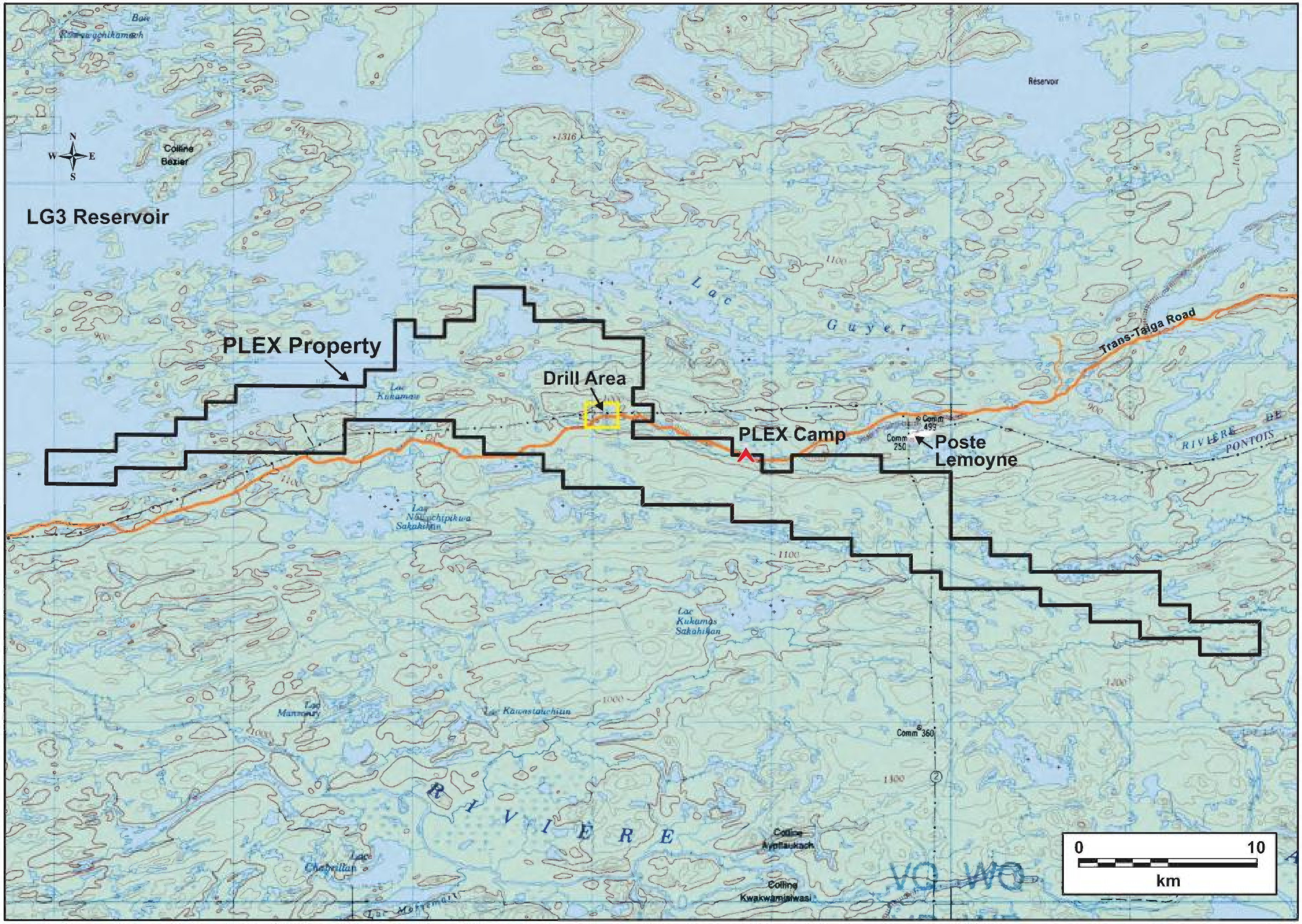

Figure 4 - Topography of the PLEX property. Contour interval = 50 feet.

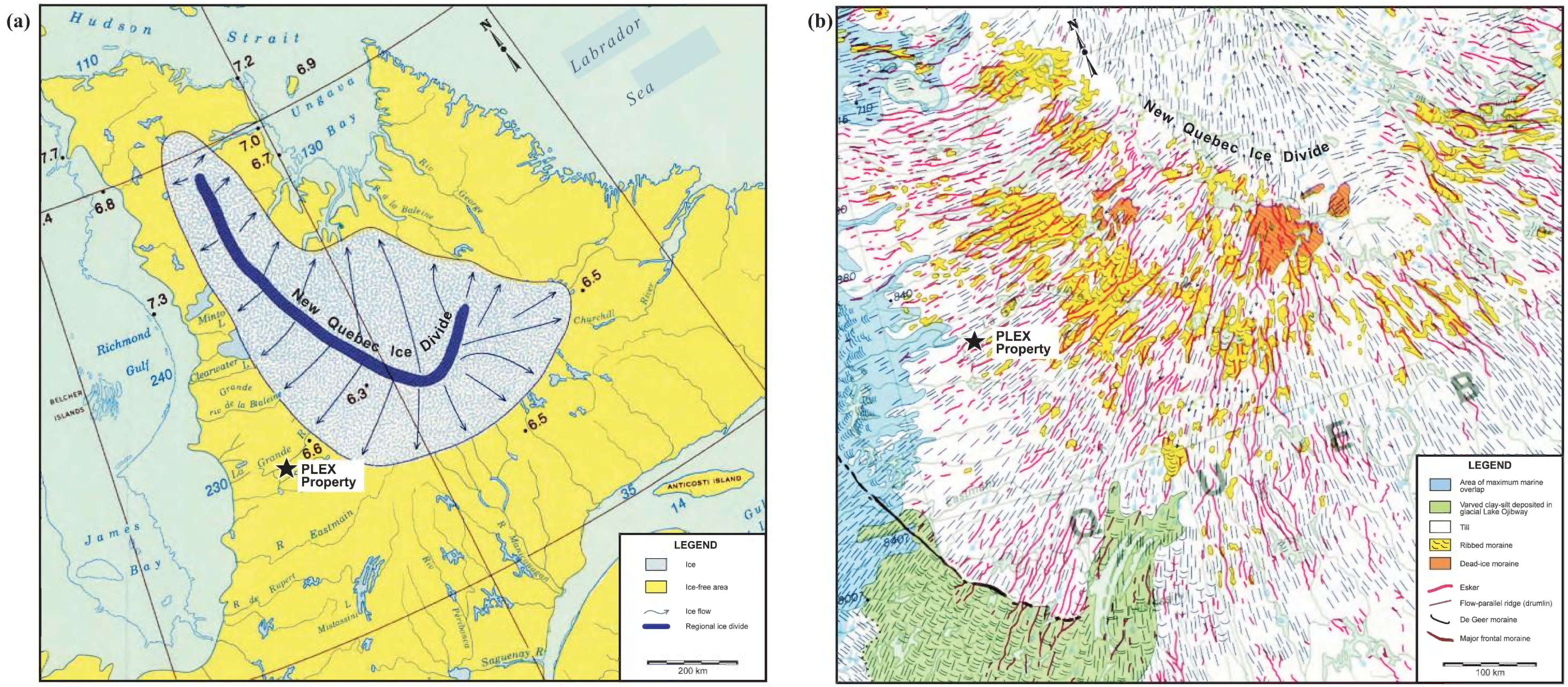

Figure 5 - Location of the PLEX property relative to : (a) the New Quebec remnant of the melting continental ice sheet ~7000 years ago; and (b) the distribution and landforms of the glacial deposits. Sources: (a) Dyke & Prest (1987); (b) Prest *et al*. (1967).

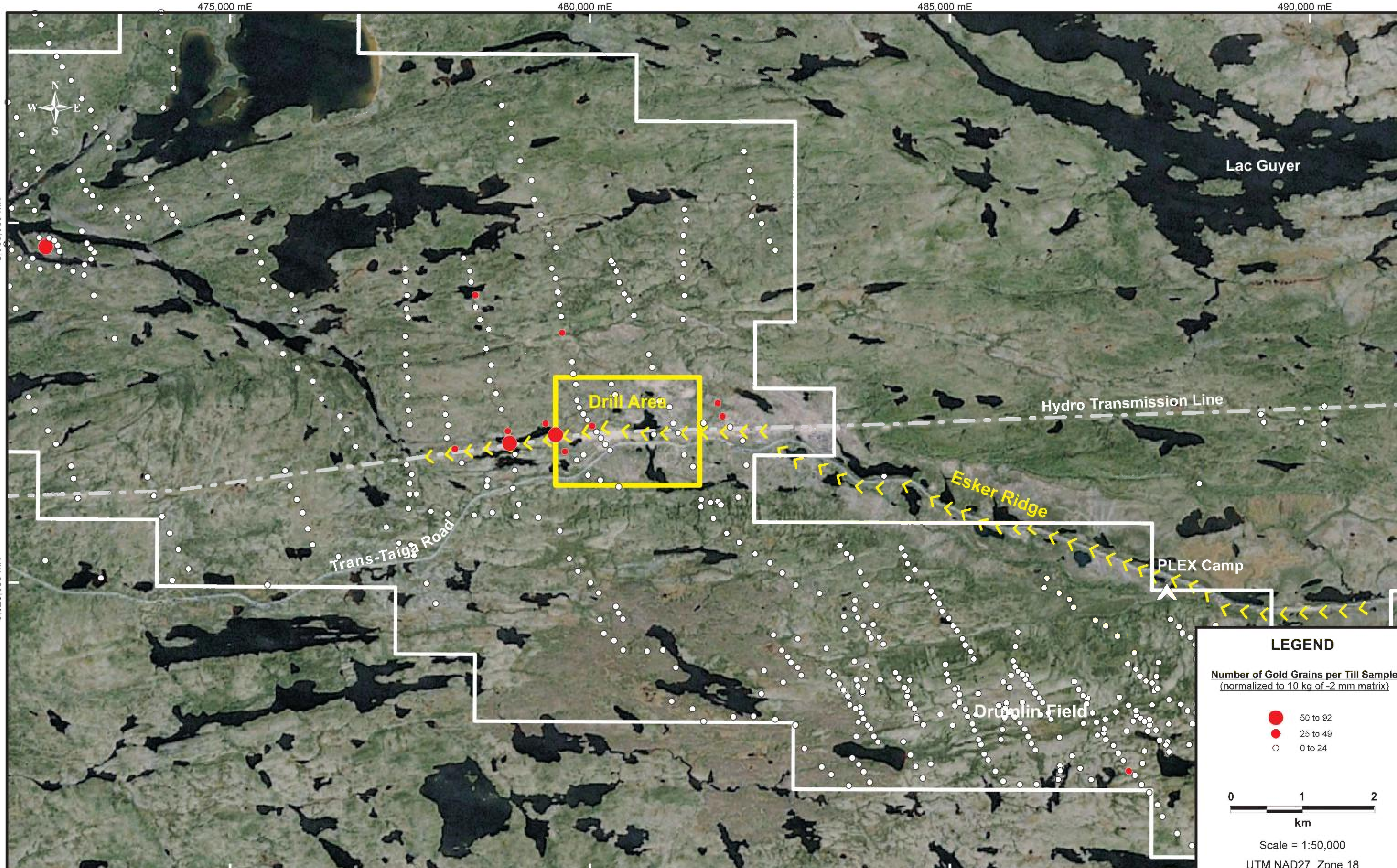

Figure 6 - Satellite image of the central part of the PLEX property showing the locations of Virginia Mines' anomalous till samples.

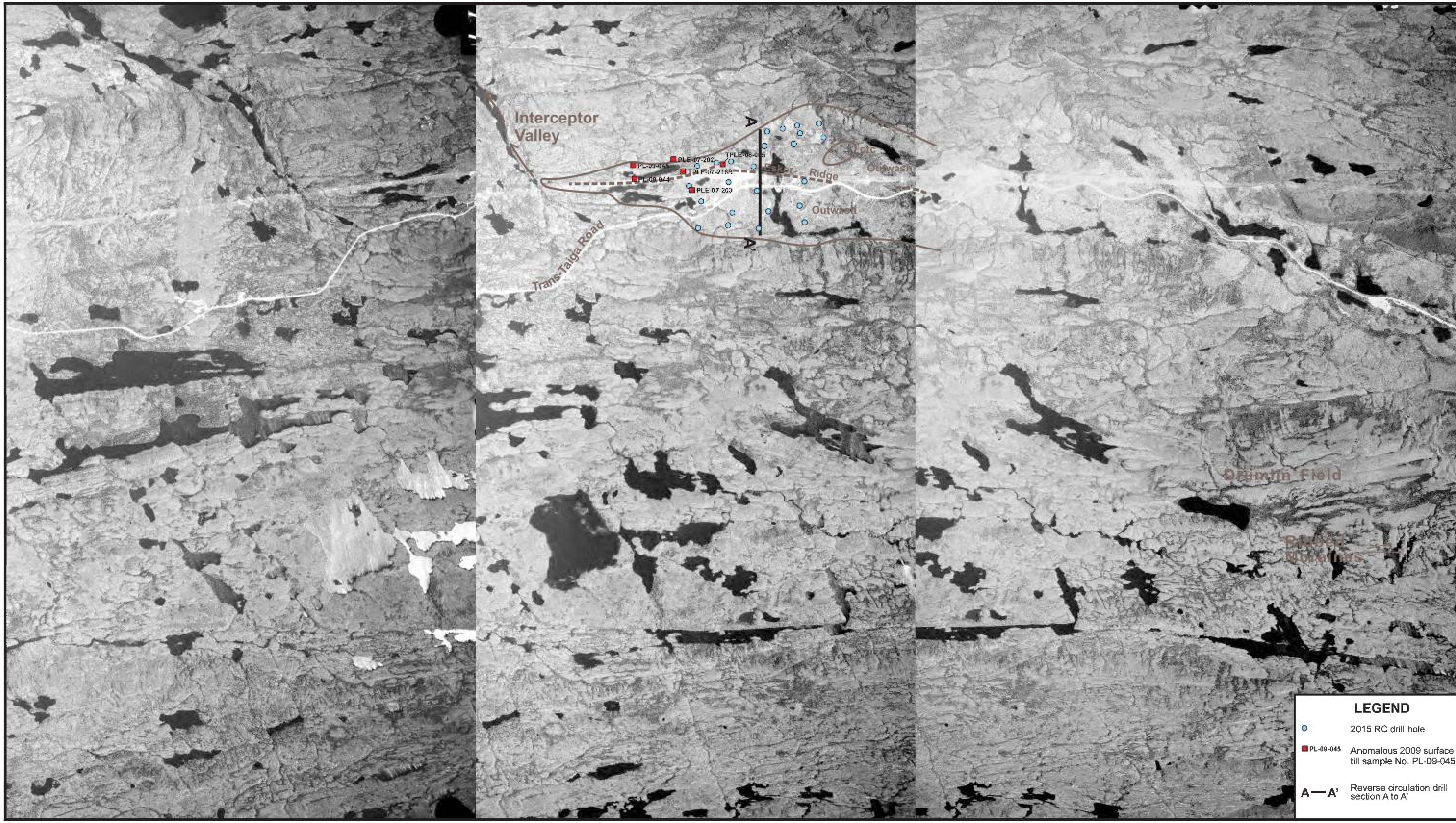

Figure 7 - Stereo air photo image of the drill area. Note the prominent topographic control on the distribution of the esker-outwash sediments. Scale 1:50,000; 1987.

The broad areas between drumlin fields are generally covered by a disorganized ground moraine which also consists mainly of till. However, the area containing the targeted gold grain anomaly is crossed by a prominent, E-W trending esker ridge with flanking outwash aprons (Fig. 7). The esker ridge occurs centrally within a flat-bottomed, possibly preglacial valley having the same E-W trend. This valley is 40 km long x 1 to 5 km wide x 50 m deep and is now occupied by a small, meandering creek (Figs. 6, 7) that flows eastward to Rivière de Pontois (Fig. 4). The esker ridge traces the former course of a meltwater discharge tunnel that developed within the ice sheet coincident with the centre of the underlying valley, i.e. the lowest point in the ice sheet. Since eskers consist of sand and gravel which is ideal for road construction and the Trans-Taiga Road has the same E-W trend as the esker, the road was routed along the esker ridge.

The esker is only about 10 m high in the area of the gold grain anomaly and ends ~1 km to the west - i.e. glacially downstream (Fig. 7). At this point the west-flowing subglacial river encountered another underlying bedrock valley that trends to the northwest rather than west, and the river changed course to follow this valley. While the west-flowing segment of the subglacial river was nearly level, allowing a thick bed of sand and gravel – the future esker ridge – to be deposited within the river tunnel, the northwest trending bedrock valley was very narrow with a steep gradient of >10 m per km. Consequently, the energy of the river increased dramatically and instead of producing an esker the river eroded down to bedrock.

Upstream from the gold grain anomaly, the gradient of the meltwater river decreased rapidly; consequently the esker becomes progressively larger to the east. Its ridge locally attains heights of 30 m or more and is traceable for 80 km across Rivière de Pontois to the head of the LG3 reservoir. The outwash aprons on either side of the ridge also become wider. These aprons consist of finer, silty sand that spread laterally from the mouth of the meltwater river to the valley walls on either side as the ice front receded. They contain numerous small, deep, subcircular to elongate lakes that fill kettle depressions left by the melting of blocky ice remnants that had been buried by the sand.

2.4 Bedrock Geological Setting

Geologically the PLEX property is located in the eastern part of the Archean Superior Province of the Canadian Shield (Fig. 8). It straddles the contact between the La Grande Subprovince to the north and the Opinaca Subprovince to the south. Both subprovinces have an overall E-W structural grain with dome-and-basin fold interference patterns around synkinematic plutons.

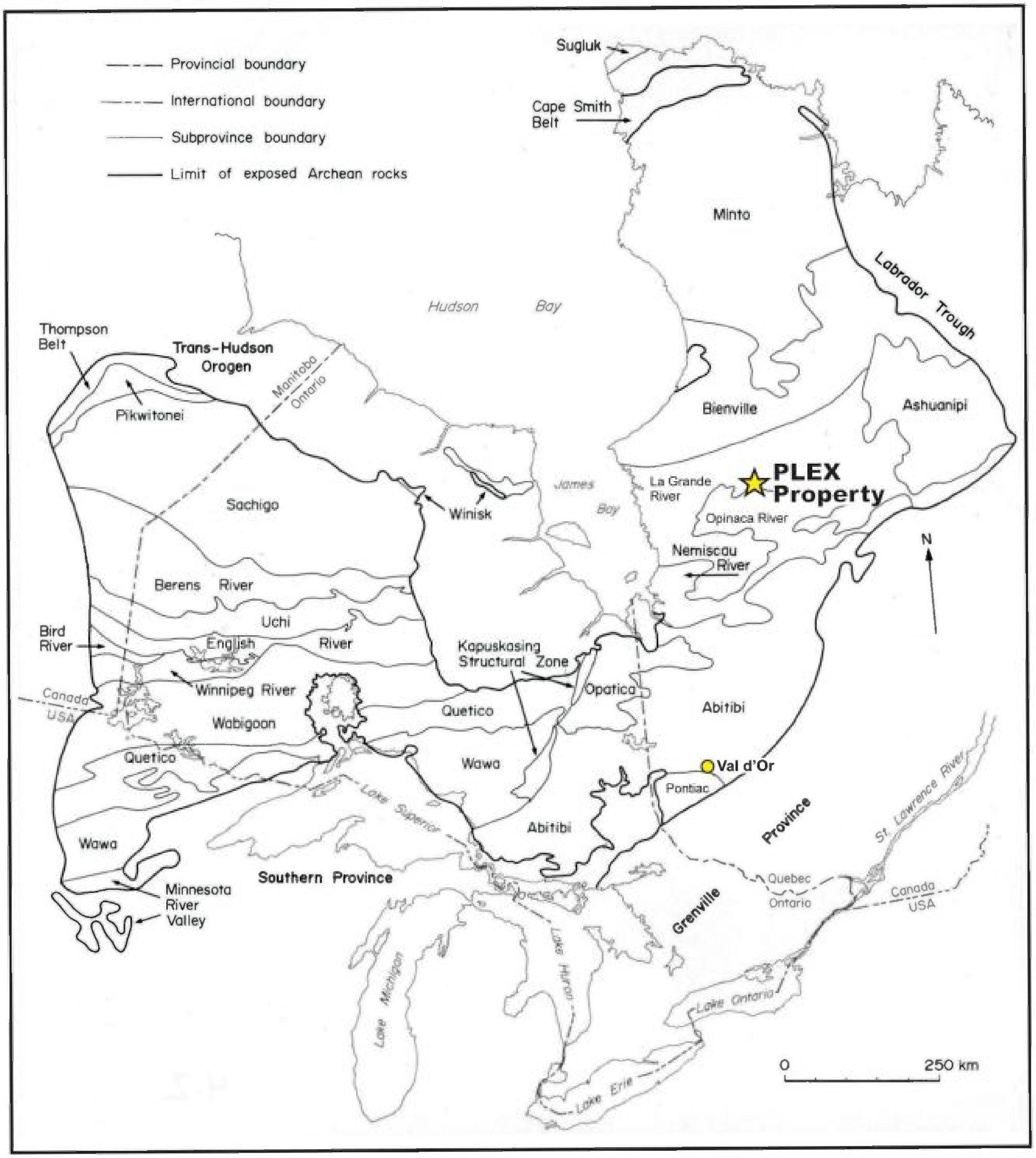

Figure 8 - Geological subprovince map of the Superior Province of the Canadian Shield showing the boundary between the La Grande and Opinaca Subprovinces.
Source: Thurston 1991.

Current knowledge of the La Grande and Opinaca Subprovinces in the vicinity of the LG3 reservoir is based mainly on mapping of fifteen 1:50,000-scale NTS sheets by Goutier between 1997 and 2001 (Goutier *et al.* 2002) and U-Pb dating of zircon grains from key stratigraphic horizons and intrusions (Goutier *et al.* 2002, Ouellet *et al.* 2014). The PLEX property is located centrally within final three NTS sheets mapped in 2001, Nos. 32G-05, 06 and 11 (Fig. 9).

The La Grande Subprovince is a 2880 to 2820 Ma Mesoarchean volcanic-plutonic assemblage that overlies, apparently structurally with an intervening décollement, Paleoarchean to Mesoarchean, 3450 to 2790 Ma basement (Goutier *et al.* 2002). The basement rocks are comprised primarily of foliated tonalite and tonalitic gneiss, represented in the LG3-LG4 area by the Langelier Complex and the 2881 Ma Poste Lemoyne Pluton (Fig. 9).

The 2880 to 2820 Ma age of volcanism in the La Grande Subprovince is similar to that in the oldest Archean subprovinces in northern Ontario – Sachigo, Berens and Uchi (Thurston *et al.* 1991) – which lie west along strike from the La Grande Subprovince (Fig. 8) and are known collectively as the North Caribou Terrane (Stott 2008). A characteristic feature of these older subprovinces is the unusually quartz-rich composition of the clastic metasediments that are interstratified with the volcanic rocks, indicating that volcanism occurred proximal to areas of sialic crust, such as the Langlier Complex and Poste Lemoyne Pluton, that had been uplifted to form a protocontinent and were actively being eroded.

The La Grande Subprovince contains a number of volcanosedimentary sequences, the most southerly being the Guyer Group of the Lac Guyer Greenstone Belt on which the PLEX property is located (Fig. 9). The greenstone belts formed separately as volcanic island arcs, then were assembled tectonically by arc-arc-accretion (Langford & Morin 1976) to the neighbouring sialic protocontinent with attendant thrust faulting and open, recumbent folding (Thurston *et al.* 1991). This early tectonism was followed, during the Kenoran Orogeny from 2720 to 2660 Ma (Thurston 1991), by north-south shortening and emplacement of the major batholiths with attendant metamorphism and the development of tight, upright folds and a penetrative E-W foliation with concordant shear zones (Goutier *et al.* 2002). In the Guyer Greenstone Belt, most of the synkinematic intrusions are of a granodiorite or quartz monzonite composition and the grade of metamorphism increases eastward from greenschist to amphibolite facies.

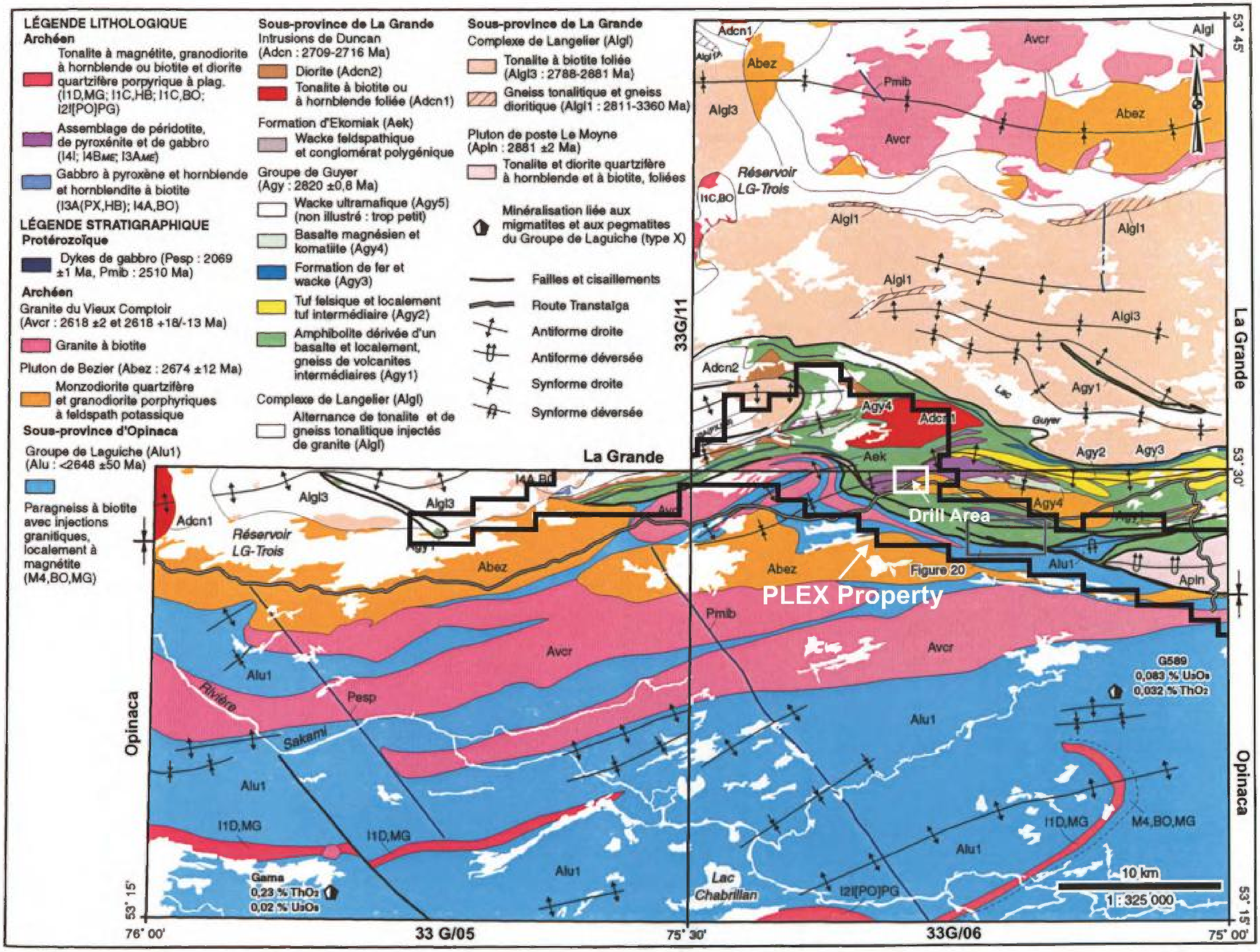

Figure 9 - Geological map of the west-central part of the PLEX property. Source: Goutier *et al.* 2002.

The Opinaca Subprovince is a younger metasedimentary and plutonic sequence that formed in a marginal basin alongside the La Grande Subprovince and was subsequently accreted to it in the same manner as the English River Subprovince in Ontario formed alongside and was later accreted to the older Uchi Subprovince (Breaks 1991; Stott & Corfu 1991). The metasediments appear to have been deposited in the early stages of the Kenoran Orogeny because their maximum age, based on the youngest contained detrital zircons, is 2648±50 Ma (Goutier *et al.* 2002). They consist of quartz-poor turbidites (greywacke with minor mudstone) and are known as the Laguiche Group.

Following deposition, the turbidites were metamorphosed and intruded by plutons of a mostly granitic composition with abundant associated pegmatite. They are more metamorphosed than the nearby Guyer Group volcanosedimentary rocks to the north, indicating that metamorphism occurred mainly prior to accretion of the Opinaca Subprovince to the La Grande Subprovince. Shear deformation compatible with major transcurrent plate-tectonic faulting is common along the boundary between the Opinaca and La Grande Subprovinces (Ouellet *et al.* 2014). Collision of these subprovinces probably occurred during final assembly of the Superior Province which concluded with accretion of the younger, Neoarchean (2750 to 2670 Ma; Bigot & Jébrak 2015) Abitibi Subprovince from the south (Fig. 8).

As in the English River Subprovince (Breaks 1991), metamorphism in the Opinaca Subprovince was of the high-temperature, low-pressure Abukuma type (Miyashiro 1974), transforming the turbidites to biotitic to migmatitic paragneisses. Therefore the Opinica Subprovince was probably subducted to a considerable depth prior to colliding with the La Grande Subprovince, then rolled back to the south during the collision as depicted in Figure 10. In the La Grande Subprovince itself, the formerly upright folds in the Lac Guyer Greenstone Belt were overturned to the south resulting in a uniform northward dip, typically at 50 to 70°. Magmatic activity related to the collision produced new plutons in both provinces. These late intrusions are elongated E-W but little deformed and cut across the regional E-W structural grain. They consist of granodiorite and quartz monzodiorite with distinctive K-feldspar phenocrysts and are thought to represent the exhumed portions of a single large batholith, the Bezier Pluton (Goutier *et al.* 2002).

The gold grain anomaly that was the target of the RC drilling occurs within the west-central part of the Lac Guyer Greenstone Belt, ~2 km north of the boundary of this greenstone belt with the Opinaca Subprovince (Fig. 9). The anomaly straddles the western tip of the most easterly of the elongate, late-tectonic Bezier intrusions. Goutier *et al.* (2002) indicated this end of the intrusion to be emplaced

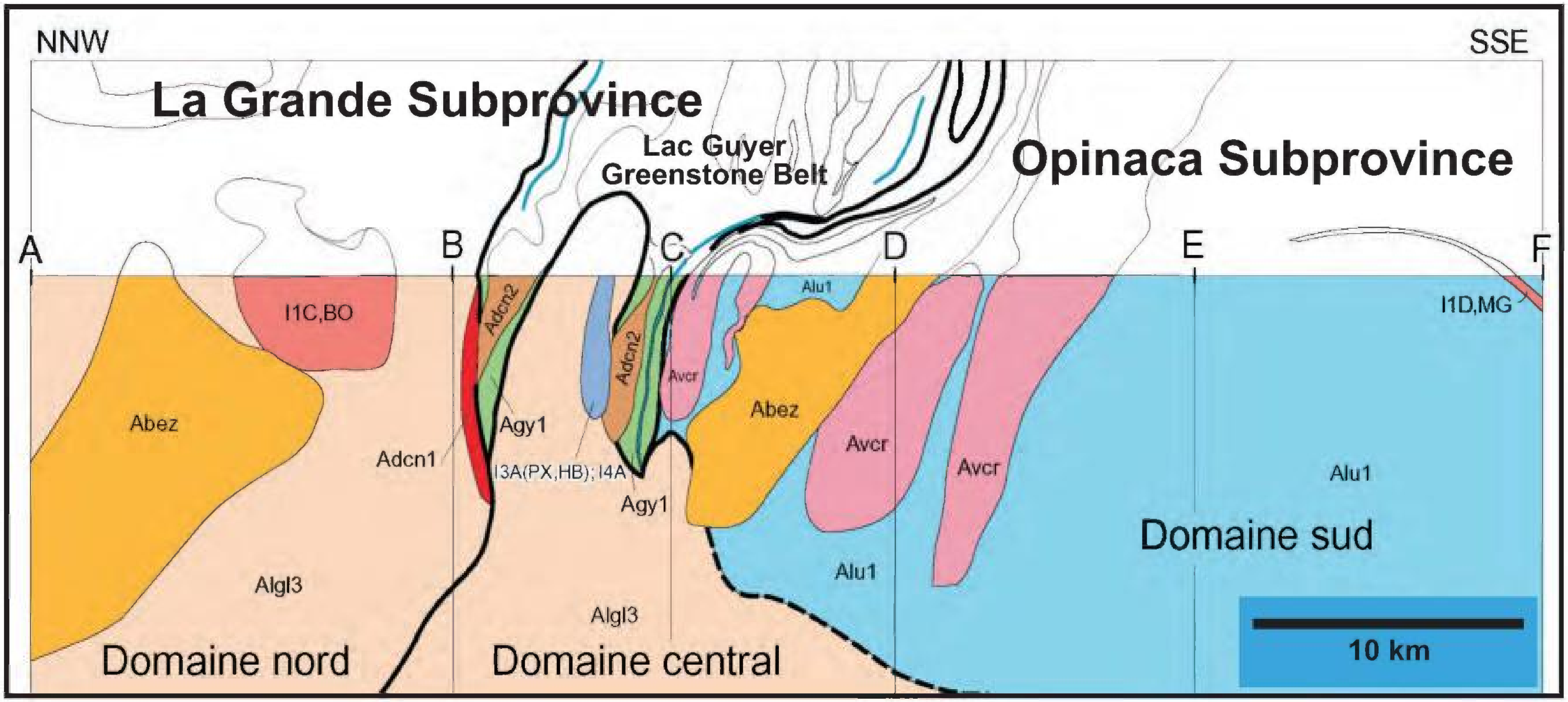

Figure 10 - Schematic N-S cross section of structural relationships between the La Grande and Opinaca Subprovinces. Source: Goutier *et al.* 2002.

discordantly into the nose of an eastward-opening syncline having ultramafic rocks in its core and basalt and dacitic tuff on its limbs (Fig. 11, Table 1). The ultramafic rocks were known prior to Goutier's systematic mapping of the area and have been studied in some detail (e.g. St. Seymour *et al.* 1979). Goutier *et al.* (2002) described them as being mainly of a pyroxenitic rather than peridotitic composition and having features such as pillows, flow-top breccias and locally a local spinifex texture that are diagnostic of an extrusive origin, indicating that they are komatiites. Inexplicably, however, they are depicted as intrusive rocks on the associated project maps (Figs. 9, 11; Goutier *et al.* 2002, MRNQ 2002a, b). The komatiites may represent former oceanic crust similar to the basal komatiites of the Favourable Lake Greenstone Belt in the Sachigo Subprovince of Ontario (Ayres 1988). Some of the flows are sufficiently magnetic to be traceable on an aeromagnetic map (Fig. 12).

2.5 Previous Mineral Exploration

In his 2013 report, Oswald summarized all recorded work performed within the area now covered by the PLEX property to December 31, 2012. Prior to the development of the James Bay hydroelectric project in the 1970s, access was very difficult and the only recorded work was geological mapping and prospecting in 1959 by Tyrone Mines Limited, the Canadian exploration arm of Phelps Dodge Corporation. The first airborne magnetic-electromagnetic ("MAG-EM") survey was performed by Noranda Exploration in 1972-73 before the reservoir areas were flooded. From 1973 to 1981 the Société de Développement de la Baie-James ("SDBJ"), which was responsible for the hydroelectric project, controlled all mineral exploration and development in the area. In 1973 they performed a lake bottom sediment survey to serve as a baseline for exploration after the reservoirs were flooded. From 1973 to 1976, concurrently with the discovery of uranium at the base of Athabasca Basin in Saskatchewan, SDBJ explored the area for unconformity-hosted uranium deposits in a consortium with Eldorado Nuclear Limited and SERU Nucléaire (Canada) Ltée.

Virginia Gold primarily targeted the area for iron-formation-hosted orogenic gold deposits (Cayer 2004), beginning with regional-scale till heavy mineral and geochemical sampling over the Guyer Greenstone Belt in 1995. This was followed in 1998 by an airborne MAG-EM survey (Fig. 12) with follow-up prospecting and trenching along the EM conductors, resulting in the discovery of the Orfée deposit 6 km southeast of the RC drill area (Fig. 13), and subsequently the wider but lower-grade Orfée East zone 1 km further east. Both mineralized zones occur at the contact between a north-dipping metabasalt horizon and a structurally underlying but stratigraphically overlying metasedimentary

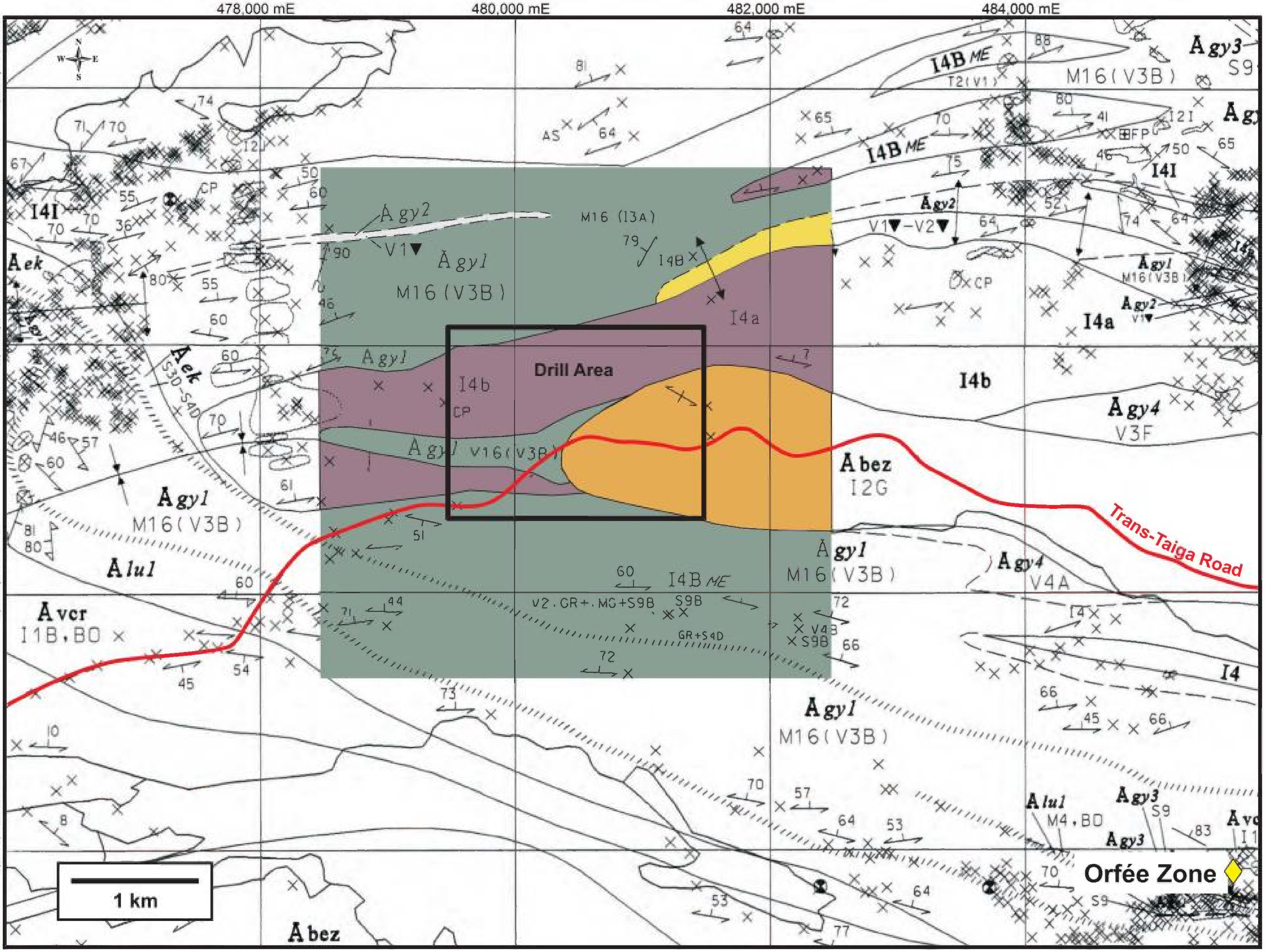

Figure 11 - Government of Quebec geological map of the area tested by RC drilling. Source: MRNQ 2002. Projection: UTM NAD83, Zone 18. See Figure 9 and Table 1for legends.

I	<u>Intrusive Rocks</u>
I1B	Granite
I1C	Granodiorite
I1D	Tonalite
I2E	Quartz monzonite
I3A	Gabbro
I4	Ultramafic intrusive rocks
I4C	Clinopyroxenite
I4E	Orthopyroxenite
S	<u>Sedimentary Rocks</u>
S1	Greywacke
S9	Iron formation
V	<u>Volcanic Rocks</u>
V1	Rhyolite, dacite
V2	Andesite
V3	Basalt
V4	Komatiite
M	<u>Supracrustal Gneisses</u>
M4	Paragneiss
M16	Amphibolite

Table 1 – Partial lithologic legend for geological maps produced by the Ministère des Ressources Naturelles, Québec (MRNQ). This legend is applicable to Figures 9, 11, 13 and 19.

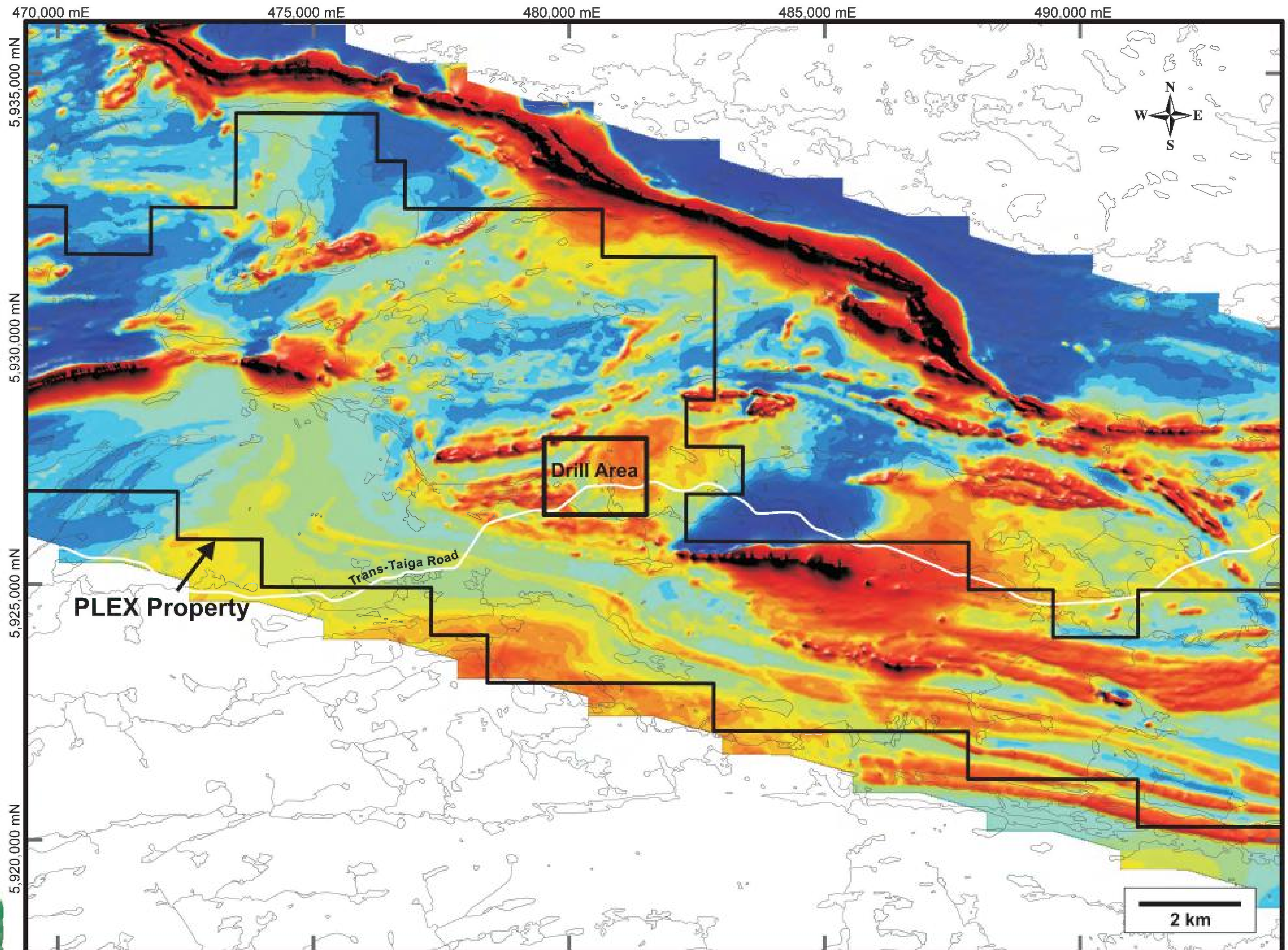

Figure 12 - Total field aeromagnetic survey of the central part of the PLEX property. Scale = 1:100,000. Courtesy of Osisko.

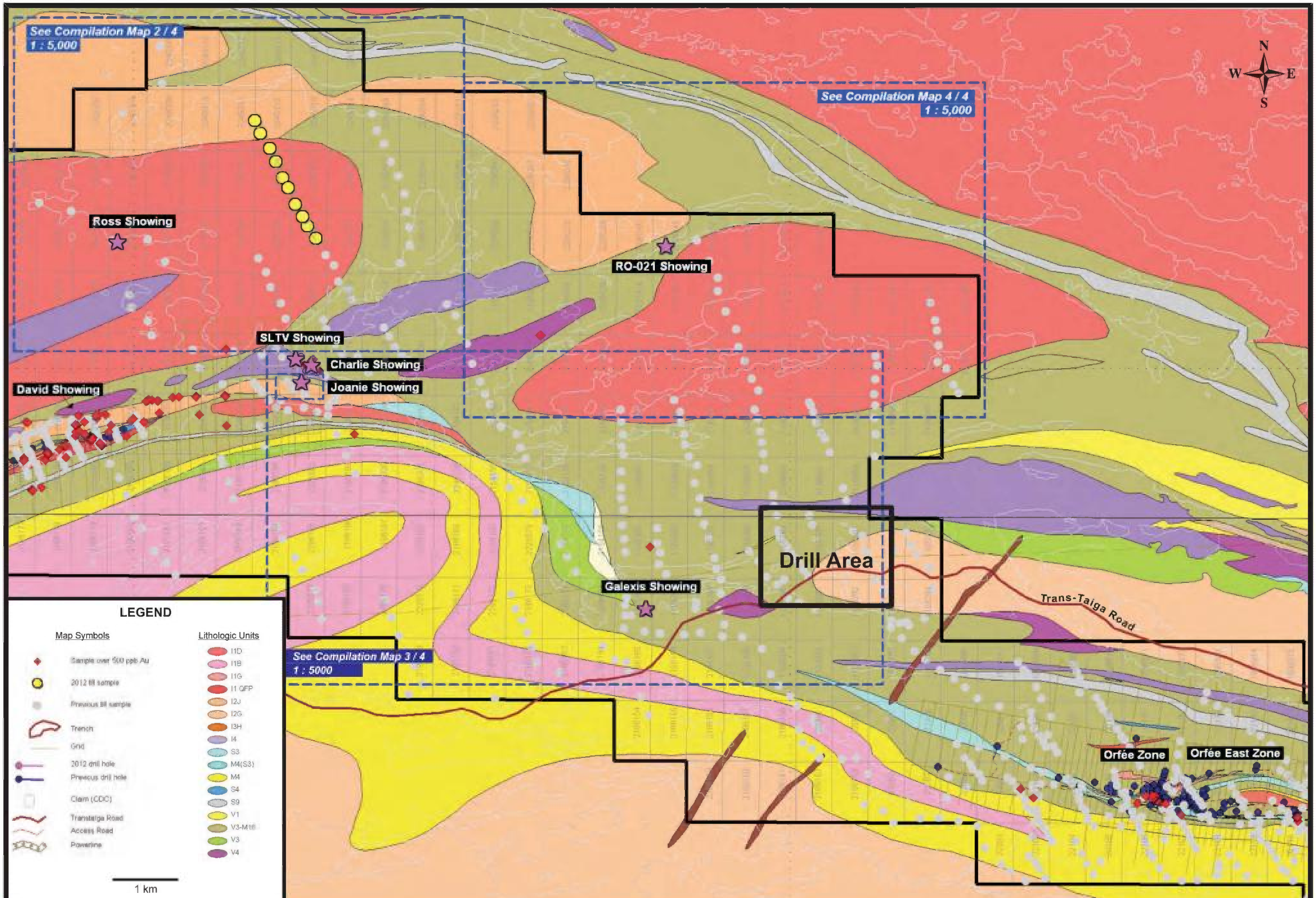

Figure 13 - Virginia Mines' geological compilation map of the central part of the PLEX property. See Table 1 for lithologic legend. Source: Oswald 2013.

package comprised successively of: (a) a 1 to 2 m thick graphitic siltstone marker horizon; (b) up to three metric-scale iron formations in which primary magnetite is variably replaced by grunerite and pyrrhotite; and (c) a thick greywacke horizon. The main Orfée deposit is confined to a fold nose in the iron formation. It has a strike length of only 25 m but is up to 15 m thick and has been traced down-plunge for 360 m. D'Amours (2003) estimated it to contain a measured gold resource of 88,588 t grading 9.44 g/t Au and an inferred resource of 114,895 t grading 18.4 g/t Au.

In each of the 17 years since the 1998 discovery of the Orfée deposit Virginia Gold, or Virginia Mines since 2004, has further explored the PLEX property, systematically testing specific sections using a combination of geological mapping, prospecting with the aid of a Beep Mat EM sled, till sampling, ground magnetic, EM and induced polarization ("IP") surveys, mechanical trenching and diamond drilling. Until 2008, the main focus continued to be for Orfée-type iron-formation-hosted deposits along the southern edge of the greenstone belt where the iron formations are concentrated (Figs. 9, 11 to 13). From 2008 to 2011, more emphasis was placed on reconnaissance testing of other parts of the property and hence on till sampling. As previously noted, the till anomaly that was targeted in the present RC drilling program was identified in 2007 and its surface limits were established in 2008 and 2009. The 2010 sampling program yielded, on the David grid 8 km west-northwest of the drill area (Fig. 13), "the most important anomaly discovered yet by the Company in the James Bay region, with 30 samples over a surface area of ~800 x 250 m being anomalous in gold including a dozen samples each containing over 100 gold grains and a maximum of 691 grains, a large proportion of which were of delicate shape indicating a proximal source" (Virginia Mines 2010). Follow-up trenching and prospecting showed that the gold grains were derived from a cluster of small mineralized zones rather than a single, economically significant zone. Importantly, however, the mineralization was not associated with folded and sulphidized iron formation but rather with porphyry emplacement and sericitic alteration, broadening the exploration potential of the PLEX property.

3. METHODS AND COSTS

3.1 Drilling Pattern

Reverse circulation drilling is normally used to sample till in areas where the thickness of the surficial sediments exceeds 5 to 10 m, making surface sampling ineffective. In such areas, bedrock outcrops are generally either absent or concentrated in isolated clusters as is the case on the PLEX property where exposures tend to be limited to topographic ridges (Fig. 2) and in some areas, such as along the major esker that interrupts the targeted gold grain anomaly (Fig. 7), are absent for many square kilometres (Oswald 2013). Consequently, the geology and geochemistry of the bedrock beneath the till are poorly known and the drills must be able to efficiently recover clean, high-quality samples of the bedrock as well as of the overlying till.

The optimal bedrock coverage per metre drilled is obtained by orienting the drill sections perpendicular to the bedrock stratigraphic/structural trend while the optimal mineral dispersal coverage is obtained by orienting the sections perpendicular to the principal direction of ice flow. Virginia Mines had identified the gold grain anomaly that was targeted by the drilling by collecting samples at ~200 m intervals along lines that were spaced 1 km apart and oriented WNW (Figs. 2, 6, 13), roughly perpendicular to the 255° ice flow direction (Fig. 5). Since the overall bedrock structural trend in the drill area is E-W and thus subparallel to the 255° ice flow direction, a N-S orientation was chosen for the drill traverses. Four traverses ~500 m apart were planned with four to six holes at 200 m along each traverse for a total of 20 holes. Since the gold grain anomaly was known to extend up-ice (eastward) over the Guyer Group supracrustal rocks almost to their contact with the easternmost Bezier granodiorite pluton (Fig. 11), one traverse was planned on the greenstone belt and the other three were positioned progressively further up-ice on the pluton.

The drill area was conveniently centered on the Trans-Taiga Road. Access trails ~4 m wide were prepared from the road to the drill sites (Fig. 14) using a wide-tracked excavator. Rather than following straight N-S lines, these trails were routed to facilitate access and minimize terrain damage, in particular skirting steep slopes, wetlands and heavily forested areas. The central ridge of the esker-outwash complex was also expressly avoided because esker streams normally erode down to bedrock, leaving no till for sampling.

3.2 Program Execution

The drilling program was planned by Sylvain Trépannier of Osisko in consultation with ODM. Tonny Girard of Osisko laid out the drill sites in the field and supervised clearing of the access trails. Osisko contracted ODM to: (a) procure the drilling contractor and geochemical laboratory for the program; (b) supervise the drilling, log the holes as they were being drilled (Appendix B) and collect the till and bedrock samples; (c) process the till samples at ODM's Ottawa laboratory to obtain a pure heavy

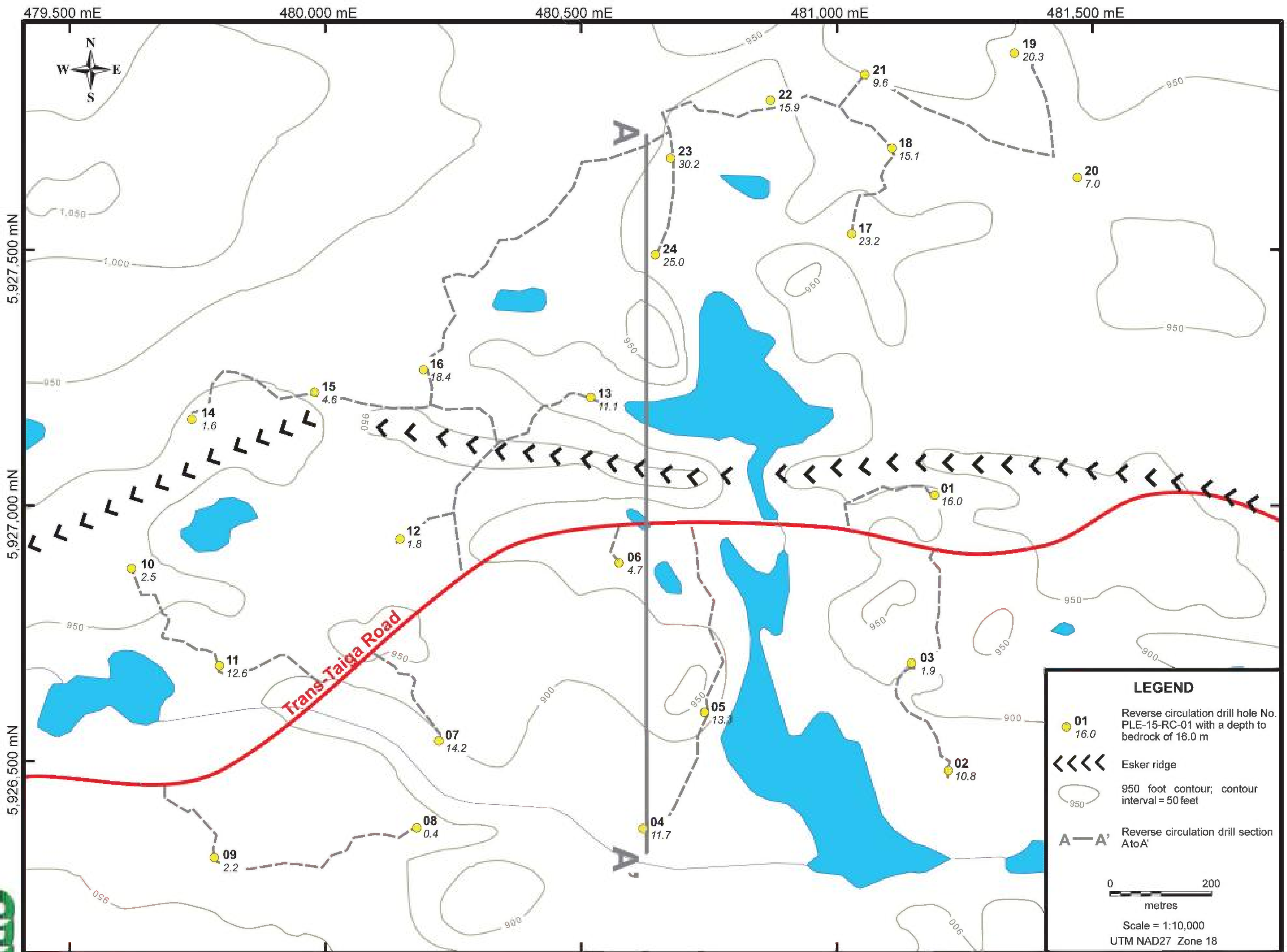

Figure 14 - Locations of the RC drill holes and access trails in relation to topographic features. The depth to bedrock at each hole is also shown.

mineral concentrate suitable for analysis by the geochemical laboratory and also to determine the number of gold grains present in the samples and the physical dimensions and morphologies of these grains; (d) interpret the till and bedrock data; and (e) produce a comprehensive report covering all aspects of the program. The drilling was contracted to Steve's Equipment Services Inc. ("SES") of Kirkland Lake, Ontario, and the laboratory analyses were contracted to Actlabs Limited ("Actlabs') of Ancaster, Ontario.

ODM's field geologist for the drilling program, Stephen Keays, P.Geo. Ontario, received authorizization from l'Ordre des Géologues du Québec ("OGQ") to work temporarily in the province on the PLEX project. He was assisted by sampling technician Michel Brière. At ODM's Nepean, Ontario laboratory, Rémy Huneault, P.Geo. Ontario, supervised the extraction of heavy mineral concentrates from the till samples and the classification of the gold grains. Stuart Averill, P.Geo. Ontario with authorization from OGQ to perform geological work on the PLEX project, described and classified the bedrock samples, interpreted the bedrock and till data and wrote the final report with production assistance from ODM staff.

3.3 Field Procedures

Field operations were conducted from Osisko's camp on the Trans Taiga Road ~8 km east of the drill area (Fig. 2). All of the drill sites were within 1 km of the road (Fig. 14); therefore off-road travel was minimal.

The RC drill rig supplied by SES consisted of a modern Acker rotary drill mounted on a Nodwell-type, hydrostatically driven PowerTraxx 10S-HF carrier having wide tracks for all-terrain mobility and a fully enclosed work platform for comfortable, all-weather operation (Fig. 15). Water for drilling was hauled on a second PowerTraxx carrier equipped with a 1900 litre supply tank and an extended crew cabin.

The drill employed a system of coaxial piping with a tricone bit that is designed specifically for sampling till and also capable of sampling bedrock, although only to a limited depth as the penetration rate in competent rock is <2 m per hour. With this system, air and water are injected between the two pipes to the bit (Fig. 16) and clay to pebble-sized sediment particles and small (up to 1 cm) cuttings of boulders and bedrock are flushed instantly through the centre pipe to surface where they are

Figure 15 - RC drill rig and support vehicle at Hole 18.

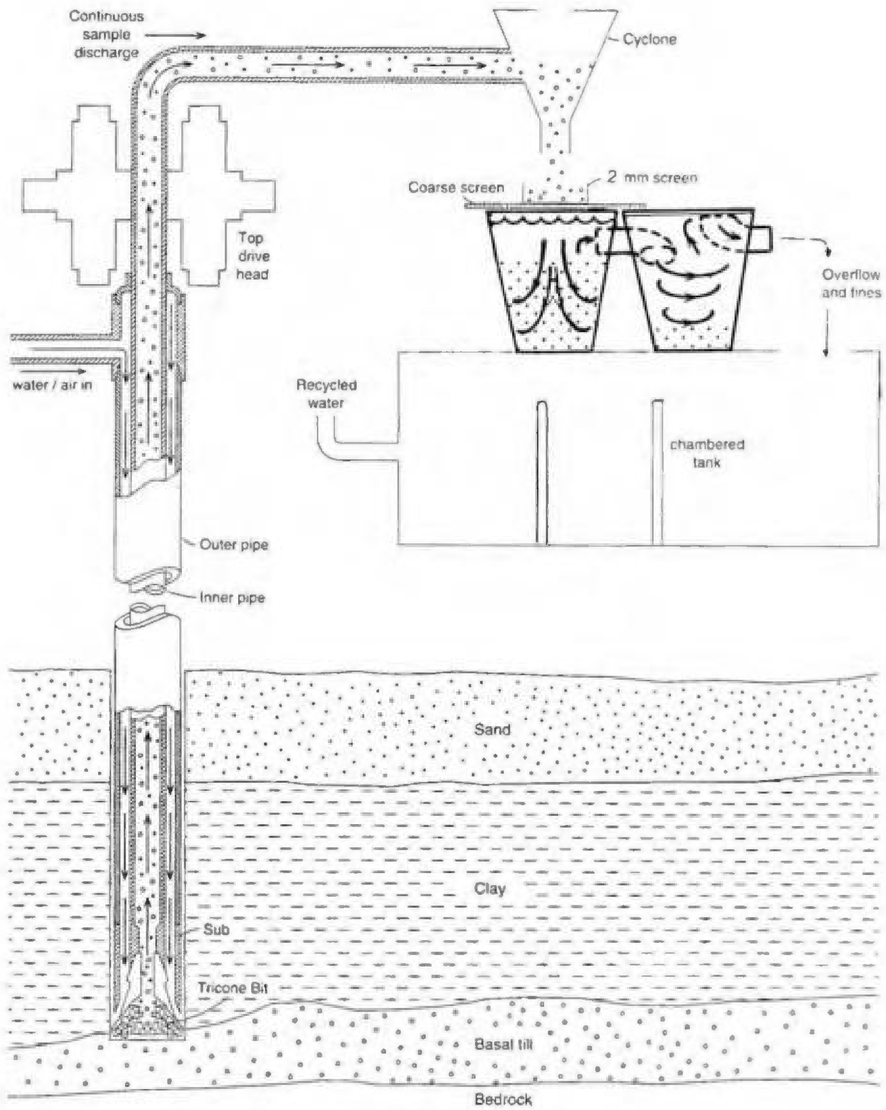

Figure 16 - Schematic diagram of a reverse circulation drilling system.

continuously monitored and described. For till samples, the -2 mm fines and a 10 to 20 percent split of the +2 mm clast cuttings are collected in paired settling buckets from which samples weighing approximately 11 kg (10 kg of till matrix and 1 kg of clasts) are extracted. Fine silt and clay suspended in the bucket overflow are settled in a baffled holding tank and the water is recirculated down the drill hole.

In bedrock, only the +2 mm cuttings are normally saved because the fines may include some material washed from the matrix of the overlying till. Since the main objective is to sample the till and the penetration rate in fresh, competent rock is slow, the hole is normally extended only a short distance into bedrock – typically 1.5 m – and a single sample of sufficient size for petrographic study and laboratory analysis is collected. If the bedrock is incompetent and easily drilled, the sample length may be increased. If a change in lithology is noted, additional samples may be collected.

The PLEX drill holes were assigned the eponymous prefix PLE followed by 15-RC (for reverse circulation hole drilled in 2015) and were numbered in sequence (Table 2). The samples collected from each hole, whether of till or bedrock, were numbered consecutively – e.g. PLE-15-RC-16-01 to 07 for the six till samples and single bedrock sample collected from Hole 16. The geographic coordinates (NAD 27, Zone 18) of each hole were measured by GPS. Readings of the surface elevations of the drill-hole collars were also recorded but are imprecise.

3.4 Drill Performance

When budgeting the PLEX project, it was assumed that 20 holes would be drilled in six days based on: (a) a 10-hour drilling day, excluding travel, with 1 hour of mechanical downtime; (b) an average hole depth of 15 m, including 1.5 m of bedrock, for a program total of 300 m; (c) average productivity of 5 m per operating hour including the time spent moving between drill holes; and (d) collecting and processing an average of 3 till samples per hole.

The drilling progressed very smoothly, with no mechanical or other delays, and 24 holes totaling 333.5 m (Table 2) were completed in just 51.75 hours over five days, from July 30th to August 3rd. Productivity averaged 6.4 m per hour. The average hole depth was 13.9 m, very close to the expected 15 m. However, the individual hole depths were extremely variable, ranging from 2.5 to 31.5 m even though thinly covered areas near known rock outcrops and the thick central esker ridge were both avoided when siting the holes. As well, an average of only 1.8 samples per hole was obtained rather than the expected 3 samples.

Hole Number	Site Number	UTM Co-ordinates NAD83				Metres Drilled		Hole Depth	Samples Collected	
		Easting	Northing	Zone	Elevation (m)	Overburden	Bedrock	(m)	Overburden	Bedrock
PLE-15-RC-001	17	481189	5927021	18	252	17.0	1.5	18.5	2	1
PLE-15-RC-002	19	481216	5926482	18	289	11.8	1.7	13.5	1	1
PLE-15-RC-003	18	481144	5926692	18	274	3.5	1.5	5.0	1	1
PLE-15-RC-004	15	480619	5926369	18	277	12.9	1.6	14.5	1	1
PLE-15-RC-005	14	480739	5926596	18	277	13.9	1.6	15.5	1	1
PLE-15-RC-006	13	480572	5926888	18	270	4.7	1.3	6.0	1	1
PLE-15-RC-007	06	480220	5926540	18	288	16.1	1.7	17.8	2	1
PLE-15-RC-008	05	480177	5926370	18	283	1.0	1.5	2.5	1	1
PLE-15-RC-009	01	479781	5926312	18	284	4.0	1.5	5.5	1	1
PLE-15-RC-010	03	479619	5926877	18	297	2.5	1.5	4.0	1	1
PLE-15-RC-011	02	479791	5926687	18	286	12.6	1.4	14.0	1	1
PLE-15-RC-012	07	480144	5926935	18	286	1.8	1.8	3.6	1	1
PLE-15-RC-013	12	480517	5927212	18	272	11.6	1.4	13.0	2	1
PLE-15-RC-014	04	479737	5927169	18	289	2.8	1.8	4.6	1	1
PLE-15-RC-015	Extra 21	479977	5927222	18	289	5.6	1.4	7.0	2	1
PLE-15-RC-016	08	480190	5927266	18	282	18.4	1.1	19.5	6	1
PLE-15-RC-017	16	481027	5927532	18	277	24.2	1.3	25.5	1	1
PLE-15-RC-018	20	481106	5927699	18	288	15.8	1.5	17.3	1	1
PLE-15-RC-019	Extra 22	481345	5927885	18	290	23.0	1.5	24.5	3	1
PLE-15-RC-020	Extra 23	481468	5927642	18	295	7.8	2.2	10.0	1	2
PLE-15-RC-021	Extra 24	481053	5927843	18	280	10.7	1.5	12.2	1	1
PLE-15-RC-022	09	480868	5927793	18	315	17.0	1.5	18.5	1	1
PLE-15-RC-023	10	480673	5927680	18	266	30.2	1.3	31.5	7	1
PLE-15-RC-024	11	480643	5927491	18	278	27.8	1.7	29.5	3	1
				Totals:		296.7	36.8	333.5	43	25
				Averages:		12.4	1.5	13.9	1.8	1.0

Table 2 – Drill hole statistics.

3.5 Bedrock Logging Procedures

The cuttings collected from the bedrock intercepts were re-sieved at 2 mm in the ODM laboratory to separate coarse, 2-10 mm fragments suitable for detailed logging (Appendix C) and geochemical analysis (Appendix D).

The system used by ODM to describe RC bedrock cuttings is designed to lead systematically to a definitive lithologic classification for each sample. The cuttings are immersed in water to enhance textural and structural features and examined by binocular microscope at 10 to 40X magnification. As shown in Appendix C, the system involves sequential recording of colour, magnetism, structure (both primary and deformational), texture (both primary and metamorphic), grain size including the sizes of any coarse phenocrystal, detrital, fragmental or cumulus grains and particles as well as of the groundmass/matrix, and degree of hydrothermal alteration, if any. As well, the percentages of all primary, metamorphic and secondary (alteration) minerals are determined along with the abundances, distribution and paragenesis (e.g. syngenetic, diagenetic, epigenetic, magmatic, vein-hosted) of any sulphides or other direct indicators of mineralization. In very fine grained samples – i.e. those having a grain size of as little as 0.05 mm or 50 μm – the individual mineral grains can often be resolved at just 20X magnification by reducing the drill cuttings to small, thin chips which, when immersed in water, serve as a low-resolution substitute for the thin sections used in plane-polarized petrographic work.

Because the rock samples obtained by RC drilling consist of small cuttings rather than intact core, structural information is limited. For example, bedding may be evident in tuffaceous intercepts from variations in the particle size of the tuff between cuttings but the attitude of the beds is indeterminate and their thickness is not apparent if it significantly exceeds the 1 cm size of the largest cuttings. However, considerably more information on grain size and mineralogy is obtained from cuttings than from drill core due to the infinite sections exposed on the surfaces of the cuttings. Moreover, any mineralogical uncertainties can be resolved quickly by a simple, semi-quantitative analysis using a scanning electron microscope ("SEM") without having to polish or coat the cuttings. By systematically correlating this detailed textural and mineralogical data with the lithogeochemical data obtained by analyzing the cuttings, definitive sample classifications are assured.

3.6 Sample Processing and Gold Grain Observation Procedures

The till samples were processed using the procedures shown in Figure 17 which are designed to progressively reduce the bulk sample, expose the gold grains, concentrate the heavy minerals and eliminate any drill steel that would interfere with geochemical analysis of the concentrates.

First, the sample is wet screened at 2 mm and a -2 mm table concentrate is prepared. Geological observations on the character of the sample are recorded during both the screening and tabling operations (Appendix E). The table concentrate is purposely large (typically 300-400 g) and of low grade (10-25% heavy minerals) in order to achieve a high, 80 to 90 percent recovery rate for all desired heavy minerals irrespective of their grain size or relative specific gravity. The gold grains, more than 90 percent of which are normally silt-sized (Averill 2001), are observed at this stage with the aid of micropanning and are counted, measured and classified as to degree of wear (i.e. distance of glacial transport; Fig. 18), then returned to the table concentrate. The proportion of fine-grained pyrite in the pan concentrate and the number of grains of heavier, visually distinctive indicator minerals such as arsenopyrite, galena and scheelite is also estimated.

To obtain a uniform heavy mineral fraction suitable for geochemical analysis, the -2.0 mm table concentrate is separated in methylene iodide at specific gravity ("SG") 3.3. Undesirable magnetite is then removed from the SG >3.3 heavy liquid concentrate using a ferromagnetic separator, leaving a pure nonferromagnetic heavy mineral concentrate ("HMC") that contains the previously observed gold grains and any sulphide minerals that were present in the till except the common, low-temperature, monoclinic variety of pyrrhotite which is ferromagnetic. The approximate Au content of the nonferromagnetic HMC is then calculated based on the number of gold grains observed, their measured dimensions and the weight of the HMC.

3.7 Analytical Procedures

The HMCs of the till samples were analyzed (Appendix F) for a package of 34 elements by the instrumental neutron activation ("INA") method using up to a 60 g (as available) aliquot. With INA analysis, the concentrate is neither pulped (pulverized) nor digested in acid. Consequently, grains of gold and other indicator minerals recovered in the concentrates remain intact and any concentrates that unexpectedly yield anomalous analyses can be retrieved and examined to determine the actual minerals responsible for the anomalies.

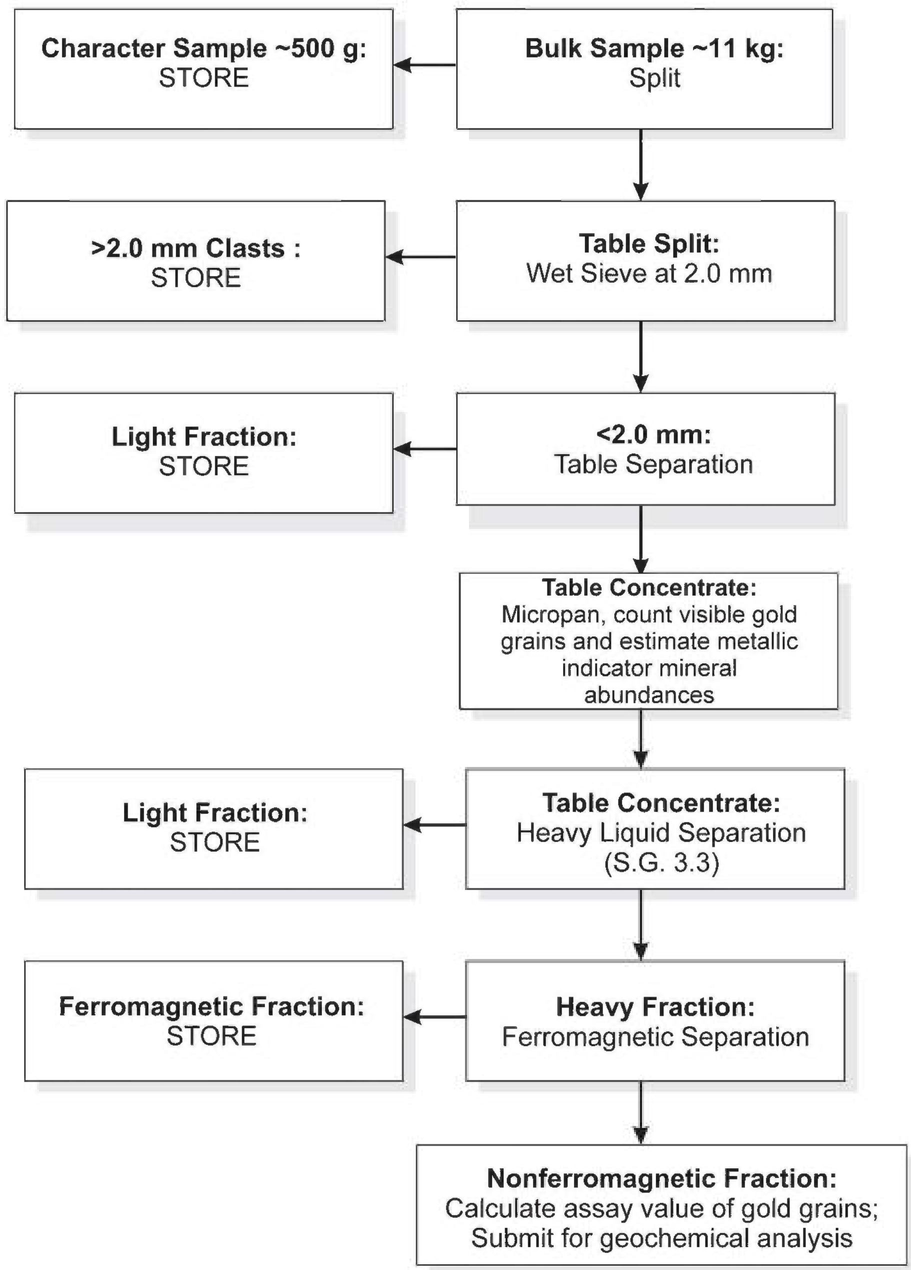

Figure 17 - Heavy mineral processing flow sheet for unoxidized till samples obtained by RC drilling.

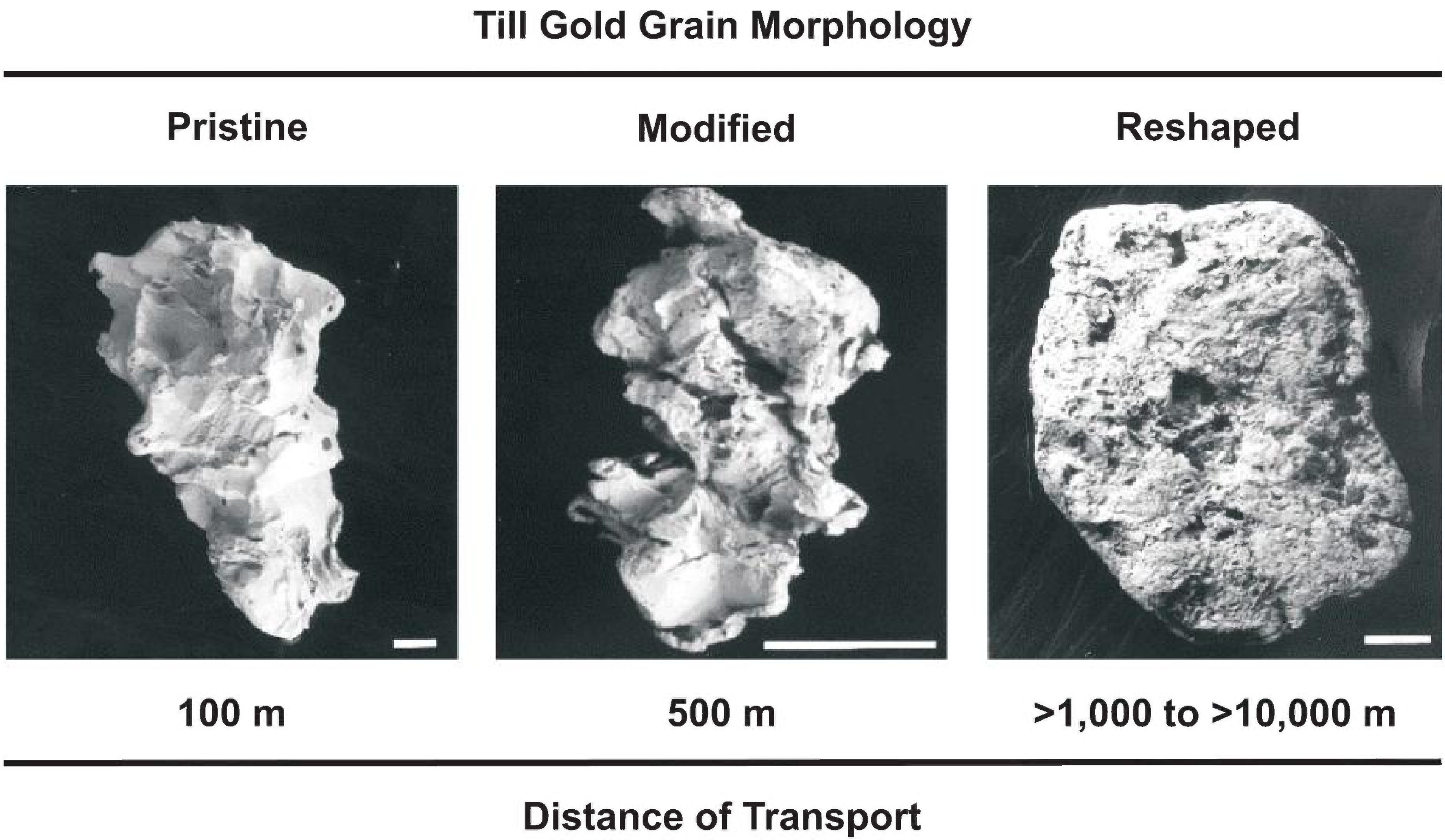

Figure 18 - Backscatter electron images of gold grains from till illustrating the relationship between grain wear and distance of transport. The wear processes are compressional (infolding and compaction) and do not reduce the mass of the gold grain. Scale bars = 50 µm. Source: Averill (2001).

Of the 34 elements analyzed by INA, Au and As are quantitative but most of the others are either too qualitative to be useful or of limited exploration interest. Therefore a second, 5 g split of the concentrates was submitted to be analyzed quantitatively by inductively coupled plasma/optical emission spectrometry ("ICP/OES"), after digestion by aqua regia ("AR"), for the key indicator elements Ag, Cu, Zn, Pb, Cd, Mo, Ni, Mn and S. Only a 1 g aliquot of the concentrate is actually digested and analyzed. Since the individual mineral grains in the concentrate can be as coarse as 2 mm, the concentrate is pulped prior to digestion to homogenize it and ensure that the mineral particles are small enough to be digested.

The bedrock samples were milled and analyzed (Appendix D) using essentially the same analytical packages as those for the till HMCs with slightly different detection limits for some elements and the inclusion of Sn in the INA package. As well, a pressed pellet was analyzed by fusion x-ray fluorescence ("FUS-XRF") for eleven whole rock oxides and loss of volatiles on ignition ("LOI").

3.8 Quality Control and Quality Assurance Measures

To check the consistency and robustness of the mineral processing and analytical data obtained from till samples, duplicates are normally collected on the drill at ~20-sample intervals by placing alternate scoops of till from the sampling buckets in two sequentially numbered bags. The duplicate samples are then processed and analyzed blindly in sequence with the regular samples. However, field duplicates were inadvertently omitted on the PLEX program, possibly because only 43 samples were obtained.

In the absence of duplicates, recovery of gold grains and other heavy indicator minerals from the till samples is assumed to have been in the 80 to 90 percent range because ODM maintains recoveries at this level through frequent blind tests. The potential for unnoticed grain loss is very low because the physical separation of each heavy mineral from the sample is fully visible throughout both primary concentration by tabling and secondary concentration by heavy liquids; no enclosed or automated devices are used in the mineral separations. This constant visual monitoring allows timely adjustments to be made to optimize mineral recovery if the character of the samples changes and also minimizes the potential for sample mix-ups and cross-contamination. For example gold grains, which are the most important indicator mineral on many properties including PLEX, are more susceptible to inter-sample carryover than any other indicator mineral due to their very small size but are physically observed as soon as a sample is tabled (Fig. 17). Consequently, any sample that contains anomalous levels of gold grains is quickly identified and blank samples are tabled and carefully inspected to ensure that they contain no gold grains before another till sample is processed.

Actlabs internally monitored its geochemical analyses for the till HMCs. This monitoring (Appendix F) included: (a) 4 standards and 4 blank samples in the INA analyses; and (b) 7 standards, 3 blanks and a second split of 3 pulps in the ICP analyses.

No duplicates of the bedrock samples were collected on the drill but the detailed laboratory descriptions of the samples (Appendix C) served as a check against both the drill logs (Appendix B) and Actlabs' geochemical and whole rock analyses (Appendix D). Actlabs also monitored its analyses internally by including: (a) 1 standard, 1 blank sample and a second split of 1 pulp in the INA analyses; (b) 7 standards, 3 blanks and a second split of 2 pulps in the ICP analyses; and (c) 10 standards, and 2 blanks in the whole rock analyses.

3.9 Program Costs

The total cost of the 24-hole program, excluding the costs of laying out the drill holes and clearing the access trails, was \$100,931.81 or \$4,205.49 per hole compared to a budgeted total of \$140,902.00 for 20 holes, or \$7,045.1 per hole, a 28 percent saving (Table 3). The lower costs were due primarily to the excellent drill performance and fewer samples being obtained than forecast.

4. RESULTS

4.1 Bedrock Stratigraphy, Structure and Plutonism

As previously noted, the drilling was confined to a 1.5 x 2 km area with extensive sand cover (Fig. 7) and few outcrops (Figs. 2, 11) on the nose of a syncline at the western end of the easternmost Bezier pluton (Fig. 9). As further noted, Goutier *et al.* 2002 reported the supracrustal rocks in the core of the syncline to consist mainly of komatiite flows but these flows were misrepresented as a sill-like ultramafic intrusion on the associated project maps (Figs. 9, 11). Virginia Mines, using the company's aeromagnetic map (Fig. 12), re-interpreted the sand-covered supracrustal rocks as consisting mainly of basalt with only the magnetic horizons being komatiitic (Fig. 19). Thin, outcropping, more strongly magnetic iron formations were mapped on the rocky ridges immediately north and south of the drill area.

	Service	Company	Budgeted $Total	Budgeted $/Metre	Budgeted $/Hole	Actual $Total	Actual $/Metre	Actual $/Hole
1.	Pre-drilling	ODM	4,000.00	13.33	200.00	2,755.00	8.26	114.79
2.	Drilling operations	Steve's	76,700.00	255.67	3,835.00	43,868.74	131.54	1,827.86
3.	Field supervision, logging and sampling	ODM	21,060.00	70.20	1,053.00	14,986.97	44.94	624.46
4.	Sample shipping	Various	1,145.00	3.82	57.25	46.20	0.14	1.93
5.	Sample processing	ODM	11,054.00	36.85	552.70	5,849.40	17.54	243.73
6.	Analytical	Actlabs	4,643.00	15.48	232.15	3,355.50	10.06	139.81
7.	Reporting (includes bedrock logging)	ODM	22,300.00	74.33	1,115.00	30,070.00	90.16	1,252.92
	TOTALS		$140,902.00	469.67	7,045.10	$100,931.81	302.64	4,205.49

Table 3 – Summary of budgeted and actual costs for the drilling program.

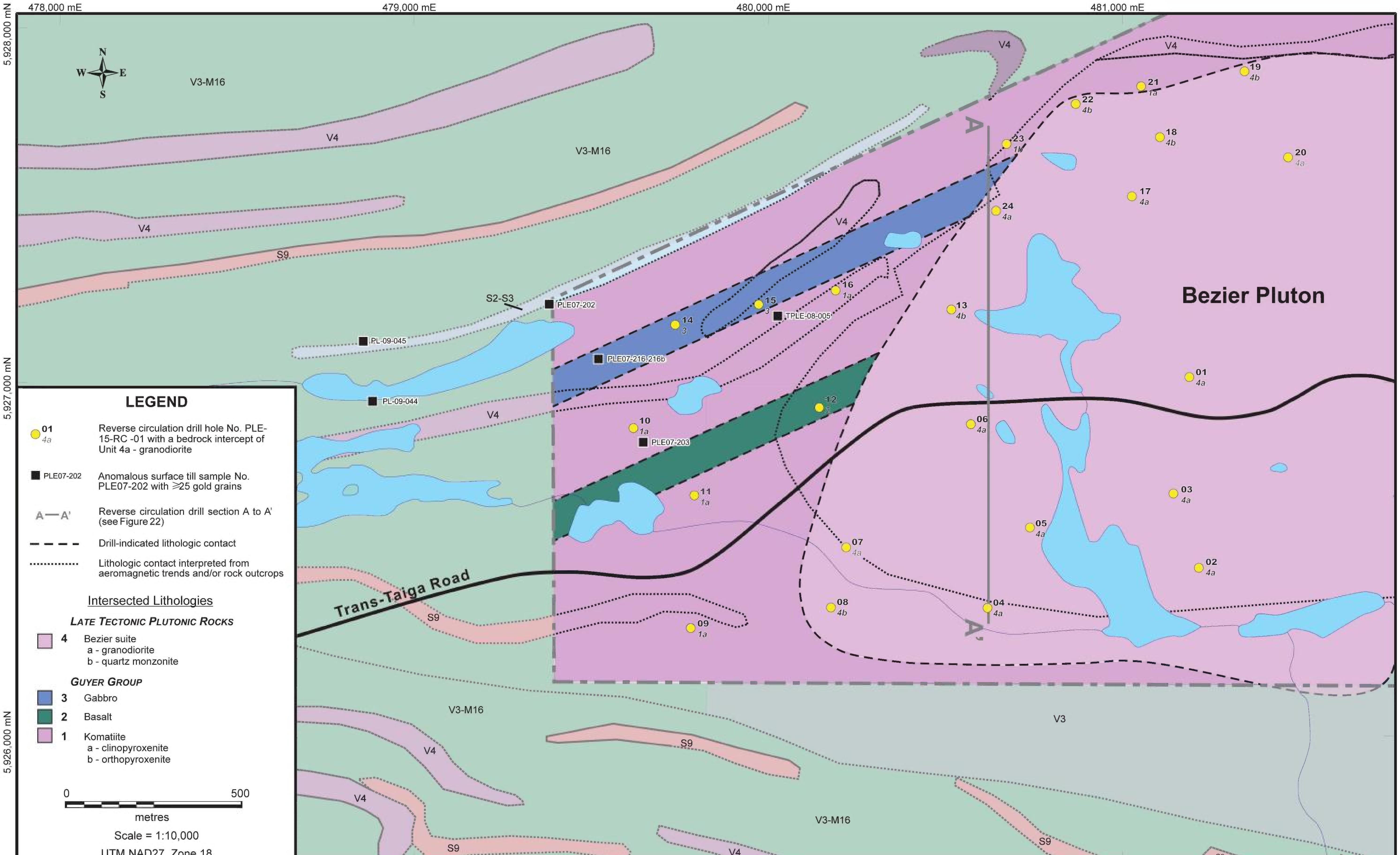

Figure 19 - Bedrock lithologies intersected in the RC drill holes in relation to the lithologies interpreted by Virginia Mines from aeromagnetic trends. The locations of the six anomalous 2007-2009 surficial sediment samples with ⩾25 gold grains are also shown. Revised from Osisko in-house files. See Table 1 for map lithologies.

Of the 24 RC drill holes, 15 intersected the pluton and the other 9 intersected either volcanic rocks or a subvolcanic sill; no iron formation horizons were encountered. The intersected volcanics consist of komatiite and subordinate basalt. They have been metamorphosed to the lower amphibolite facies, transforming their primary pyroxene to amphibole, expelling CO_2 and imparting a moderate to strong foliation to the rock but neither producing garnet nor fully obliterating primary textures. The subvolcanic rocks are restricted to a single gabbro sill which is similarly metamorphosed. The Bezier pluton, in contrast, is generally only weakly foliated although shear-granulated sections were encountered in several holes. While the pluton has not been dated, its overall weak fabric indicates late-tectonic emplacement as noted by Goutier *et al.* (2002).

The complex structural setting and abundance of komatiitic volcanics suggest significant potential for komatiite-hosted orogenic gold mineralization of the Kerr Addison type (Kishida & Kerrich 1987) but the komatiites, basalt and gabbro are all unsheared and unaltered and contain negligible sulphides and no gold. The minor shear zones intersected within the pluton are similarly unaltered and unmineralized.

4.2 Lithologic Descriptions and Lithogeochemistry

The following sections summarize the physical and mineralogical features of each intersected lithology that are discernible visually by binocular microscope and were used in Appendix C to classify the rocks. For the volcanic lithologies, the chemical compositions determined from the whole rock analyses are also discussed, and Jensen cation diagrams are used to classify the samples chemically and verify the visual classifications. The geochemical analyses obtained for Au and other elements of potential interest are also evaluated.

4.2.1 Komatiite

Komatiite was intersected in six drill holes, Nos. 09 to 11 and Nos. 16, 21 and 23 (Fig. 19). The positions of the intersections suggest that komatiite occupies most of the area around the nose of the pluton that was described by Goutier *et al.* (2002) as being komatiite-dominated but mapped (Figs. 9, 11) as a metamorphosed ultramafic intrusion rather than being subordinate to basalt as inferred by Virginia Mines (Fig. 19).

The komatiite is a dark green-black to brown, moderately to strongly foliated and lineated rock with an equigranular interlocking texture. In five of the six drill intersections its grain size is only 0.2 to 0.4 mm, clearly demonstrating that the rock was erupted rather than occurring as a sill as depicted in Figures 9 and 11. The Hole 23 intersection is coarser grained (0.5-1 mm) but has an extrusive spinifex texture defined by chains of amphibole crystals. Most intersections are nonmagnetic whereas Virginia Mines apparently inferred the komatiite to be significantly magnetic when interpreting its distribution (Fig. 19) from the aeromagnetic data (Fig. 12).

All six komatiite intersections are of amphibolite derived from a pyroxenite protolith that contained 90 to 100 percent pyroxene and 0 to 10 percent plagioclase. Olivine and its alteration products, serpentine + magnetite, are absent but the amphiboles at Holes 09 and 23 contains 3 to 5 percent magnetite as minute, <50 μm inclusions that render the rock strongly magnetic. Five of the pyroxenites are clinopyroxenites in which primary augite has been replaced by dark green clinoamphibole and 10 to 25 percent biotite. SEM analysis showed that the clinoamphibole in some of these samples is actinolite while in others it is hornblende. The Hole 23 intercept is an orthopyroxenite that now consists of anthophyllite plus 20 percent biotite. The anthophyllite varies in colour from pale green to mostly colourless. It readily transmits the dark brown colour of the biotite such that the orthopyroxenite appears brown rather than green like the clinopyroxenite.

The clinopyroxenite samples contain from 14 to 19 percent MgO and 46 to 51 percent SiO_2 (Table 4) and plot toward the basaltic side of the basaltic komatiite field on a Jensen cation diagram (Fig. 20). The orthopyroxenite contains more (21%) MgO and less (44%) SiO_2 and therefore plots more centrally in the basaltic komatiite field.

As previously noted the six komatiite samples along with all other bedrock samples obtained from the drilling program are unaltered, contained negligible sulphides, no Au and only normal background levels of other elements of potential economic interest. Background Ni and Cr levels in the komatiites are, however, distinctly elevated (Table 5) as is normal for ultramafic rocks. Nickel ranges from 311 to 792 ppm and Cr from 836 to 1820 ppm.

4.2.2 Basalt

Basalt was intersected in Hole 12 within the predominantly komatiitic domain (Fig. 19). As well, a thin layer of very mafic basalt was intersected within the orthopyroxenitic komatiite at Hole 23 and a basalt xenolith was intersected in the Bezier pluton at Hole 20.

Sample Number	Lithology	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	MnO %	MgO %	CaO %	Na_2O %	K_2O %	Na_2O+K_2O %	Na_2O/K_2O	TiO_2 %	P_2O_5 %	Cr_2O_3 %	V_2O_5 %	LOI %	Total %
001-03	Granodiorite	65.79	16.05	3.54	0.046	1.53	2.83	5.59	3.45	9.04	1.6	0.39	0.15	< 0.01	0.01	0.51	99.89
002-02	Granodiorite	66.13	15.41	3.44	0.023	2.62	1.94	5.57	2.63	8.20	2.1	0.4	0.16	< 0.01	0.009	2.3	100.6
003-02	Granodiorite	66.66	15.41	3.6	0.044	1.49	2.76	5.41	3.06	8.47	1.8	0.37	0.15	< 0.01	0.01	1.22	100.2
004-02	Granodiorite	66.27	15.01	3.58	0.045	1.65	2.61	5.15	3.13	8.28	1.6	0.37	0.16	< 0.01	0.008	2.07	100.1
005-02	Granodiorite	65.62	15.22	3.64	0.047	1.55	3.09	5.19	3.21	8.40	1.6	0.38	0.16	< 0.01	0.01	1.97	100.1
006-02	Granodiorite	65.78	15.33	4.17	0.052	1.8	3.72	5.34	3.06	8.40	1.7	0.42	0.2	< 0.01	0.009	0.67	100.6
007-03	Granodiorite	68.36	14.95	3.33	0.04	1.51	2.53	4.89	2.82	7.71	1.7	0.35	0.13	< 0.01	0.008	1.03	99.95
008-02	Quartz-monzonite	69.25	14.95	2.73	0.028	1.03	2.49	6.22	1.33	7.55	4.7	0.29	0.1	< 0.01	0.008	1.9	100.3
009-02	Komatiite	48.37	7.61	12.27	0.17	17.02	9.44	0.99	1.62	NA	NA	0.68	0.06	0.29	0.028	2.09	100.8
010-02	Komatiite	46.7	12.24	12.64	0.204	13.85	8.82	2.19	0.87	NA	NA	0.55	0.06	0.14	0.029	2.14	100.5
011-02	Komatiite	49.87	10.01	11.83	0.183	14.26	9.35	2.05	0.86	NA	NA	0.66	0.1	0.18	0.029	1.48	100.9
012-02	Basalt	54.06	11.07	8.7	0.142	11.84	7.17	3.08	1.52	NA	NA	0.51	0.25	0.1	0.022	2.27	100.8
013-03	Quartz-monzonite	65.55	15.51	3.65	0.046	1.6	3.26	5.27	3.27	8.54	1.6	0.38	0.15	< 0.01	0.01	1.24	99.94
014-02	Gabbro	49.59	14.91	11.79	0.176	9.18	11.02	1.89	0.38	NA	NA	0.73	0.07	0.05	0.035	0.97	100.8
015-03	Gabbro	49.66	14.28	14.09	0.18	6.9	10.14	2.8	0.31	NA	NA	1.01	0.08	0.03	0.041	0.59	100.1
016-07	Komatiite	46.46	9.75	11.17	0.155	18.91	6.82	1.14	1.4	NA	NA	0.54	0.1	0.29	0.026	3.25	100.1
017-02	Granodiorite	65.32	15.47	3.71	0.046	1.65	3.14	5.26	3.21	8.47	1.6	0.39	0.15	< 0.01	0.01	1.89	100.3
018-02	Quartz-monzonite	66.32	15.04	3.69	0.046	1.62	3.14	5.25	3.26	8.51	1.6	0.39	0.16	< 0.01	0.01	1.83	100.8
019-04	Quartz-monzonite	67.91	14.77	3.21	0.039	1.45	2.3	5.38	3.22	8.60	1.7	0.33	0.14	< 0.01	0.008	1.28	100
020-02A	Granodiorite	66.92	14.9	3.43	0.042	1.67	3.54	5.8	1.66	7.46	3.5	0.36	0.15	< 0.01	0.011	1.85	100.3
020-02B	Basalt	54.03	13.14	8.21	0.132	8.99	7.3	3.09	3.16	NA	NA	0.53	0.22	0.08	0.024	1.85	100.8
021-02	Komatiite	50.99	9.44	8.4	0.147	16.14	6.19	1.83	3.52	NA	NA	0.54	0.42	0.14	0.021	2.2	100.1
022-02	Granodiorite	67.03	14.42	2.73	0.035	1.25	2.78	5.15	3.33	8.48	1.5	0.29	0.12	< 0.01	0.008	3.74	100.9
023-08	Komatiite	44.49	7.43	10.21	0.15	21.09	7.69	0.83	2.33	NA	NA	0.64	0.3	0.28	0.022	4.71	100.3
024-04	Granodiorite	68.17	14.54	2.86	0.033	1.48	2.58	5.38	2.55	7.93	2.1	0.3	0.14	< 0.01	0.008	1.9	99.94

Table 4 – Whole rock analyses for the bedrock samples.

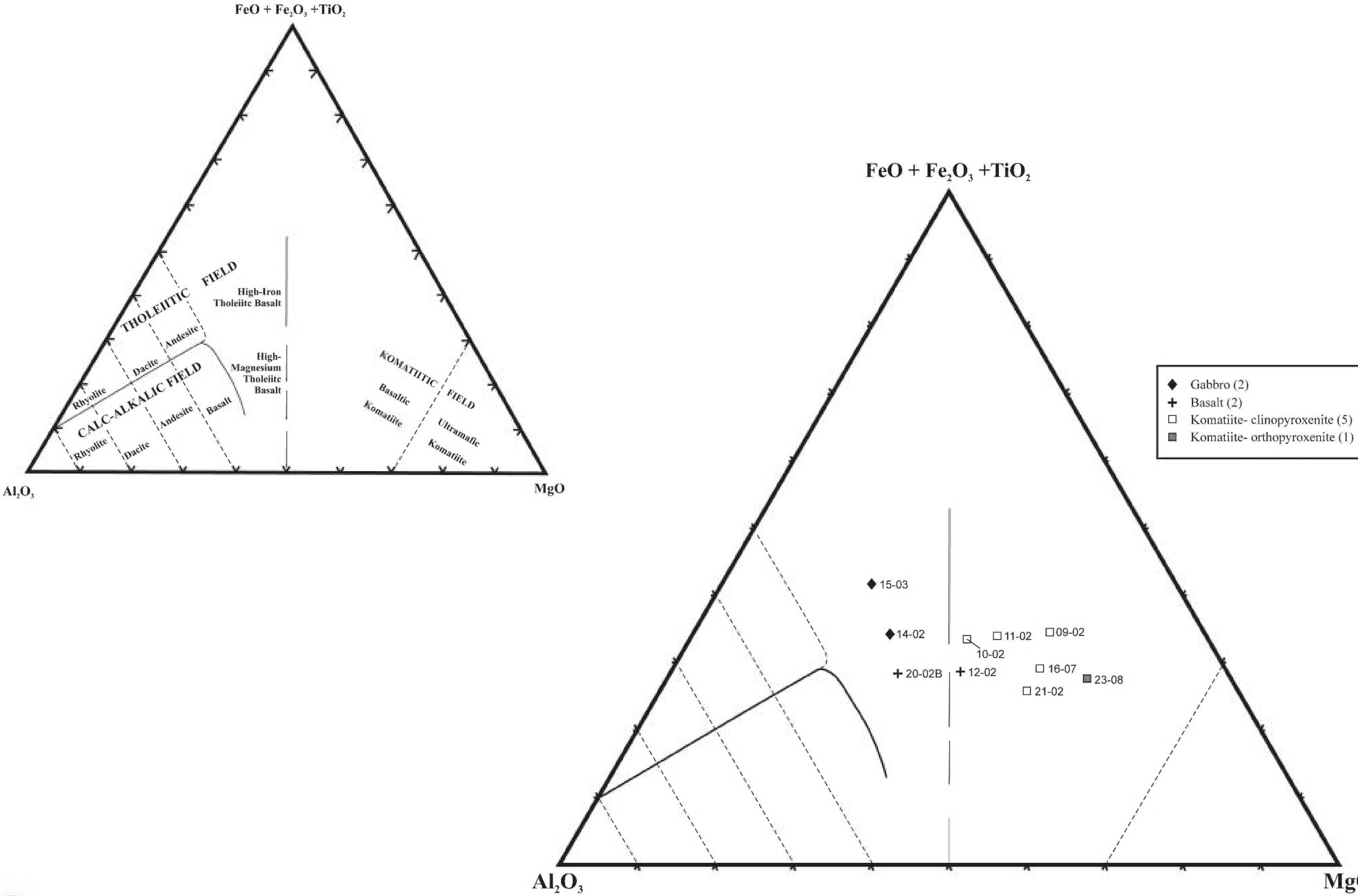

Figure 20 - Jensen cation plot for the volcanic and subvolcanic bedrock intercepts.

Sample Number	Lithology	Au ppb	As ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Cd ppm	Mo ppm	Ni ppm	Cr ppm	Mn ppm	S %
001-03	Granodiorite	< 2	6.5	< 0.3	9	14	70	< 0.3	1	26	40	374	< 0.01
002-02	Granodiorite	< 2	5.3	< 0.3	24	10	32	< 0.3	< 1	28	45	217	< 0.01
003-02	Granodiorite	< 2	4.8	< 0.3	18	15	62	< 0.3	< 1	25	52	341	< 0.01
004-02	Granodiorite	< 2	6.1	< 0.3	14	13	65	< 0.3	< 1	30	48	358	< 0.01
005-02	Granodiorite	< 2	3	< 0.3	17	14	67	< 0.3	< 1	27	59	359	< 0.01
006-02	Granodiorite	< 2	5.1	< 0.3	2	11	73	< 0.3	< 1	29	58	405	< 0.01
007-03	Granodiorite	< 2	4.5	< 0.3	8	12	67	< 0.3	< 1	23	37	305	0.01
008-02	Quartz-monzonite	< 2	4.4	< 0.3	15	6	41	< 0.3	< 1	15	29	256	0.11
009-02	Komatiite	< 2	3.9	< 0.3	104	5	63	< 0.3	< 1	596	1820	1220	0.11
010-02	Komatiite	< 2	1.5	< 0.3	52	< 3	80	< 0.3	< 1	311	895	1440	0.02
011-02	Komatiite	< 2	3.2	< 0.3	31	< 3	68	< 0.3	< 1	445	1150	1310	0.03
012-02	Basalt	< 2	3.6	< 0.3	26	4	71	< 0.3	< 1	375	616	1040	0.01
013-03	Quartz-monzonite	< 2	5.5	< 0.3	21	12	70	< 0.3	1	28	50	374	< 0.01
014-02	Gabbro	< 2	2.5	< 0.3	103	< 3	60	< 0.3	< 1	127	344	1230	0.07
015-03	Gabbro	< 2	< 0.5	< 0.3	61	< 3	88	< 0.3	< 1	80	198	1280	0.01
016-07	Komatiite	< 2	2.9	< 0.3	3	< 3	65	< 0.3	< 1	792	1770	1150	< 0.01
017-02	Granodiorite	< 2	1.9	< 0.3	19	12	72	< 0.3	< 1	26	47	385	< 0.01
018-02	Quartz-monzonite	< 2	2.9	< 0.3	19	11	70	< 0.3	< 1	27	54	379	< 0.01
019-04	Quartz-monzonite	< 2	3.3	< 0.3	15	12	62	< 0.3	< 1	31	44	315	0.01
020-02A	Granodiorite	< 2	1.8	< 0.3	34	10	51	< 0.3	< 1	28	67	338	0.13
020-02B	Basalt	< 2	2.2	< 0.3	64	11	68	< 0.3	2	135	475	944	0.06
021-02	Komatiite	< 2	3.6	< 0.3	4	16	122	< 0.3	7	627	836	1090	< 0.01
022-02	Granodiorite	< 2	4.2	< 0.3	8	11	53	< 0.3	< 1	22	42	294	< 0.01
023-08	Komatiite	< 2	5.8	< 0.3	56	8	67	< 0.3	< 1	772	1700	1120	0.15
024-04	Granodiorite	< 2	4.8	< 0.3	30	10	53	< 0.3	< 1	24	44	278	0.05

Table 5 – Selected geochemical analyses for the bedrock samples.

The basalt in Hole 12 is a dark green, strongly foliated to schistose, nonmagnetic rock comprised of 50 percent plagioclase, 15 percent biotite and 35 percent green clinoamphibole. The amphibole was determined by SEM analysis to be actinolite rather than hornblende. The primary equigranular interlocking texture and relatively fine, 0.2 to 0.3 mm grain size of the basalt are well preserved. Also present are 0.5 percent small (2-3 mm), leucocratic lithic fragments. These fragments are aphanitic and contain minute amygdules. They are probably autoliths derived from the quenched top an underlying flow.

The plagioclase and mafic minerals are locally segregated in a manner that is more suggestive of cumulate layering than metamorphic differentiation. Moreover, Ni and Cr are both significantly elevated at 375 and 616 ppm, respectively (Table 5), approaching the levels found in the komatiites and suggesting that the basalt and komatiite were derived from the same parental melt. MgO significantly exceeds Fe_2O_3, at 12 versus 9 percent (Table 4), and the sample plots marginally within the basaltic komatiitic field on the Jensen diagram (Fig. 20). The thin basalt zone intersected within the orthopyroxenitic komatiite at Hole 23 is probably a cumulate layer as it comprises only 15 percent of the section and has a very high, 80 percent mafic mineral content. Its chemistry was not determined because it was not sampled separately from the komatiite.

The basalt xenolith that was intersected in Hole 20 is similar mineralogically to the basalt in Hole 12 but has a hornfelsic texture, with the plagioclase now recrystallized as sugary, colourless, quartz-like grains. It also contains 2 percent calc-silicate veinlets that have a high-temperature polygranular texture and contain 30 percent diopside, 20 percent calcite and 2 percent titanite. As at Hole 12, MgO exceeds Fe_2O_3, although only marginally at 9 versus 8 percent (Table 4). Chemically, therefore, the rock is a high-Mg tholeiitic basalt (Fig. 20). Its Ni content is only weakly elevated at 135 ppm but Cr is significant at 475 ppm.

4.2.3 Gabbro

Gabbro was intersected in Hole 14 on the westernmost drill section and in Hole 15 on the next section to the east (Fig. 19). The two intercepts appear to define an E-W to ENE trending sill with a maximum thickness of 100 m.

The gabbro is a strongly foliated, dark green-black, nonmagnetic rock. Like the basalt it consists of equigranular interlocking grains of hornblende and plagioclase but the grains are significantly coarser, typically 1 to 2 mm versus 0.2 to 0.3 mm. Magnetite is absent but minor (0.1-0.2%) ilmenite is present. In Hole 14, the plagioclase has been metamorphically recrystallized as finer-grained, sugary, quartz-like aggregates. The hornblende (± biotite) content is elevated at ~70 percent. However, Fe_2O_3 significantly exceeds MgO at 12 to 14 percent versus 7 to 9 percent (Table 4) and the samples plot in the Fe-rich rather than Mg-rich tholeiitic basalt field on the Jensen diagram (Fig. 20) suggesting that the gabbro was not comagmatic with the basalt and komatiite. Moreover, Ni and Cr levels are only about half those of the basalt and much less than in the komatiite (Table 5).

4.2.4 Granitoid Rocks of the Bezier Pluton

As previously noted, the intersected granitoid rocks of the Bezier pluton are generally much less foliated and recrystallized than the adjacent volcanic rocks of the Lac Guyer Group, indicating that their emplacement was late tectonic as reported by Goutier *et al.* (2002). Their colour is white overall with abundant dark green to black mafic flecks; however, the feldspar is locally stained salmon pink by hematite. The intersections vary irregularly from nonmagnetic to moderately magnetic. The maximum magnetite content is 0.5 percent.

Texturally, all of the granitoid intercepts except those from Holes 08 and 20 are weakly porphyritic with 1 to 2 percent large, 5 to 8 mm feldspar phenocrysts in a coarse-grained (typically 1.5 to 3 mm), equigranular groundmass of interlocking quartz, feldspar and mafic mineral grains with 0.1 to 0.5 percent finer-grained accessory titanite. Goutier *et al.* (2002) reported that feldspar phenocrysts are common to all of the Bezier plutons and inferred that these small plutons are connected at depth to a large batholith.

While the groundmass minerals are all of a similar size, the mafic minerals actually consist of impure clusters of smaller grains intermixed with varying proportions of fine-grained titanite, epidote and magnetite. The feldspar crystals vary from mostly subhedral to locally anhedral, i.e. the groundmass is morphologically hypidiomorphic to allotriomorphic.

The quartz content of the granitoid rocks varies from 15 to 30 percent but in most samples is 20 to 25 percent. The mafic mineral content varies from 10 to 25 percent and is mostly 15 to 20 percent. Hornblende and biotite occur with equal frequency but in any given drill hole one of these minerals either occurs to the exclusion of the other or is clearly dominant. In Holes 02 and 08, the primary hornblende and biotite have been completely retrograded to chlorite, apparently by shear-associated hydration as both intercepts display weak shear deformation in the form of fractures or granulated seams.

As previously noted by Goutier *et al.* (2002) the feldspar phenocrysts consist of alkali feldspar. They are unaltered, and thus transparent, and have a perthitic texture in which the K-spar and albite intergrowths vary from feathery to lamellar. The alkali feldspar in the groundmass is visually similar but in some samples is difficult to distinguish from the plagioclase which is less clouded by saussuritization than normal, probably due to the late tectonic age of the pluton. Retrograde epidote alteration along the contacts of the plagioclase and hornblende or biotite grains is similarly restricted, reaching a maximum of 2 percent.

In half of the samples the ratio of alkali feldspar to plagioclase appears to be ~1:2, indicating a granodiorite composition (Fig. 21a). In Holes 08, 13, 18, 19 and 22, which were drilled along the margin of the pluton (Fig. 19), the ratio increases to 1:1 or 1.5:1 indicating a quartz monzonite composition using the older definition which did not limit the quartz content to 20 percent like the 1991 International Union of Geological Sciences ("IUGS") revision that doubled the granite field for rocks with >20 percent quartz at the expense of quartz-monzonite on the thesis that the granite field was too restricted (Le Bas & Streckeisen 1991).

Goutier *et al.* (2002) also described the plutons of the Bezier suite as granodiorite and quartz monzonite. Chemically, however, samples of the two lithologies are indistinguishable; they all contain ~8 percent $Na_2O + K_2O$ (Table 4) and, on the IUGS diagram (Fig. 21a), cluster in the formerly quartz monzonite portion of the enlarged granite field. Interestingly, Na_20 is two to three times as abundant as both K_20 and CaO indicating that in addition to sodic (albite) lamellae being present in the alkali feldspar the plagioclase itself is very sodic.

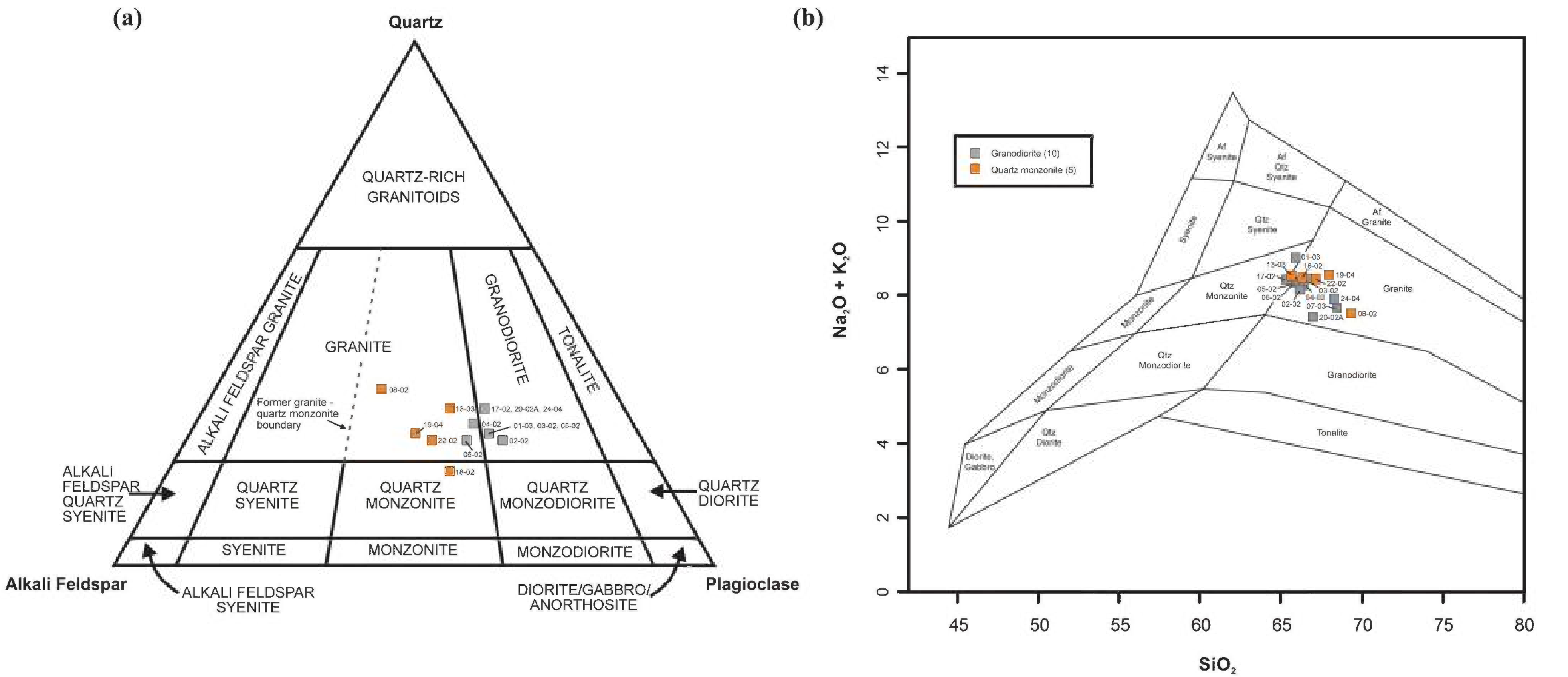

Figure 21 - Classification of the Bezier pluton samples based on (a) mineralogy and (b) whole rock chemistry.

4.3 Surficial Geology

As previously noted, the drill sections were oriented roughly N-S (Figs. 7, 14, 19) to squarely cross both the 255° ice flow direction (Fig. 5a) in which the till was transported and the westerly trending valley (Fig. 7) that contains the esker and outwash sediments. As further noted, all holes were sited on the sand aprons that border the esker on either side, leaving a narrow gap at the esker ridge because till is normally absent beneath eskers. This approach was very successful as till was intersected beneath the sand cover in 21 of the 24 holes. As well, it crops out at Hole 10 which was drilled where the valley narrows and is walled in by rock outcrops on either side (Figs. 2, 11).

A N-S cross-section of the Quaternary sediments intersected over the nose of the Bezier pluton on the widest part of the valley is shown in Figure 22. The location of this section is shown on Figures 7 and 19.

The overburden along the section ranges in thickness from 4.7 to 30.2 m. On average it is twice as thick on the north side of the esker ridge as on the south side, in part because the underlying paleovalley deepens to the north. In the shallower, southern part of this valley the till occurs as a thin, 0.5 to 2 m veneer between the bedrock and outwash sediments which are up to 15.9 m thick. In the deeper, northern part of the valley both the till and outwash sediments thicken significantly, with the till reaching a maximum thickness of 14.6 m in Hole 23 and the outwash sediments reaching 22.9 m in Hole 24.

The outwash sediments in every drill hole, whether thick or thin, consisted mainly of very fine to fine-grained silty sand with subordinate intervals of medium or coarse-grained sand. Due to a combination of the high permeability of the sand, the low relief in the drill area and the presence of numerous lakes and ponds (Figs. 4, 19) the sand is generally saturated almost to surface and thus is unoxidized and retains its primary silty grey-beige colour.

At depth, the fine outwash sediments are generally in sharp contact with a basal layer of stony debris. The sharpness of the contact, with few if any coarse sandy or pebbly gravel interbeds appearing in the fine sand to indicate an upward transition from high-energy esker channel to low-energy outwash plain sedimentation, suggests that most of the stony basal debris is till rather than esker gravel. In ten drill holes, however, either the top of the stony section or the entire section was logged as gravel (Appendix

B), in some cases with a rather ambiguous description that was more suggestive of till. The samples collected from some of the reported gravel sections were reclassified as till when the samples were screened and tabled in the laboratory (Appendix E). In addition, the archived splits of samples from every reported gravel section were examined by binocular microscope and the findings were noted on the drill logs (Appendix B).

The till, having been produced by the dual mechanical processes of plucking and grinding and deposited by ice rather than meltwater, is unsorted, generally unstratified, bimodal in coarse clasts and fine matrix, and matrix supported. The clasts typically comprise from 20 to 40 percent of the till and range randomly in size from granules to pebbles and cobbles with occasional boulders. Lithologically, ~80 percent are of granitoid rocks and 20 percent are of Guyer Group supracrustal rocks. The matrix of the till is dominated by silty to fine sandy rock flour but, being unsorted, does contain some medium and coarse sand particles. Being protected from oxidation by the thick cover of saturated outwash sand, it retains its primary grey-beige colour.

While stony gravel can normally be distinguished from similarly stony till on the basis of its water-sorted matrix, the degree and style of wear of the surfaces of small, intact pebbles in the archived splits of the ambiguous samples was found to be more diagnostic. In gravel sections, the surfaces of the pebbles tend to be worn smooth regardless of their primary texture, but due to the relative immaturity of esker sediments many of the pebbles are not yet well rounded. In till sections, the surfaces of coarse-grained granitic pebbles tend to be rather rough, with the wear surface following the original grain boundaries rather than cutting across the grains to produce a smooth surface as on similar granitic pebbles in the gravel.

True gravel appears to have been intersected in only four drill holes, Nos. 06, 12, 16 and 23 (Appendix B) which are all located in the in the west-central part of the drill area. Seven samples were collected from these four sections (Table 2). In Holes 06 and 12, both of which were drilled adjacent to the esker ridge and were so shallow that only one sample was obtained, the usual thin till layer is absent and the gravel directly overlies bedrock. In Hole 16 an 8.5 m thick, 4-sample gravel layer overlies the till, while in Hole 23 the 12.2 m thick till section in the bottom of the buried bedrock valley (Fig. 22) is overlain by 2.4 m of fine, silty to pebbly sand from which a single sample was collected. The till section also includes a 2 m thick sand lens that was not sampled.

4.4 Gold Grain Content and Heavy Mineral Geochemistry of the Till Samples

The number of gold grains found while extracting the heavy minerals from each of the forty-three ~10 kg till and gravel samples is shown in Table 6 together with the expected Au contribution of these grains to the HMCs and the actual analyses obtained from the HMCs for Au and other useful indicator elements.

Background levels of gold grains in 10 kg till samples vary from region to region depending primarily on the total area of gold-fertile rocks that was exposed to glacial erosion (Averill 1988). Over a small or narrow belt of supracrustal rocks such as the Lac Guyer Greenstone Belt the gold background is generally 0 to 5 grains per sample while at Val d'Or, on the southern or down-ice edge of the 200 km wide and regionally Au-fertile Abitibi Subprovince (Fig. 8), the background is as high as 20 to 40 grains per sample. The threshold level for a traceable dispersal train from potentially significant gold mineralization is 10 grains per sample (Table 7). Therefore a weak gold dispersal train on the PLEX property should be more conspicuous than a similarly weak train at Val d'Or; i.e. even a small gold deposit should be detectable. Indeed, this has already been demonstrated on the David grid (Fig. 13) by the discovery of low-grade, porphyry-related gold mineralization from dispersed gold grains in the till (Virginia Mines 2008).

Even if no significant mineralization is present on a property in a region with a low gold grain background, occasional false "noise" above the 10-grain anomaly threshold should be expected. Therefore the 10-grain dispersal train threshold comes with the caveats that the grains must be of a similar size and crystal form and either pristine or only partially modified by glacial transport rather than fully reshaped (Fig. 18), indicating that they are derived from a single, local bedrock source rather than many distal sources like background grains.

If a gold dispersal train is present and the till samples were obtained by drilling as in the PLEX program, at least two consecutive 1.5 m samples within the till section should be anomalous because dispersal trains tend to be thick – up to 28 m in the case of the Blackwater train in British Columbia (Averill 2015). As well, since the till at depth is unoxidized, the gold grains may be accompanied by anomalous levels of pyrite, arsenopyrite or other sulphide minerals. Any grains of these minerals will be recovered in the HMCs along with the gold grains and either observed during extraction of the HMCs or detected when the HMCs are analyzed. Some of these sulphide grains may contain minute gold inclusions or chemically occluded gold that cannot be seen. If so, the HMC Au analyses will be significantly higher than the Au values calculated from the observed gold grains.

Sample Number	Sediment Type	Gold Grains	Au (ppb)		As ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Cd ppm	Mo ppm	Ni ppm	Mn ppm	S %
			Calculated	Analyzed										
001-01	Till	0	0	< 5	< 2	< 0.2	37	23	15	< 0.5	3	32	303	0.45
001-02	Till	0	0	50	4	< 0.2	52	19	20	< 0.5	5	33	533	0.37
002-01	Till	2	1	44	6	< 0.2	20	22	12	< 0.5	2	17	393	0.07
003-01	Till	3	14	6	< 2	< 0.2	41	23	19	< 0.5	< 2	27	419	0.06
004-01	Till	7	63	136	< 2	< 0.2	94	21	13	< 0.5	2	16	415	0.09
005-01	Till	2	5	32	< 2	< 0.2	176	24	17	< 0.5	2	15	365	0.24
006-01	Gravel	3	22	48	16	< 0.2	29	20	18	< 0.5	3	43	345	0.16
007-01	Till	11	27	46	3	< 0.2	31	19	16	< 0.5	< 2	18	377	0.1
007-02	Till	6	7	56	< 2	< 0.2	24	19	12	< 0.5	< 2	12	385	0.07
008-01	Till	9	18	37	< 2	< 0.2	14	14	11	< 0.5	< 2	17	390	0.52
009-01	Till	4	31	134	16	0.2	437	16	19	< 0.5	3	62	434	3.04
010-01	Till	2	<1	35	9	0.2	206	25	18	< 0.5	39	70	333	1.43
011-01	Till	2	13	363	< 2	< 0.2	48	20	21	< 0.5	< 2	47	282	0.31
012-01	Gravel	2	8	123	8	< 0.2	39	22	13	< 0.5	3	20	379	0.1
013-01	Till	1	14	< 5	< 2	< 0.2	45	23	19	< 0.5	< 2	17	498	0.3
013-02	Till	3	20	< 5	< 2	0.6	376	31	16	< 0.5	< 2	24	307	1.09
014-01	Till	3	33	54	< 2	0.2	147	16	17	< 0.5	< 2	44	313	1.52
015-01	Till	6	14	112	< 2	< 0.2	84	8	17	< 0.5	< 2	20	293	0.52
015-02	Till	1	<1	30	< 2	< 0.2	101	14	19	< 0.5	2	25	420	0.28
016-01	Gravel	1	1	19	< 2	< 0.2	19	30	16	< 0.5	< 2	13	434	0.09
016-02	Gravel	3	35	< 5	< 2	< 0.2	21	19	16	< 0.5	< 2	13	310	0.09
016-03	Gravel	2	1	436	< 2	< 0.2	86	23	17	< 0.5	59	19	347	0.26
016-04	Gravel	0	0	< 5	< 2	< 0.2	67	24	20	< 0.5	6540	36	390	0.75
016-05	Till	1	1	30	< 2	< 0.2	53	31	20	< 0.5	58	28	395	0.41
016-06	Till	16	435	460	< 2	< 0.2	225	41	28	< 0.5	15	24	356	0.42
017-01	Till	1	<1	< 5	< 2	< 0.2	68	17	13	< 0.5	5	12	367	0.06
018-01	Till	0	0	< 5	< 2	< 0.2	48	29	15	< 0.5	4	19	422	0.14
019-01	Till	3	3	11	< 2	< 0.2	9	14	15	< 0.5	3	8	347	0.02
019-02	Till	6	3	38	< 2	< 0.2	24	14	15	< 0.5	4	16	344	0.07
019-03	Till	1	1	12	< 2	< 0.2	26	24	14	< 0.5	2	19	316	0.47
020-01	Till	7	8	10	< 2	< 0.2	13	14	13	< 0.5	< 2	13	376	0.2
021-01	Till	9	3	5	< 2	< 0.2	16	17	15	< 0.5	5	44	359	0.33
022-01	Till	1	14	33	6	< 0.2	322	23	16	< 0.5	4	173	362	0.3
023-01	Sand	7	29	38	12	< 0.2	74	24	12	< 0.5	4	24	379	1.17
023-02	Till	0	0	45	46	< 0.2	127	27	17	< 0.5	3	26	384	1.53
023-03	Till	4	13	35	13	< 0.2	135	24	16	< 0.5	3	24	372	1.35
023-04	Till	4	8	< 5	< 2	< 0.2	53	24	13	< 0.5	3	12	373	0.31
023-05	Till	0	0	< 5	< 2	< 0.2	45	26	21	< 0.5	3	13	366	0.24
023-06	Till	0	0	38	6	< 0.2	246	33	21	< 0.5	4	69	354	1.52
023-07	Till	3	12	33	< 2	1.7	168	28	16	< 0.5	3	24	380	1.26
024-01	Till	2	1	28	11	< 0.2	88	29	14	< 0.5	3	13	411	0.23
024-02	Till	0	0	28	< 2	< 0.2	79	29	13	< 0.5	3	11	406	0.13
024-03	Till	3	1	72	13	< 0.2	95	41	14	< 0.5	3	15	365	0.68

Table 6 – Gold grain counts and selected geochemical analyses for the till HMCs.

Fold belt	Deposit name	Train length (m) Traced	Est. total[1]		Gold grains per kg of till[2]	Average gold grain diameter (μm)
Abitibi	Belore	400	400		2	50 - 100
Abitibi	Cooke Mine [3]	800	1000		Encapsulated	--
Abitibi	Golden Pond West	400	400	4	3	50 - 100
Abitibi	Golden Pond	400	500	4	2	50 - 75
Abitibi	Golden Pond East	800	1000	4	6	25 - 75
Abitibi	Orenada	100	200		2	25 - 75
Abitibi	Kiena	100	300		3	10 - 75
Abitibi	Chimo	600	1000		4	50 - 75
La Ronge	EP [5] (Waddy Lake)	600	2000		10	10 - 100
La Ronge	Star Lake	300	800		2	10 - 50
La Ronge	Tower Lake	7000	7000	4	10	10 - 50
La Ronge	Bakos	2000	2000		20	25 - 50
Lynn Lake	Farley Lake	400	400		1	25 - 75
Humber	Devil's Cove	2000	2000		6	10 - 100
Rainy River	ODM Zone	2000	15000	6	10	10 - 50
Cordillera	Blackwater	2500	5000		15	15 - 50

[1] Based on minimum 10 gold grains of similar size and shape per standard 10 kg sample for free gold trains and coincident high gold and base metal assays in unweathered till for sulphide-encapsulated gold trains.
[2] Midway along train.
[3] Sulphide-encapsulated gold deposit.
[4] Train hosted by older till and fragmented by erosion in younger ice advance.
[5] Deposit oriented parallel to glacial ice flow.
[6] Train length enhanced by a 5 km^2 Au-bearing alteration zone surrounding Au deposit.

Table 7 – Gold grain dispersal trains tested by ODM in glaciated terrains in Canada.

Whether a gold dispersal train is due to a large number of pristine to partly modified and physically similar gold grains or to gold bound in sulphides or any combination thereof, the Au analysis obtained from the HMC must normally be >1000 ppb to be of interest. The 1000 ppb threshold is based on: (a) ODM's knowledge, gained from testing a large selection of gold dispersal trains (Table 7), that the average Au grade of the till HMCs in the train is similar to the grade of the bedrock source mineralization; i.e. the progressive dilution of gold and sulphide grains that occurs in the till down-ice from a gold deposit is roughly counterbalanced in the laboratory by reconcentrating these grains to obtain the HMCs; and (b) the current requirement that a gold deposit must have a grade >1000 ppb, or 1 g/t, to be of economic interest.

The extensive surface sampling performed by Virginia Gold and Virginia Mines (Figs. 6, 13) demonstrated that the gold grain background of the till over the Lac Guyer Greenstone Belt is, as expected, 0 to 5 grains per sample. The gold grain anomaly that was followed up in the current RC drilling program is relatively weak, with the strongest response being just 92 grains (Figs. 2, 19) when normalized to a constant 10 kg sample weight to compensate for high variability in the actual weights of the samples. Nevertheless the anomaly contrasts sharply with the very low gold grain background. Moreover, most of the gold grains were found to be fully reshaped suggesting that they were derived from a distal bedrock source and thus that the apparent weakness of the anomaly could simply be due to grain dilution by long transport.

The till intersected in the RC drill holes was found to contain only normal background levels of gold grains even though three of the holes, Nos. 10, 14 and 15, were drilled within the limits of the surface anomaly (Fig. 19). Most of the till samples yielded from 0 to 5 grains (Table 6). The basic 10-grain anomaly threshold was exceeded in just two till samples and only nominally, with 11 grains in the upper of two samples from Hole 07 and 16 grains in the lower of two samples from Hole 16. The lack of gold continuity with the overlying or underlying samples in these sections indicates that the two elevated responses are not significant. The HMC from the 16-grain sample returned a 460 ppm Au analysis, closely matching the 435 ppb value calculated from the gold grains. This was the highest Au response obtained from the program and still well below the basic 1000 ppb threshold for a potentially significant Au anomaly.

In most of the samples with 0 to 5 gold grains, the HMC Au analyses exceeded the calculated Au values. This suggests that some of the sulphide grains recovered in the HMCs were slightly auriferous. Based on the S analyses, which were mostly in the 0.2 to 1.5 percent range (Table 6), the HMCs typically contained 0.5 to 3 percent sulphides, almost all of which evidently was pyrite because the Cu, Pb, Zn and As analyses are all low. The only significant base metal analysis was a strong, 6540 ppm Mo response obtained from the lowermost of the four samples obtained from the 8.5 m thick gravel horizon in Hole 16 (Appendix B). The good strength but lack of vertical continuity of the anomaly suggests that it was produced artificially by drilling through an erratic molybdenite-bearing clast in the stony gravel and thus is not significant.

4.5 Genesis of the Surface Gold Anomaly

The uniformly low gold grain content of the till beneath the esker/outwash sediments in the RC drill holes contrasts sharply with the consistently anomalous gold content of the surface samples that were collected earlier within a 0.5 x 1.5 km area immediately down-ice from and in part overlapping the drill area (Figs. 2, 19). The uniformly low, <2 ppb Au content and completely unsheared and unaltered condition of the bedrock beneath the till in the drill holes explain the low gold grain content of the till and clearly show that the surface anomaly is not related to bedrock mineralization. This raises the question of why an anomaly is present.

The simplest explanation is that the anomalous surface samples were of sand and gravel, not till. There is considerable evidence to support this interpretation including the following:

1. The surface anomaly is essentially defined by six samples – Nos. PLE-07-202, 203 and 216 (together with its field duplicate TPLE-07-216B), TPLE-08-005 and PL-09-044 and 045 – that yielded ≥25 gold grains when normalized to 10 kg of processed -2 mm matrix (Table 8) to compensate for variations in both the weights of the samples and the proportion of matrix versus clasts, and all but No. PLE-07-202 were collected on the valley floor which is covered with sand and gravel (Fig. 7).
2. Two of the samples, Nos. PLE-07-216/216B and TPLE-08-005, were collected close to RC drill holes Nos. 14 and 12, respectively, in which till is either absent (Hole 12; Appendix B) or covered by a significant thickness (1.6 m) of sand.
3. While all of the anomalous samples except No. PL-09-044 were classified as till by ODM's laboratory technicians when processing the samples (Table 8), the till designation was based on an observed lack of sorting, and bimodal samples collected from zones of interstratified stony gravel and fine, silty sand like those encountered in the RC drill holes (Appendix B) commonly appear to be as unsorted as till samples.

Sample No.	Laboratory Classification	Weight (kg)		Proportion of +2 mm Clasts (%)	Number of Gold Grains								Proportion of Silt-Sized Gold Grains (%)	Magnetite Weight (g)
					Actual				Normalized to 10 kg of -2 mm Matrix					
		Sample	-2 mm Matrix		Total	Reshaped	Modified	Pristine	Total	Reshaped	Modified	Pristine		
PLE-07-202	Till	12.3	7.3	41	27	22	4	1	36	30	5	1	74	38.2
-203	Till	11.2	7.7	31	32	26	5	1	41	34	6	1	91	113.6
-216	Till	15.1	9.3	38	86	65	16	5	92	70	17	5	91	91.6
TPLE-07-216B	Till	8.6	4.8	44	28	20	2	6	58	42	4	12	82	92.3
TPLE-08-005	Till	18.3	10.4	43	26	21	3	2	25	20	3	2	77	111.3
PL-09-044	Sand and Gravel	13.2	5.1	61	44	36	4	4	87	71	8	8	91	89.6
-045	Till	13.6	8.4	38	22	18	3	1	26	21	4	1	95	106.4

Table 8 – Summary of heavy mineral processing data for the six most anomalous samples within the limits of the surface gold grain anomaly outlined in 2007-2009. Sample 216B was a duplicate of No. 216.

4. The weights of the clast and magnetic fractions that were extracted when processing the samples show that five of the six anomalous samples differ from till samples collected from the uplands on either side of the valley in the following respects: (a) the proportion of clasts is unusually high suggesting that the clasts were sorted, with most occurring as small pebbles that could not be hand-picked and discarded in the field as readily as the large pebbles and cobbles that normally dominate the clast fraction of till; and (b) the magnetite content of the matrix, except in Sample PLE-07-202 which was collected north of the valley (Fig. 7), is three to four times as high as in the till samples, indicating that significant gravity sorting occurred during sedimentation.
5. While ~90 percent of the gold grains are of the normal silt size (i.e. <63 µm wide; Table 8) found in till (Averill 2001), the grains are biased to coarse rather than fine silt like the grains in known till-hosted dispersal trains from major gold deposits (Fig. 23).

In summary, all of the anomalous samples except No. PLE-07-202, which was only nominally anomalous with 27 gold grains (36 grains normalized; Table 8), appear to have consisted of interbedded pebbly gravel and fine, silty outwash sand rather than till. The coarser, cobbly to bouldery gravel that is deposited englacially in meltwater discharge tunnels, and is manifested as an esker ridge when the ice melts, is normally depleted, not enriched in gold grains (Averill 2001). This gold depletion occurs because: (a) in a stream with sufficient energy to transport boulders, the silt-sized gold particles that comprise ~90 percent of the gold grain population travel in suspension and therefore are flushed from the meltwater tunnel and deposited in the silty, outwash sand aprons, significantly enriching them in gold relative to till; and (b) englacial streams are too short-lived for the coarsest 10 percent of the gold grains to become concentrated in placers in the stream bed (esker).

In the RC drilling program, only samples of till and gravel were collected. Consequently the gold grain content of the silty outwash sand that overlies the till was not established. However, the sample collected immediately above the thick till section in Hole 23 (Fig. 22) did consist mainly of this outwash sand with only a few thin interbeds of pebbly gravel (Appendix B) and it yielded 7 gold grains while the six coarser gravel samples yielded 0 to 3 grains (Table 6) and, as previously noted, most of the till samples yielded 0 to 5 grains. The high magnetite content of the anomalous surface samples suggests that after the outwash sand was deposited it was extensively reworked and winnowed by the meltwater that would have continued to flow over it in braided streams as the ice receded up the 40 km long valley in which the sand was deposited (Figs. 4, 6, 7). This valley-constrained meltwater channel probably existed for 200 to 400 hundred years since the rate of meltback of the ice front was ~100 to 200 m per year. Such prolonged reworking of the outwash sand would tend to concentrate not only magnetite and gold grains near its surface but also produce a stony, till-like lag deposit atop the sand. It appears that this gold-enriched lag deposit was mistaken for and sampled as till.

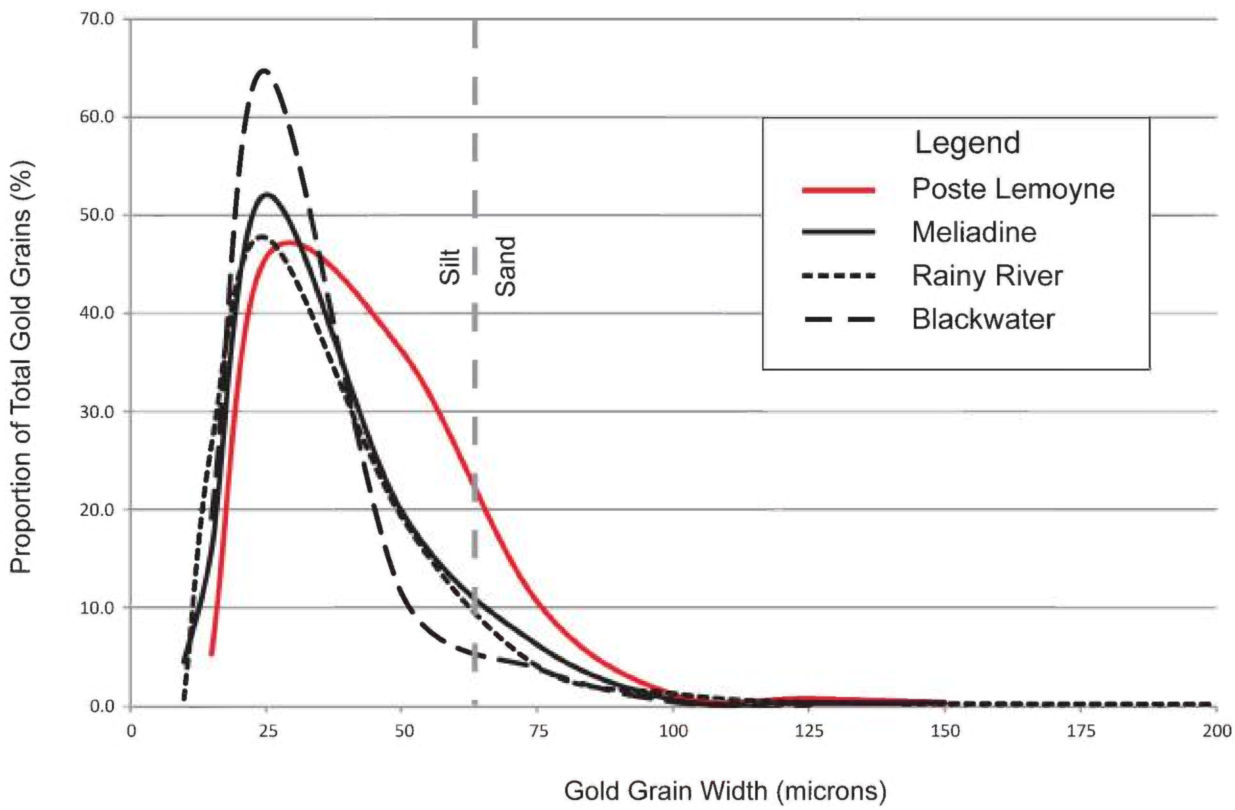

Figure 23 – Particle size distribution of the gold grains in the six most anomalous surface samples relative to the distribution in known till-hosted dispersal trains from the large Meliadine, Rainy River and Blackwater gold deposits.

5. CONCLUSIONS AND RECOMMENDATIONS

The objective of the RC drilling was to sample till beneath the outwash sand cover that is present up-ice from the gold grain anomaly that Virginia Mines outlined by surface till sampling and thereby trace the gold grains to their presumed bedrock source.

The drilling has clearly shown that the sand-covered till contains only background levels of gold grains and that the bedrock beneath the till is not sheared or hydrothermally altered and consistently contains negligible sulphides and <2 ppb Au. The anomalous samples collected by Virginia Mines appear to have consisted of reworked outwash sand rather than till. This reworking occurred because the esker/outwash sediments were deposited in a 40 km long bedrock valley and meltwater continued to flow along this valley for hundreds of years thereafter, probably in braided streams similar to those flowing from the Lowell Glacier in the Kluane Ice Field in the Yukon (Fig. 24). These streams concentrated magnetite and silt-sized gold grains from the fine, silty outwash sand which was already slightly enriched in fine gold grains that had been flushed from the much coarser, higher-energy esker gravel. The streams also concentrated pebbles and cobbles and mixed them with the silty outwash sand to produce a bimodal lag deposit that resembles till and appears to have been sampled inadvertently along with the true till that occurs on either side of the valley.

Fig. 24 – Braided streams draining meltwater from the Lowell Glacier in the Kluane Ice Field, Yukon. Similar streams would have flowed over and winnowed the valley-constrained outwash sediments on either side of the esker in the drill area for hundreds of years as the ice melted back along the 40 km long valley

Due to the consistently negative and very definitive results obtained from the RC drilling program, it is recommended that no additional work be performed in or near the drill area.

* * * * * * *

6. CERTIFICATE – Stuart A. Averill

I, Stuart A. Averill, residing at 192 Powell Avenue, Ottawa, Ontario, Canada hereby certify as follows:

That I attended the University of Manitoba at Winnipeg, Manitoba and graduated with a B.Sc. (Hons.) in Geology in 1969;

That I have worked continuously in the field of mineral exploration geology since 1971;

That I am Chairman of Overburden Drilling Management Limited, 107-15 Capella Court, Nepean, Ontario, an independent geological consulting company that I founded in 1974;

That I am a Member of the Association of Professional Geoscientists of Ontario and the Association of Professional Engineers and Geoscientists of Newfoundland and a Fellow of the Geological Association of Canada;

That I was granted permission by L'Ordre des Géologues due Québec under special authorization number 334 to work on the Post Lemoyne Extension project.

That this technical report is based on data gathered on the subject property by employees of Overburden Drilling Management Limited;

That I have no direct or indirect interest in Exploration Osisko-Baie James Inc.

Stuart A. Averill, B.Sc. (Hons.), P.Geo.

Dated at Ottawa, Ontario this 7th day of October, 2015

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ODM

Appendix A

Mining Claims Comprising the PLEX Property

Claim No.	Map Sheet	Area	Recording Date	Anniversary Date	Claim No.	Map Sheet	Area	Recording Date	Anniversary Date
401669832	33G05	51.27	20090729	20170728	401678345	33G11	51.22	20090729	20170728
401671449	33G07	51.35	20051129	20171128	401678413	33G11	51.20	20100603	20160602
401669819	33G05	51.27	20091102	20171101	401670301	33G06	51.34	20051129	20171128
401670378	33G06	51.31	20040406	20160405	401678311	33G11	51.24	20131018	20171017
401671444	33G07	51.35	20051129	20171128	401671495	33G07	51.33	20051129	20171128
401678318	33G11	51.23	20090729	20170728	401669790	33G05	51.28	20091102	20171101
401678352	33G11	51.22	20090729	20170728	401669780	33G05	51.28	20091102	20171101
401670326	33G06	51.33	20051129	20171128	401678433	33G11	51.19	20100603	20160602
401671114	33G06	51.28	20090729	20170728	401678376	33G11	51.21	20090729	20170728
401670375	33G06	51.31	20040406	20160405	401670406	33G06	51.30	20040406	20160405
401670415	33G06	51.30	20020610	20160609	401671399	33G07	51.37	20051129	20171128
401678321	33G11	51.23	20100812	20160811	401670486	33G06	51.27	20020610	20160609
401678394	33G11	51.21	20100504	20160503	401670464	33G06	51.28	20100728	20160727
401671186	33G06	51.25	20090729	20170728	401671148	33G06	51.27	20021119	20161118
401678343	33G11	51.22	20090729	20170728	401669852	33G05	51.26	20091028	20171027
401671123	33G06	51.28	20040406	20160405	401671150	33G06	51.27	20021119	20161118
401670388	33G06	51.31	20080908	20160907	401678365	33G11	51.22	20071213	20151212
401670403	33G06	51.30	20040406	20160405	401671376	33G07	51.38	20051129	20171128
401669789	33G05	51.28	20091102	20171101	401678363	33G11	51.22	20100504	20160503
401678395	33G11	51.21	20100504	20160503	401680808	33G12	51.24	20090729	20170728
402576829	33G11	51.20	20100603	20160602	401671166	33G06	51.26	20090729	20170728
401678458	33G11	51.18	20100603	20160602	401670396	33G06	51.30	20040406	20160405
401678300	33G11	51.24	20090729	20170728	401670470	33G06	51.28	20100601	20160531
401671385	33G07	51.38	20051129	20171128	401671379	33G07	51.38	20051129	20171128
401671439	33G07	51.35	20051129	20171128	401678410	33G11	51.20	20100603	20160602
401670424	33G06	51.29	20040406	20160405	401670436	33G06	51.29	20020610	20160609
401678386	33G11	51.21	20090728	20170727	401678320	33G11	51.23	20100716	20160715
401678301	33G11	51.24	20100812	20160811	401670380	33G06	51.31	20040406	20160405
401669889	33G05	51.25	20090729	20170728	401678407	33G11	51.20	20100603	20160602
401671197	33G06	51.25	20080522	20160521	401669781	33G05	51.28	20091102	20171101
401670412	33G06	51.30	20020610	20160609	401678333	33G11	51.23	20071213	20151212
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Claim No.	Map Sheet	Area	Recording Date	Anniversary Date	Claim No.	Map Sheet	Area	Recording Date	Anniversary Date
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Claim No.	Map Sheet	Area	Recording Date	Anniversary Date	Claim No.	Map Sheet	Area	Recording Date	Anniversary Date
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Claim No.	Map Sheet	Area	Recording Date	Anniversary Date	Claim No.	Map Sheet	Area	Recording Date	Anniversary Date
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402576404	33G05	51.26	20090729	20170728	401678298	33G11	51.24	20090729	20170728
401670437	33G06	51.29	20020610	20160609	401670439	33G06	51.29	20020610	20160609
401678317	33G11	51.23	20090729	20170728	401678416	33G11	51.20	20100504	20160503
402576515	33G07	51.38	20051129	20171128	401678414	33G11	51.20	20100603	20160602
401669861	33G05	51.26	20090729	20170728	401671451	33G07	51.35	20051129	20171128
401678303	33G11	51.24	20080522	20160521	401669824	33G05	51.27	20091102	20171101
401670386	33G06	51.31	20051129	20171128	402576813	33G11	51.23	20090729	20170728
401671094	33G06	51.29	20040406	20160405	401670453	33G06	51.28	20040406	20160405
401678346	33G11	51.22	20090729	20170728	401671183	33G06	51.25	20090729	20170728
401678330	33G11	51.23	20071213	20151212	401678411	33G11	51.20	20100603	20160602
401671191	33G06	51.25	20090729	20170728	401670332	33G06	51.33	20051129	20171128
401670427	33G06	51.29	20040406	20160405	401678406	33G11	51.20	20100603	20160602
401678347	33G11	51.22	20090729	20170728	401669830	33G05	51.27	20100503	20160502
401678327	33G11	51.23	20080522	20160521	402927693	33G06	3.83	20020610	20160609
401671428	33G07	51.36	20090728	20170727	401671091	33G06	51.29	20040406	20160405
401669792	33G05	51.28	20091102	20171101	401678366	33G11	51.22	20071213	20151212
401671206	33G06	51.25	20131018	20171017	401670400	33G06	51.30	20040406	20160405
401671149	33G06	51.27	20050502	20161118	401670463	33G06	51.28	20100705	20160704
401670416	33G06	51.30	20020610	20160609	401671443	33G07	51.35	20051129	20171128
401671093	33G06	51.29	20040406	20160405	401671359	33G07	51.39	20051129	20171128
401670426	33G06	51.29	20040406	20160405	401671121	33G06	51.28	20040406	20160405
401671179	33G06	51.26	20021119	20161118	401671424	33G07	51.36	20051129	20171128
401671176	33G06	51.26	20021119	20161118	401678367	33G11	51.22	20071213	20151212
401670450	33G06	51.28	20040406	20160405	401671383	33G07	51.38	20051129	20171128
401671445	33G07	51.35	20051129	20171128	401669751	33G05	51.29	20091102	20171101
401680799	33G12	51.24	20090729	20170728	402566152	33G06	51.26	20100621	20160620
401678323	33G11	51.23	20090729	20170728	401671152	33G06	51.27	20021119	20161118
401670331	33G06	51.33	20051129	20171128	401678408	33G11	51.20	20100603	20160602
401669836	33G05	51.27	20090729	20170728	401670444	33G06	51.29	20080908	20160907
401670458	33G06	51.28	20040406	20160405	401671427	33G07	51.36	20090728	20170727
401670360	33G06	51.32	20051129	20171128	401670357	33G06	51.32	20051129	20171128
401671401	33G07	51.37	20051129	20171128	401678378	33G11	51.21	20090729	20170728
401670389	33G06	51.31	20080908	20160907	401670394	33G06	51.31	20080910	20160909
401670459	33G06	51.28	20100602	20160601	401678335	33G11	51.23	20071213	20151212
401669886	33G05	51.25	20090729	20170728	401671455	33G07	51.35	20090728	20170727
401670407	33G06	51.30	20040406	20160405	401670432	33G06	51.29	20040406	20160405
401669860	33G05	51.26	20090729	20170728	401670483	33G06	51.27	20020610	20160609
401669887	33G05	51.25	20090729	20170728	401670434	33G06	51.29	20100728	20160727
401671493	33G07	51.33	20051129	20171128	401670440	33G06	51.29	20020610	20160609
401678385	33G11	51.21	20090728	20170727	401669753	33G05	51.29	20091102	20171101
402576809	33G11	51.24	20080522	20160521	401669837	33G05	51.27	20100503	20160502
401671175	33G06	51.26	20021119	20161118	401678383	33G11	51.21	20090728	20170727
401671119	33G06	51.28	20040406	20160405	401678290	33G11	51.24	20090729	20170728
401671145	33G06	51.27	20090729	20170728	401678297	33G11	51.24	20090729	20170728
401671419	33G07	51.36	20051129	20171128	401678460	33G11	51.18	20100603	20160602

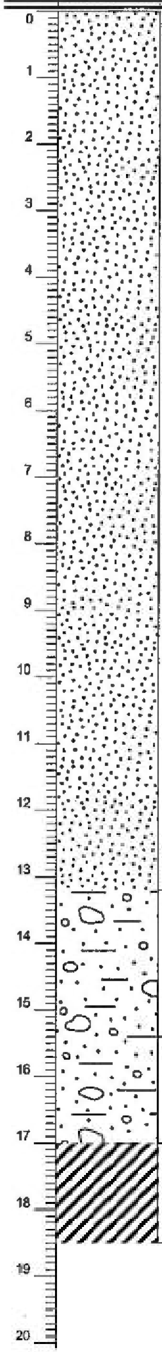
Appendix B

Reverse Circulation Drill Hole Logs

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-01	Start Date: 30-Jul-15	Travel: 6:00-6:15	Geologist: S. Keays
Site No.:17	End Date: 30-Jul-15		Drilling Company: SES
Location: 481189 mE, 5927021 mN	Move to Hole:	Mechanical downtime:	Driller: Steve Pullen
Elevation: 252 m	Start Drilling: 6:30 End Drilling: 8:30	Standby Time:	Bit No.: C49815
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 0 to 18.5 m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



Sample No.	Unit		Interval	Material	Description
	0.0 - 16.0 m	*Glaciofluvial*	0.0 to 13.2 m	Sand	Sorted very fine to medium grained beige sand grading to grey-beige downhole. @ 3.0 m sorted fine to coarse grained grey-beige sand, predominately medium sand below 3.5 m. @ 6.0 m occasional thin (10 cm) intervals of sorted coarse esker sand, but mostly medium sand downhole.
01	16.0 - 17.0 m	*Till*	13.2 to 16.0 m	Gravel	Poorly sorted fine grained grey-beige sand matrix, pebble to cobble size, sub-rounded to rounded clast of composition: 10% volcanics and 90% granitics. Below 15 m continued intervals of medium to coarse sand.
02			16.0 to 17.0 m	Till	Unsorted, grey-beige silt to fine sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
03	17.0 - 18.5 m	*Bedrock*	17.0 to 18.5 m	Bedrock	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 18.5 m

Note: Subsequent laboratory examination indicates Sample 01 section is till, not gravel

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STEPHEN M. KEAYS
PRACTISING MEMBER
2126
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REMARKS

Drilling:

Mechanical Downtime:

Standby:

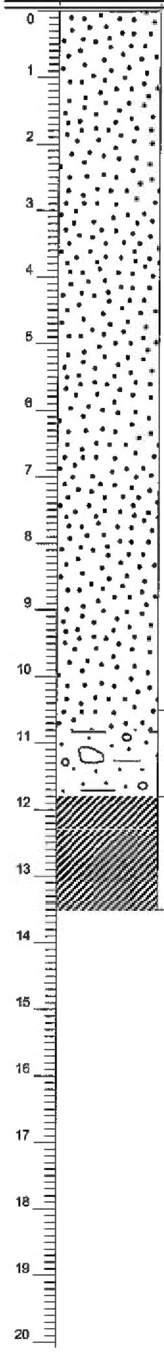
Other:

CONSUMABLES

New sub

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-002	Start Date: 30-Jul-15	Travel:	Geologist: S. Keays
Site No.:19	End Date: 30-Jul-15		Drilling Company: SES
Location: 481216 mE, 5926482 mN	Move to Hole: 8:30-9:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 289 m	Start Drilling: 9:15 End Drilling: 10:15	Standby Time:	Bit No.: C49815
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 18.5 to 32 m



Sample No. and Interval	Descriptive Log				
	0 - 10.8 m	*Glaciofluvial*	0.0 to 10.8 m	Sand	Initially very fine to fine grained beige sand. Bebw 2 m fine sand grading to medium grained sand.
01	10.8 - 11.8 m	*Till*	10.8 to 11.8 m	Till	Unsorted, grey-beige silt to fine sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics. Local clast content increasing downhole.
02	11.8 - 13.5 m	*Bedrock*	11.8 to 13.5 m	Bedrock	Felsic intrusive / granite: pale grey to pink, fine to medium grain, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 13.5 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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STEPHEN M. KEAYS
PRACTISING MEMBER
2126
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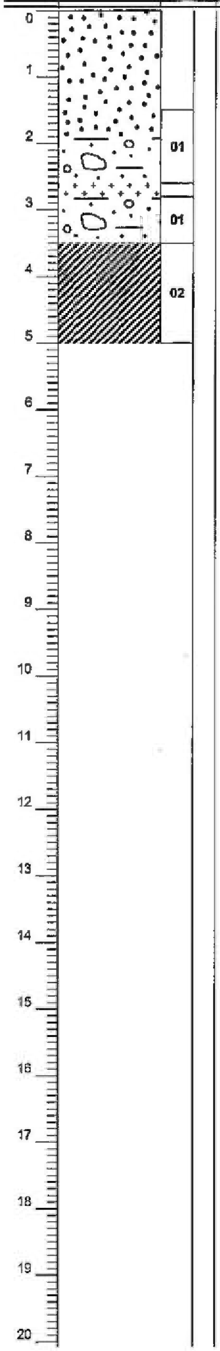
OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-003	Start Date: 30-Jul-15	Travel:	Geologist: S. Keays
Site No.:18	End Date: 30-Jul-15		Drilling Company: SES
Location: 481144 mE, 5926692 mN	Move to Hole: 10:15-10:45	Mechanical downtime:	Driller: Steve Pullen
Elevation: 274 m	Start Drilling: 10:45 End Drilling: 11:30	Standby Time:	Bit No.: C49815
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 32 to 37 m

Depth (metres) | Graphic Log | Sample No. and Interval



Descriptive Log

0 - 1.9 m	*Glaciofluvial*	0.0 to 1.9 m	**Sand**	Very fine to fine grained grey-beige sand.
1.9 - 3.5 m	*Till*	1.9 to 2.6 m	**Till**	Unsorted, grey-beige silt to fine sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
		2.6 to 2.8 m	**Boulder**	Granitic
		2.8 to 3.5 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
3.5 - 5 m	*Bedrock*	3.5 to 5.0 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 5.0 m

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REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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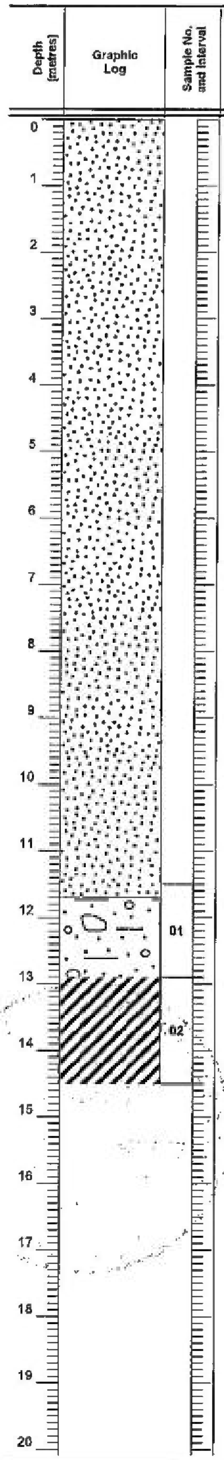
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-04	Start Date: 30-Jul-15	Travel:	Geologist: S. Keays
Site No.:15	End Date: 30-Jul-15		Drilling Company: SES
Location: 480619 mE, 5926369 mN	Move to Hole: 11:30-12:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 277 m	Start Drilling: 12:15 End Drilling: 13:15	Standby Time:	Bit No.: C49815
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 37 to 51.5 m



Descriptive Log

0.0 - 11.7 m	***Glaciofluvial***	0.0 to 11.7 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
11.7 - 12.9 m	***Till***	11.7 to 12.9 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics. Local clast composition increasing with depth.
12.9 - 14.5 m	***Bedrock***	12.9 to 14.5 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 14.5 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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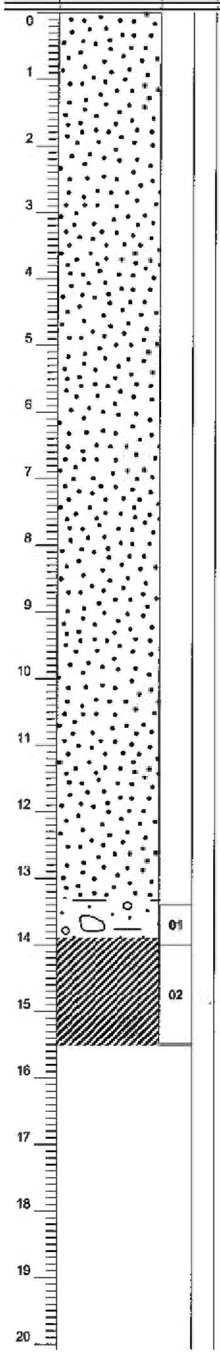
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-005	Start Date: 30-Jul-15	Travel:	Geologist: S. Keays
Site No.:14	End Date: 30-Jul-15		Drilling Company: SES
Location: 480739 mE, 5926596 mN	Move to Hole: 13:15-13:30	Mechanical downtime:	Driller: Steve Pullen
Elevation: 277 m	Start Drilling: 13:30 End Drilling: 14:30	Standby Time:	Bit No.: C49815
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 51.5 to 67 m



Depth (metres)	Sample No. and Interval	Descriptive Log			
0 - 13.3 m		***Glaciofluvial***	0.0 to 13.3 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
13.3 - 13.9 m	01	***Till***	13.3 to 13.9 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
13.9 - 15.5 m	02	***Bedrock***	13.9 to 15.5 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 15.5 m

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STEPHEN M. KEAYS
PRACTISING MEMBER
2126

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

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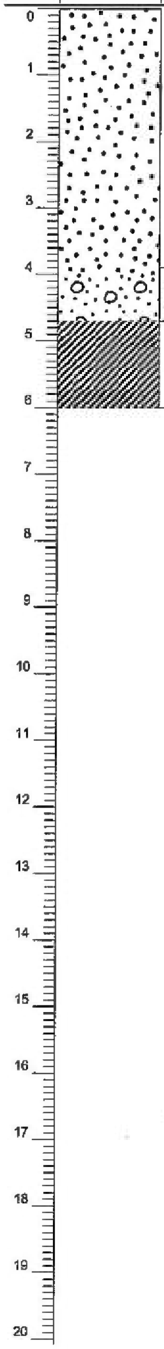
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-006	Start Date: 30-Jul-15	Travel:	Geologist: S. Keays
Site No.:13	End Date: 30-Jul-15		Drilling Company: SES
Location: 480572 mE, 5926888 mN	Move to Hole: 14:30-15:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 270 m	Start Drilling: 15:15 End Drilling: 16:30	Standby Time:	Bit No.: G139415
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 0 to 6 m



Sample No. and Interval	Descriptive Log				
	0 - 4.7 m	***Glaciofluvial***	0.0 to 4.0 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
01			4.0 to 4.7 m	**Gravel**	Sorted to poorly sorted fine to medium grained grey-beige sand matrix, mostly pebble sized clast of composition: 10% volcanics and 90% granitics, rounded to sub-rounded clast.
02	**4.7 - 6 m**	***Bedrock***	4.7 to 6.0 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 6.0 m

STEPHEN M. [illegible]
2126
ONTARIO

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REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

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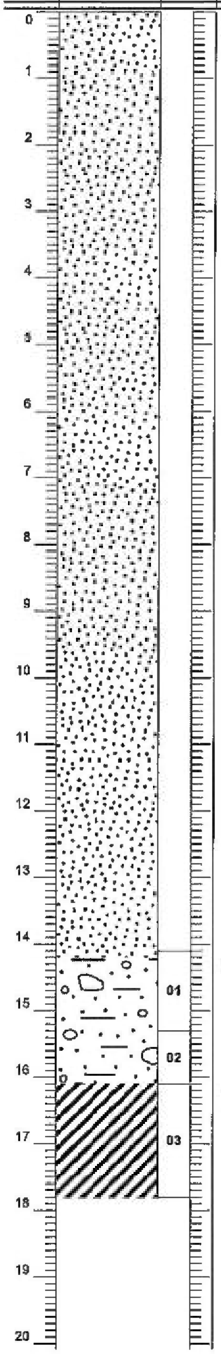
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-07	Start Date: 30-Jul-15	Travel: 18:00-18:30	Geologist: S. Keays
Site No.:06	End Date: 30-Jul-15		Drilling Company: SES
Location: 480220 mE, 5926540 mN	Move to Hole: 16:30-16:45	Mechanical downtime:	Driller: Steve Pullen
Elevation: 288 m	Start Drilling: 16:45 End Drilling: 18:00	Standby Time:	Bit No.: G139415
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 6 to 23.8 m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



0.0 - 14.2 m	***Glaciofluvial***	0.0 to 14.2 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
14.2 - 16.1 m	***Till***	14.2 to 16.1 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
16.1 - 17.8 m	***Bedrock***	16.1 to 17.8 m	**Bedrock**	Felsic intrusive: white to dark grey, fine to medium grained, massive to weakly foliated, < 20 % mafic minerals and > 30 % quartz, no sulfides visible. EOH = 17.8 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

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STEPHEN M. KEAYS
PRACTISING MEMBER
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REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-008	Start Date: 31-Jul-15	Travel: 6:15-6:30	Geologist: S. Keays
Site No.:05	End Date: 31-Jul-15		Drilling Company: SES
Location: 480177 mE, 5926370 mN	Move to Hole: 6:30-7:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 283 m	Start Drilling: 7:15 End Drilling: 9:00	Standby Time:	Bit No.: G139415
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 23.8 to 28.3 m

Depth (metres)	Sample No. and Interval	Descriptive Log				
0 - 0.4 m		*Glaciofluvial*	0.0 to .4 m	Sand	Very fine to fine grained grey-beige sand.
0.4 - 1 m	01	*Till*	0.4 to 1.0 m	Till	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 10% volcanics, 90% granitics.
1 - 2.5 m	02	*Bedrock*	1.0 to 2.5 m	Bedrock	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 2.5 m

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REMARKS

Drilling:

Mechanical Downtime:

Standby:

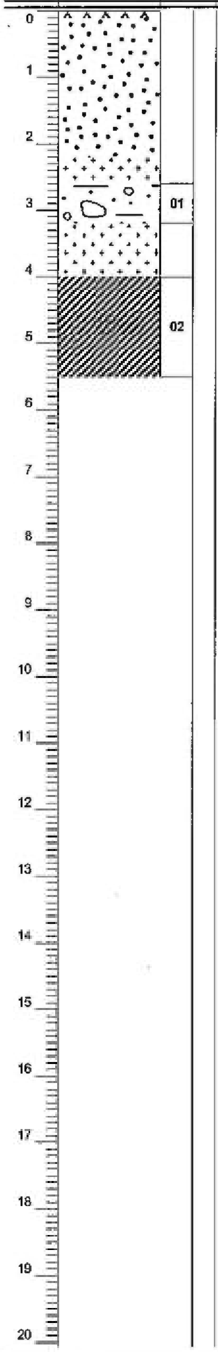
Other: moved drill 20 m from original site to acquire sufficient overburden for sampling.

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-009	Start Date: 31-Jul-15	Travel:	Geologist: S. Keays
Site No.:01	End Date: 31-Jul-15		Drilling Company: SES
Location: 479781 mE, 5926312 mN	Move to Hole: 9:00-9:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 284 m	Start Drilling: 9:15 End Drilling: 12:10	Standby Time:	Bit No.: G139415
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 28.3 to 32.5 m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



Interval	Unit	Sub-interval	Lithology	Description	Sample No.
0 - 0.1 m	*Organics*	0.0 to .1 m	**Organics**	Caribou moss	
0.1 - 2.2 m	*Glaciofluvial*	0.1 to 2.2 m	**Sand**	Very fine to fine grained grey-beige sand.	
2.2 - 4 m	*Till*	2.2 to 2.6 m	**Boulder**	Granitic	
		2.6 to 3.2 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics. Granitic boulders Between 2.2-2.6 m and 3.2-4.0 m.	01
		3.2 to 4.0 m	**Boulder**	Granitic	
4 - 5.5 m	*Bedrock*	4.0 to 5.5 m	**Bedrock**	Mafic volcanic: dark green, fine grained, massive to weakly foliated, trace quartz veinlets, no sulfides visible, weakly magnetic.	02

REMARKS

Drilling:

Mechanical Downtime:

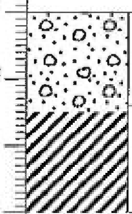
Standby:

Other: At 4.0 meters first rod broke off drill string, attempted to recover 1st rod (with bit and sub attached) with no success. Moved 3 meters south and redrilled.

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-10	Start Date: 31-Jul-15	Travel:	Geologist: S. Keays
Site No.:03	End Date: 31-Jul-15		Drilling Company: SES
Location: 479619 mE, 5926877 mN	Move to Hole: 12:10-13:00	Mechanical downtime:	Driller: Steve Pullen
Elevation: 297 m	Start Drilling: 13:00 End Drilling: 14:30	Standby Time:	Bit No.: G139315
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 5.5 to 9.5 m



Depth (metres)	Sample No. and Interval	Descriptive Log			
0.0 - 2.5 m		***Glaciofluvial***	0.0 to 1.0 m		No recovery
	01		1.0 to 2.5 m	**Gravel**	Sorted to poorly sorted fine to medium grained light ochre to beige sand matrix, pebble to cobble sized clast of composition: 10-20% volcanics and 80-90% granitics, rounded to sub-rounded clast.
2.5 - 4.0 m	02	***Bedrock***	2.5 to 4.0 m	**Bedrock**	Mafic volcanic: pale to dark green, fine grained, massive to weakly foliated, up to 10 % chlorite locally, trace quartz veinlets, no sulfides visible. EOH = 4.0 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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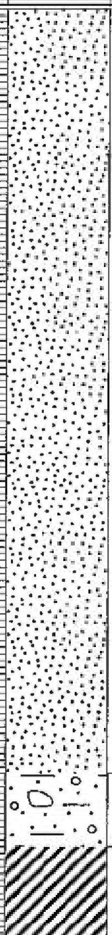
OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-11	Start Date: 31-Jul-15	Travel: 16:30-17:15	Geologist: S. Keays
Site No.:02	End Date: 31-Jul-15		Drilling Company: SES
Location: 479791 mE, 5926687 mN	Move to Hole: 14:30-14:45	Mechanical downtime:	Driller: Steve Pullen
Elevation: 286 m	Start Drilling: 14:45 End Drilling: 16:30	Standby Time:	Bit No.: G139315
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 9.5 to 23.5 m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



Depth (m)	Sample No.	Interval	Unit	Depth range	Material	Description
0		0.0 - 12.6 m	*Glaciofluvial*	0.0 to 11.5 m	Sand	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
11.5	01	11.5 - 12.6 m	*Till*	11.5 to 12.6 m	Gravel	Sorted to poorly sorted fine to medium grained grey-beige sand matrix, mostly pebble sized clast of composition: 5% volcanics and 95% granitics, rounded to sub-rounded clast.
12.6	02	12.6 - 14.0 m	*Bedrock*	12.6 to 14.0 m	Bedrock	Mafic volcanic: dark green, fine grained, massive to weakly foliated, trace quartz veinlets, no sulfides visible, weakly magnetic. EOH = 14.0 m

Note: Subsequent laboratory examination indicates Sample 01 section is till, not gravel

Depth scale: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Stephen Keays

REMARKS

Drilling:

Mechanical Downtime:

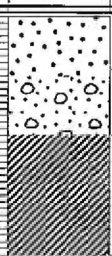
Standby:

Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-012	Start Date: 1-Aug-15	Travel: 6:00-6:15	Geologist: S. Keays
Site No.:07	End Date: 1-Aug-15		Drilling Company: SES
Location: 480144 mE, 5926935 mN	Move to Hole: 6:15-6:30	Mechanical downtime:	Driller: Steve Pullen
Elevation: 286 m	Start Drilling: 6:30 End Drilling: 7:30	Standby Time:	Bit No.: G139315
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 23.5 to 27.1 m



Depth (metres)	Sample No. and Interval	Descriptive Log				
0		0 - 1.8 m	*Glaciofluvial*	0.0 to .9 m	**Sand**	Very fine to fine grained grey-beige sand.
1	01			0.9 to 1.8 m	**Gravel**	Sorted to poorly sorted fine to medium grained grey-beige sand matrix, pebble to cobble sized clast of composition: 10% volcanics and 90% granitics. rounded to sub-rounded clast.
2–3	02	1.8 - 3.6 m	*Bedrock*	1.8 to 3.6 m	**Bedrock**	Mafic volcanic: dark green, fine grained, massive to weakly foliated, up to 5 % chlorite locally, trace quartz veinlets, no sulfides visible. EOH = 3.6 m

Note: Sample 01 was collected with shovel, not from drill hole.

PROFESSIONAL GEOSCIENTISTS
STEPHEN M. KEAYS
PRACTISING MEMBER
2126
ONTARIO

[illegible]

REMARKS

Drilling:

Mechanical Downtime:

Standby:

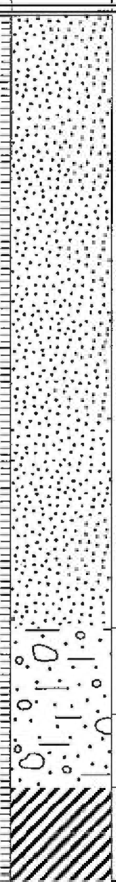
Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-13	Start Date: 1-Aug-15	Travel:	Geologist: S. Keays
Site No.:12	End Date: 1-Aug-15		Drilling Company: SES
Location: 480517 mE, 5927212 mN	Move to Hole: 7:30-8:00	Mechanical downtime:	Driller: Steve Pullen
Elevation: 272 m	Start Drilling: 8:00 End Drilling: 9:15	Standby Time:	Bit No.: G139315
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 27.1 to 40.1 m

Depth (metres) 0–20 | Graphic Log | Sample No. and Interval | Descriptive Log



Sample No. and Interval	Unit		Interval	Lithology	Description
	0.0 - 11.1 m	***Glaciofluvial***	0.0 to 9.2 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
01 (9.2–10.6 m)			9.2 to 11.1 m	**Gravel**	Sorted to poorly sorted fine to medium grained grey-beige sand matrix, mostly pebble sized clast of composition: 5-10% volcanics and 90-95% granitics, rounded to sub-rounded clast.
02 (10.6–11.6 m)	**11.1 - 11.6 m**	***Till***	11.1 to 11.6 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 10% volcanics, 90% granitics.
03 (11.6–13.0 m)	**11.6 - 13.0 m**	***Bedrock***	11.6 to 13.0 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 13.0 m

Note: Subsequent laboratory examination indicates Sample 01 section is till, not gravel

PROFESSIONAL GEOSCIENTISTS
STEPHEN M. KEAYS
PRACTISING MEMBER
2126
ONTARIO

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-14	Start Date: 1-Aug-15	Travel:	Geologist: S. Keays
Site No.:04	End Date: 1-Aug-15		Drilling Company: SES
Location: 479737 mE, 5927169 mN	Move to Hole: 9:15-10:00	Mechanical downtime:	Driller: Steve Pullen
Elevation: 289 m	Start Drilling: 10:00 End Drilling: 11:45	Standby Time:	Bit No.: G136615
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 0 to 4.6 m

Depth (metres)	Graphic Log	Sample No. and Interval	Descriptive Log				
0			0.0 - 1.6 m	*Glaciofluvial*	0.0 to 1.6 m	Sand	Initially very fine to fine grained beige sand. Below 1 m fine sand grading to medium grained sand.
2		01	1.6 - 2.8 m	*Till*	1.6 to 2.8 m	Till	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
3		02	2.8 - 4.6 m	*Bedrock*	2.8 to 4.6 m	Bedrock	Mafic volcanic: dark green to black, fine grained, massive to weakly foliated, weakly sheared, trace quartz veinlets, no sulfides visible, weakly magnetic. EOH = 4.6 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

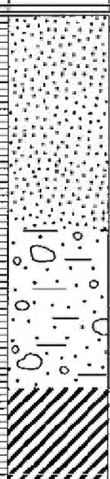
Other: placed new bit on to match circumference of fairly new sub

CONSUMABLES

PROFESSIONAL GEOSCIENTISTS ONTARIO
STEPHEN M. KEAYS
PRACTISING MEMBER
2126

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-15	Start Date: 1-Aug-15	Travel:	Geologist: S. Keays
Site No.:Extra 21	End Date: 1-Aug-15		Drilling Company: SES
Location: 479977 mE, 5927222 mN	Move to Hole: 11:45-12:00	Mechanical downtime:	Driller: Steve Pullen
Elevation: 289 m	Start Drilling: 12:00 End Drilling: 13:50	Standby Time:	Bit No.: G138615
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 4.6 to 11.6 m



Depth (metres)	Sample No. and Interval	Descriptive Log				
0		0.0 - 4.6 m	*Glaciofluvial*	0.0 to 3.2 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
						Note: Subsequent laboratory examination indicates Sample 01 section is till, not gravel
3.2–4.6	01			3.2 to 4.6 m	**Gravel**	Sorted to poorly sorted fine to medium grained grey-beige sand matrix, mostly pebble sized clast of composition: 5-10% volcanics and 90-95% granitics, rounded to sub-rounded clast.
4.6–5.6	02	**4.6 - 5.6 m**	*Till*	4.6 to 5.6 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
5.6–7.0	03	**5.6 - 7.0 m**	*Bedrock*	5.6 to 7.0 m	**Bedrock**	Mafic volcanic : dark green, fine grained, massive to weakly foliated, up to 5 % chlorite locally, trace quartz veinlets, no sulfides visible. EOH = 7.0 m

Depth scale: 0–20 m

STEPHEN M. KEAYS (seal)

REMARKS

Drilling:

Mechanical Downtime:

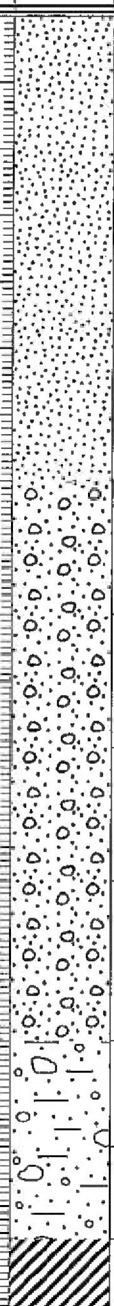
Standby:

Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-16	Start Date: 1-Aug-15	Travel: 17:45-18:00	Geologist: S. Keays
Site No.:08	End Date: 1-Aug-15		Drilling Company: SES
Location: 480190 mE, 5927266 mN	Move to Hole: 13:50-14:05	Mechanical downtime:	Driller: Steve Pullen
Elevation: 282 m	Start Drilling: 14:05 End Drilling: 17:45	Standby Time:	Bit No.: G138615
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 11.6 to 31.1 m



Depth (metres)	Sample No. and Interval	Descriptive Log				
0		**0.0 - 18.4 m**	*Glaciofluvial*	0.0 to 7.0 m	**Sand**	Very fine to fine grained grey-beige sand with frequent thin (10 cm) intervals of medium to coarse sand.
7	01			7.0 to 15.4 m	**Gravel**	Sorted to poorly sorted fine to medium grained grey-beige sand matrix, pebble to cobble sized clast of composition: 5-20% volcanics and 80-95% granitics. Rounded to sub-rounded clast. Occasional thin (10 cm) coarse sand intervals within gravel sequence, between 8.0-10.0 m matrix poor gravels.
9	02					
11	03					
13.4	04					
15.4	05			15.4 to 18.4 m	**Till**	
17	06					
18.4	07	**18.4 - 19.5 m**	*Bedrock*	18.4 to 19.5 m	**Bedrock**	Mafic volcanic: pale to dark green, fine grained, massive to weakly foliated, up to 10 % chlorite locally, trace quartz veinlets, trace disseminated sulfides. EOH = 19.5 m

Note: Subsequent laboratory examination indicates Samples 05 and 06 section is till, not gravel

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

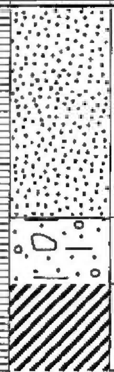
PROFESSIONAL GEOSCIENTISTS
STEPHEN M. KEAYS
PRACTISING MEMBER
2120
ONTARIO

Stephen Keays

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-17	Start Date: 2-Aug-15	Travel: 6:15-18:30	Geologist: S. Keays
Site No.:16	End Date: 2-Aug-15		Drilling Company: SES
Location: 481027 mE, 5927532 mN	Move to Hole: 6:30-7:30	Mechanical downtime:	Driller: Steve Pullen
Elevation: 277 m	Start Drilling: 7:30 End Drilling: 9:00	Standby Time:	Bit No.: G138615
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 31.1 to 56.6 m

Depth (metres)	Graphic Log	Sample No. and Interval	Descriptive Log			
21–23						
23–24		01	23.2 - 24.2 m ***Till***	23.2 to 24.2 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
24–25		02	24.2 - 25.5 m ***Bedrock***	24.2 to 25.5 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 25.5 m
26–40						



REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-17	Start Date: 2-Aug-15	Travel: 6:15-18:30	Geologist: S. Keays
Site No.:16	End Date: 2-Aug-15		Drilling Company: SES
Location: 481027 mE, 5927532 mN	Move to Hole: 6:30-7:30	Mechanical downtime:	Driller: Steve Pullen
Elevation: 277 m	Start Drilling: 7:30 End Drilling: 9:00	Standby Time:	Bit No.: G138615
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 31.1 to 56.6 m

Depth (metres)	Graphic Log	Sample No. and Interval	Descriptive Log				
0–20			0.0 - 23.2 m	*Glaciofluvial*	0.0 to 23.2 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand. Below 7.0 m predominately medium sand with occasional intervals of coarse sand and granules.

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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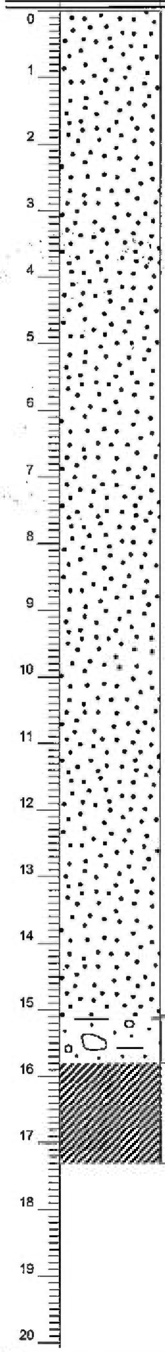
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-018	Start Date: 2-Aug-15	Travel:	Geologist: S. Keays
Site No.:20	End Date: 2-Aug-15		Drilling Company: SES
Location: 481106 mE, 5927699 mN	Move to Hole: 9:00-9:20	Mechanical downtime:	Driller: Steve Pullen
Elevation: 288 m	Start Drilling: 9:20 End Drilling: 10:30	Standby Time:	Bit No.: Used
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: to m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



Interval	Unit	Depth	Lithology	Description	Sample No.
0 - 15.1 m	***Glaciofluvial***	0.0 to 15.1 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand. Below 7.0 m predominately medium sand with occasional intervals of coarse sand and granules.	
15.1 - 15.8 m	***Till***	15.1 to 15.8 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.	01
15.8 - 17.3 m	***Bedrock***	15.8 to 17.3 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 17.3 m	02

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

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REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-19	Start Date: 2-Aug-15	Travel:	Geologist: S. Keays
Site No.:Extra 22	End Date: 2-Aug-15		Drilling Company: SES
Location: 481345 mE, 5927885 mN	Move to Hole: 10:30-11:07	Mechanical downtime:	Driller: Steve Pullen
Elevation: 290 m	Start Drilling: 11:07 End Drilling: 12:30	Standby Time:	Bit No.: Used
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: to m

Depth (metres)	Graphic Log	Sample No. and Interval	Descriptive Log
0 – 20			**0.0 - 20.3 m** *Glaciofluvial* 0.0 to 20.3 m **Sand** Very fine to fine grained grey-beige sand with frequent thin (10 cm) intervals of medium to coarse sand.

PROFESSIONAL GEOSCIENTISTS
STEPHEN M. KEAYS
PRACTISING MEMBER
2123
ONTARIO

Stephen Keays

REMARKS

Drilling:

Mechanical Downtime:

Standby:

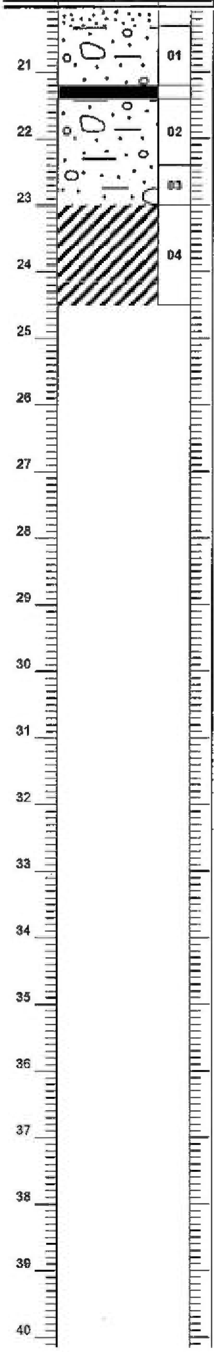
Other:

CONSUMABLES

used bit, non chargeable

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-19	Start Date: 2-Aug-15	Travel:	Geologist: S. Keays
Site No.:Extra 22	End Date: 2-Aug-15		Drilling Company: SES
Location: 481345 mE, 5927885 mN	Move to Hole: 10:30-11:07	Mechanical downtime:	Driller: Steve Pullen
Elevation: 290 m	Start Drilling: 11:07 End Drilling: 12:30	Standby Time:	Bit No.: Used
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: to m



Depth (metres)	Sample No. and Interval	Descriptive Log			
20.3 - 23.0	01, 02, 03	20.3 - 23.0 m ***Till***	20.3 to 21.2 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
			21.2 to 21.4 m	**Boulder**	Granitic
			21.4 to 23.0 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
23.0 - 24.5	04	23.0 - 24.5 m ***Bedrock***	23.0 to 24.5 m	**Bedrock**	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 24.5 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

used bit, non chargeable

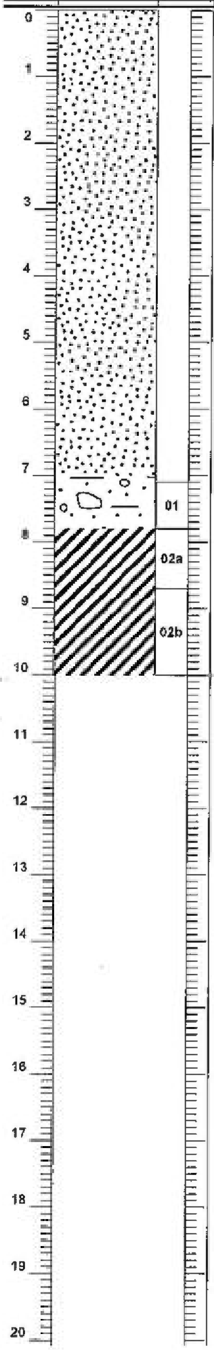
OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-20
Site No.: Extra 23
Location: 481468 mE, 5927642 mN
Elevation: 295 m
Datum: NAD 27 Zone: 18

Start Date: 2-Aug-15
End Date: 2-Aug-15
Move to Hole: 12:30-12:45
Start Drilling: 12:45 End Drilling: 13:45
Move to Next Hole:

Travel:
Mechanical downtime:
Standby Time:

Geologist: S. Keays
Drilling Company: SES
Driller: Steve Pullen
Bit No.: Used
Bit Meterage: to m



Depth (metres)	Sample No. and Interval	Descriptive Log				
0.0 - 7.0		0.0 - 7.0 m	*Glaciofluvial*	0.0 to 7.0 m	Sand	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
7.0 - 7.8	01	7.0 - 7.8 m	*Till*	7.0 to 7.8 m	Till	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
7.8 - 8.8	02a	7.8 - 10.0 m	*Bedrock*	7.8 to 8.8 m	Bedrock	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible.
8.8 - 10.0	02b			8.8 to 10.0 m	Bedrock	Mafic volcanic: pale to dark green, fine grained, massive to weakly foliated, trace quartz veinlets, trace disseminated sulfides. EOH = 10.0 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

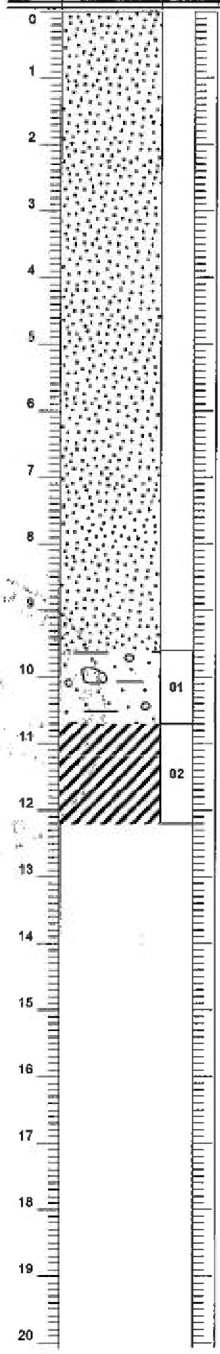
Other:

CONSUMABLES

used bit, non chargeable

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-21	Start Date: 2-Aug-15	Travel:	Geologist: S. Keays
Site No.: Extra 24	End Date: 2-Aug-15		Drilling Company: SES
Location: 481053 mE, 5927843 mN	Move to Hole: 13:45-14:00	Mechanical downtime:	Driller: Steve Pullen
Elevation: 280 m	Start Drilling: 14:00 End Drilling: 14:45	Standby Time:	Bit No.: Used
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: to m



Descriptive Log

Interval	Unit	Depth	Lithology	Description
0.0 - 9.6 m	*Glaciofluvial*	0.0 to 9.6 m	Sand	Very fine to fine grained grey-beige sand.
9.6 - 10.7 m	*Till*	9.6 to 10.7 m	Till	Unsorted, grey-beige silt to fine sand matrix, matrix supported, pebble to cobble sized clast of composition: 70% volcanics, 30% granitics. Clast content locally derived. downhole.
10.7 - 12.2 m	*Bedrock*	10.7 to 12.2 m	Bedrock	Mafic volcanic: dark green, fine grained, massive to weakly foliated, trace quartz veinlets, no sulfides visible. EOH = 12.2 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

used bit, non chargeable

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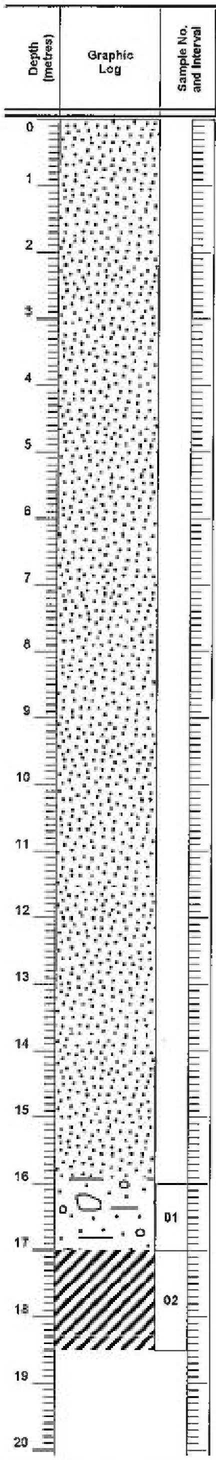
OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-22	Start Date: 2-Aug-15	Travel: 16:00-17:15	Geologist: S. Keays
Site No.:09	End Date: 2-Aug-15		Drilling Company: SES
Location: 480868 mE, 5927793 mN	Move to Hole: 14:45-15:00	Mechanical downtime:	Driller: Steve Pullen
Elevation: 315 m	Start Drilling: 15:00 End Drilling: 16:00	Standby Time:	Bit No.: G138915
Datum: NAD 27 Zone: 18	Move to Next Hole: 16:00-16:15		Bit Meterage: 0 to 18.5 m



Descriptive Log

Interval	Unit	Depth	Material	Description
0.0 - 15.9 m	***Glaciofluvial***	0.0 to 15.9 m	**Sand**	Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.
15.9 - 17.0 m	***Till***	15.9 to 17.0 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 30% volcanics, 70% granitics.
17.0 - 18.5 m	***Bedrock***	17.0 to 18.5 m	**Bedrock**	Felsic intrusive : pale grey to white, fine grained, massive to weakly foliated, mostly quartz phenocrysts with < 10% biotite, no sulfides visible. EOH = 18.5 m

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REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

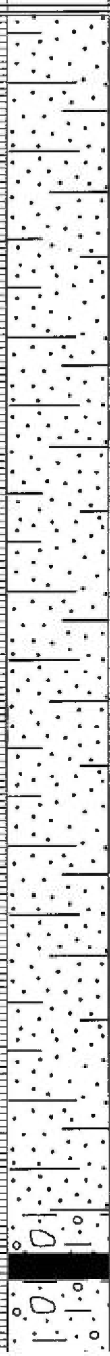
CONSUMABLES

ODM

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-23	Start Date: 3-Aug-15	Travel: 6:15-7:00	Geologist: S. Keays
Site No.:10	End Date: 3-Aug-15		Drilling Company: SES
Location: 480673 mE, 5927680 mN	Move to Hole:	Mechanical downtime:	Driller: Steve Pullen
Elevation: 266 m	Start Drilling: 7:00 End Drilling: 10:00	Standby Time:	Bit No.: G138915
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 18.5 to 50 m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



Depth (metres): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Sample No. and Interval: 01, 02, 02

Unit interval	Unit	Interval	Lithology	Description
0.0 - 18.0 m	***Glaciofluvial***	0.0 to 18.0 m	**Sand and silt**	Silt and very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand and pebbly gravel beds
18.0 - 30.2 m	***Till***	18.0 to 18.6 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 10-20% volcanics, 80-90% granitics.
		18.6 to 19.0 m	**Boulder**	Granitic
		19.0 to 21.0 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.

PROFESSIONAL GEOSCIENTISTS STEPHEN M. KEAYS PRACTISING MEMBER 2126 ONTARIO

REMARKS

Drilling:

Mechanical Downtime:

Standby:

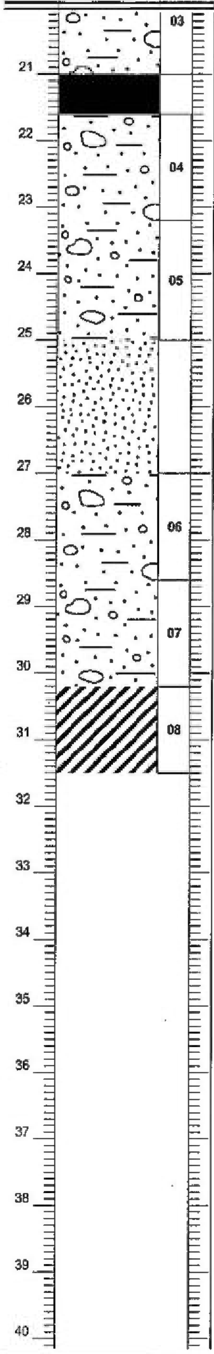
Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-23	Start Date: 3-Aug-15	Travel: 6:15-7:00	Geologist: S. Keays
Site No.:10	End Date: 3-Aug-15		Drilling Company: SES
Location: 480673 mE, 5927680 mN	Move to Hole:	Mechanical downtime:	Driller: Steve Pullen
Elevation: 266 m	Start Drilling: 7:00 End Drilling: 10:00	Standby Time:	Bit No.: G138915
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 18.5 to 50 m

Depth (metres) | Graphic Log | Sample No. and Interval | Descriptive Log



	21.0 to 21.6 m	**Boulder**	Granitic
	21.6 to 23.3 m	**Till**	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
	23.3 to 25.0 m	**Gravel**	Sorted to poorly sorted fine to medium grained light ochre to beige sand matrix, pebble to cobble sized clast of composition: 10-20% volcanics and 80-90% granitics, rounded to sub-rounded clast.
	25.0 to 27.0 m	**Sand**	Very fine to fine grained grey-beige sand with frequent thin (10 cm) intervals of medium to coarse sand.
	27.0 to 30.2 m	**Gravel**	Sorted to poorly sorted fine to medium grained light ochre to beige sand matrix, pebble to cobble sized clast of composition: 10-20% volcanics and 80-90% granitics. Rounded to sub-rounded clast.
30.2 - 31.5 m *Bedrock*	30.2 to 31.5 m	**Bedrock**	Mafic volcanic: dark grey to dark green, fine grained, weakly to moderately foliated, trace quartz veinlets, trace disseminated sulfides. EOH = 31.5 m

Note: Subsequent laboratory examination indicates Samples 05 to 07 sections are till, not gravel

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-24	Start Date: 3-Aug-15	Travel: 12:00-13:45	Geologist: S. Keays
Site No.:11	End Date: 3-Aug-15		Drilling Company: SES
Location: 480643 mE, 5927491 mN	Move to Hole: 10:00-10:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 278 m	Start Drilling: 10:15 End Drilling: 12:00	Standby Time:	Bit No.: G138915
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 50 to 79.5 m

Depth (metres)	Graphic Log	Sample No. and Interval	Descriptive Log
0–20			**0.0 - 25.0 m** ***Glaciofluvial*** 0.0 to 22.9 m **Sand** Very fine to fine grained grey-beige sand with occasional thin (10 cm) intervals of medium to coarse sand.

STEPHEN M. KEAYS PRACTISING MEMBER 2126 — PROFESSIONAL GEOSCIENTISTS ONTARIO

REMARKS

Drilling:

Mechanical Downtime:

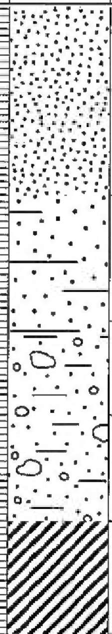
Standby:

Other:

CONSUMABLES

OVERBURDEN DRILLING MANAGEMENT LIMITED
REVERSE CIRCULATION DRILL HOLE LOG

Hole No.: PLE-15-RC-24	Start Date: 3-Aug-15	Travel: 12:00-13:45	Geologist: S. Keays
Site No.:11	End Date: 3-Aug-15		Drilling Company: SES
Location: 480643 mE, 5927491 mN	Move to Hole: 10:00-10:15	Mechanical downtime:	Driller: Steve Pullen
Elevation: 278 m	Start Drilling: 10:15 End Drilling: 12:00	Standby Time:	Bit No.: G138915
Datum: NAD 27 Zone: 18	Move to Next Hole:		Bit Meterage: 50 to 79.5 m



Depth (metres)	Sample No. and Interval	Unit		Descriptive Log	
22.9 to 25.0 m	01		22.9 to 25.0 m	Sand and silt	Mostly clean silt and very fine sand with a few rough pebbles from the top of the till section; very few cobble cuttings
25.0 to 27.8 m	02, 03	25.0 - 27.8 m *Till*	25.0 to 27.8 m	Till	Unsorted, grey-beige silt to fine grained sand matrix, matrix supported, pebble to cobble sized clast of composition: 20% volcanics, 80% granitics.
27.8 to 29.5 m	04	27.8 - 29.5 m *Bedrock*	27.8 to 29.5 m	Bedrock	Felsic intrusive / granite: pale grey to pink, fine to medium grained, equigranular, massive to weakly foliated, mostly quartz and K-feldspar phenocrysts with < 10% biotite, no sulfides visible. EOH = 29.5 m

REMARKS

Drilling:

Mechanical Downtime:

Standby:

Other:

CONSUMABLES

Appendix C

Binocular Microscope Descriptions of the Bedrock Cuttings

OVERBURDEN DRILLING MANAGEMENT LIMITED
BEDROCK CUTTING LOG

Client Name: Osisko
Project: Poste Lemoyne Extension (PLEX)

				Grain Size (mm)			Textural Components (%): Crystals/ Sand Grains		Textural Components (%)	Textural Components (%): Groundmass/ Matrix		Mineral Components	Mineral Components: Primary/Metamorphic/**Alteration** Minerals **(%)**: Silicates						
Sample No.	Colour and Magnetism	Structure	Primary/ Metamorphic Texture	Xls/ Sand Grains	Visible Frag- ments	Ground- mass/ Matrix	Qtz	Plag	Visible Frag- ments	Primary/ Met.	Tec- tonic/ Alt.	Ratio Mafics/Plag/ NaK-Spar/Qtz	Mafic	Ser	Other	Carbonates	FeTiCr Oxides	Sulphides	Lithology
PLE-15-RC-01-03	White to hematite-stained pale pink with black flecks; weakly magnetic	Weakly foliated	Weakly feldspar and mafic-phyric with coarse-grained anhedral equigranular interlocking (i.e. allotriomorphic) groundmass	5 (feldspar and mafic pheno-crysts)	NA	1.5-3	0	1 (pheno-crysts)	0	97	0	20:40:20:20 (plag is saussuritized cloudy white; K-spar is fresh, colourless to grey, perthitic with both feathery and lamellae varieties present and includes 1% phenocrysts)	20 hornblende (includes 1 as phenocrysts) <1 biotite	0	0.2 titanite	0	0.3 magnetite (finely disseminated)	**Low tr pyrite**	GRANODIORITE
PLE-15-RC-02-02	White to mostly hematite-stained salmon-pink with dark grey-green flecks; very weakly and patchily magnetic	Moderately foliated with 5% granulated shear seams	Weakly feldspar-phyric with coarse-grained anhedral to subhedral interlocking (allotriomorphic to hypidiomorphic) groundmass; chlorite occurs as clusters of smaller grains	5 (feldspar pheno-crysts)	NA	1.5-3	0	0	0	94	5 (granulated shear seams)	15:45:20:20 (NaK-spar includes 1 as phenocrysts)	15 chlorite	0	0.1 titanite	3 calcite (mainly in chloritic shear seams)	0.1 magnetite (sparsely disseminated)	0	GRANODIORITE
PLE-15-RC-03-02	White to patchily hematite-stained salmon-pink with black flecks; weakly magnetic	Weakly foliated, and fractured	Weakly feldspar-phyric with coarse-grained anhedral equigranular interlocking groundmass; biotite occurs as clusters of smaller flakes	5-8 (feldspar pheno-crysts)	NA	2-3	0	0	0	99	0	20:40:20:20 (NaK-spar includes 1 as phenocrysts)	15 biotite 5 hornblende	0	0.3 titanite	2 calcite (fracture-hosted)	0.2 magnetite (finely disseminated within biotite clusters)	0	GRANODIORITE
PLE-15-RC-04-02	Mottled black and white; nonmagnetic	Strongly foliated with 2% open vugs due to leaching of carbonate	Weakly feldspar-phyric with coarse-grained, very anhedral equigranular interlocking groundmass; biotite occurs as clusters of smaller grains	4-5 (feldspar pheno-crysts)	NA	1-2	0	0	0	98	0	25:35:20:20 (NaK-spar includes 2 as phenocrysts)	24 biotite 1 hornblende	0	2 epidote 0.5 titanite	3 calcite (patchy; partially leached leaving open vugs)	Tr ilmenite	0	GRANODIORITE
PLE-15-RC-05-02	White with black flecks and local salmon-pink hematite-stained patches; very weakly magnetic	Moderately foliated	Weakly feldspar-phyric with coarse-grained anhedral equigranular interlocking groundmass; biotite occurs as clusters of smaller flakes	5 (feldspar pheno-crysts)	NA	1.5-3	0	0	0	98	0	20:40:20:20 (NaK-spar includes 2 as phenocrysts)	20 biotite	0	0.5 epidote 0.2 titanite	3 calcite	0.2 magnetite	0	GRANODIORITE
PLE-15-RC-06-02	White with black flecks and local hematite-stained salmon-pink zones; weakly magnetic	Massive to weakly foliated; fresh, plag little-altered	Moderately feldspar and mafic-phyric with coarse-grained subhedral equigranular interlocking groundmass	Feldspar pheno-crysts 4-6 mafic pheno-crysts: 3	NA	1-2	0	0	0	94	0	15:40:25:20 (NaK-spar includes 5 as phenocrysts)	15 hornblende (includes 1 as phenocrysts)	0	0.5 titanite (yellow-brown)	Tr calcite (fracture-hosted)	0.3 magnetite (disseminated in hornblende) Tr rutile	0	GRANODIORITE

OVERBURDEN DRILLING MANAGEMENT LIMITED
BEDROCK CUTTING LOG

Client Name: Osisko
Project: Poste Lemoyne Extension (PLEX)

Sample No.	Colour and Magnetism	Structure	Primary/ Metamorphic Texture	Grain Size (mm): Xls/ Sand Grains	Grain Size (mm): Visible Frag-ments	Grain Size (mm): Ground-mass/ Matrix	Textural Components (%): Crystals/ Sand Grains: Qtz	Textural Components (%): Crystals/ Sand Grains: Plag	Textural Components (%): Visible Frag-ments	Textural Components (%): Groundmass/ Matrix: Primary/ Met.	Textural Components (%): Groundmass/ Matrix: Tec-tonic/ Alt.	Ratio Mafics/Plag/ NaK-Spar/Qtz	Mineral Components: Primary/Metamorphic/**Alteration** Minerals **(%)**: Silicates: Mafic	Silicates: Ser	Silicates: Other	Carbonates	FeTiCr Oxides	Sulphides	Lithology
PLE-15-RC-07-03	Speckled black and white; nonmagnetic	Strongly foliated and shear-granulated but not altered	Probably weakly feldspar-phyric with coarsely equigranular interlocking groundmass except biotite occurs as clusters of smaller grains; feldspar phenocrysts not recognizable due to dismemberment by shearing	NA	NA	1-2 (but mostly reduced by shear granulation and associated recrystall-ization	0	0	0	20	80 (shear granulated)	15:?:?:25 (ratio of plag to alkali feldspar indeterminate due to shear-related granulation and recrystall-ization)	15 biotite	0	2 epidote 0.5 titanite	0.5 calcite (disseminated)	Tr magnetite	**Low-tr pyrite**	GRANODIORITE
PLE-15-RC-08-02	Hematite-stained pale pink with dark green-black flecks; nonmagnetic	Moderately foliated and weakly shear-fractured	Medium to coarse-grained inequigranular interlocking	NA	NA	0.5-3	0	0	0	100	0	10:25:35:30	10 chlorite	0	0.5 epidote 0.1 titanite	2 calcite (fracture hosted)	0	**0.1 pyrite** (coarsely crystalline; fracture-hosted)	QUARTZ-MONZONITE
PLE-15-RC-09-02	Dark green-black; strongly nonmagnetic	Amphibolitized; strongly foliated and lineated	Finely equigranular interlocking but overprinted by acicular recrystallization	NA	NA	0.2-0.5 (variable)	0	0	0	100	0	90:10:0:0 (plag variable 0-40 but mostly absent)	80 actinolite (SEM confirmed; not hornblende) 20 biotite (SEM confirmed; not phlogopite)	0	0	Tr calcite (interstitial)	3 magnetite (finely disseminated)	**0.1 pyrite** (finely interstitial)	KOMATIITE (clinopyroxenite)
PLE-15-RC-10-02	Dark green-black; nonmagnetic	Amphibolitized; fabric variable from moderately foliated to strongly foliated and lineated	Finely equigranular interlocking	NA	NA	0.2-0.4	0	0	0	100	0	95:5:0:0	70 hornblende (SEM confirmed) 25 biotite (SEM confirmed)	0	0	0	0	0	KOMATIITE (clinopyroxenite)
PLE-15-RC-11-02	Dark green=-black; nonmagnetic	Amphibolitized; moderately foliated	Finely equigranular interlocking	NA	NA	0.2-0.4 (hornblende locally elongated to 1)	0	0	0	100	0	95:5:0:0	85 hornblende 10 biotite	0	0	0	0.1 ilmenite (finely disseminated)	**Low tr pyrite**	KOMATIITE (clinopyroxenite)
PLE-15-RC-12-02	Dark green with sparse leucocratic spots; nonmagnetic	Strongly foliated to schistose; contains 0.5% small, leucocratic lithic fragments; feldspar and mafic minerals are locally segregated suggesting cumulus layering	Finely equigranular interlocking; lithic fragments are aphanitic with minute amygdules	NA	2-3 (lithic fragments)	0.2-0.3	0	0	0	97	0	50:50:0:0	35 actinolite (SEM confirmed; not hornblende) 15 biotite	0	0	0	0	**Low tr pyrite**	BASALT

OVERBURDEN DRILLING MANAGEMENT LIMITED
BEDROCK CUTTING LOG

Client Name: Osisko
Project: Poste Lemoyne Extension (PLEX)

Sample No.	Colour and Magnetism	Structure	Primary/ Metamorphic Texture	Grain Size (mm): Xls/ Sand Grains	Grain Size (mm): Visible Frag-ments	Grain Size (mm): Ground-mass/ Matrix	Textural Components (%): Crystals/ Sand Grains: Qtz	Textural Components (%): Crystals/ Sand Grains: Plag	Textural Components (%): Visible Frag-ments	Textural Components (%): Groundmass/ Matrix: Primary/ Met.	Textural Components (%): Groundmass/ Matrix: Tec-tonic/ Alt.	Ratio Mafics/Plag/ NaK-Spar/Qtz	Mineral Components: Primary/Metamorphic/**Alteration** Minerals **(%)**: Silicates: Mafic	Silicates: Ser	Silicates: Other	Carbonates	FeTiCr Oxides	Sulphides	Lithology
PLE-15-RC-13-03	White to hematite-stained pale pink with black flecks, very weakly magnetic with strongly magnetic xenolith	Weakly foliated with single small xenolith	Weakly feldspar-phyric with coarse-grained subhedral equigranular interlocking groundmass; mafic minerals occur as clusters of smaller flakes; xenolith is internally fine-grained, cherty	5-8 (feldspar pheno-crysts)	~20 (single xenolith)	1.5-2	0	0	1 (xenolith)	97	0	15:35:25:25 (NaK-spar includes 2 as phenocrysts)	12 hornblende 3 biotite	0	0.3 titanite	1 calcite (disseminated within mafic clusters)	Host rock: 0.3 magnetite (finely disseminated) Cherty xenolith: 10 magnetite (thickly disseminated)	0	QUARTZ-MONZONITE
PLE-15-RC-14-02	Dark green-black; nonmagnetic	Strongly foliated	Coarsely equigranular interlocking but most feldspar metamorphically recrystallized as fine-grained, sugary aggregates	NA	NA	1.5-3	0	0	0	98	2 (biotitic shear seam)	70:30:0:0	65 hornblende 5 biotite (includes 2 in shear seams)	0	0	0	0.2 ilmenite (finely disseminated)	0.3 pyrite (disseminated)	GABBRO
PLE-15-RC-15-03	Dark green-black; nonmagnetic	Strongly foliated and moderately lineated	Medium-grained equigranular interlocking	NA	NA	0.5-1.5	0	0	0	100	0	75:25:0:0	75 hornblende	0	0	0	0.1 ilmenite (finely disseminated)	**Low tr pyrite**	GABBRO
PLE-15-RC-16-07	Dark green with dark brown seams; nonmagnetic	Amphibolitized; schistose with 15% shear seams	Finely equigranular interlocking but grain size variable down-section; shear zones are waxy	NA	NA	0.2-0.5	0	0	0	85	15 (shear seams)	100:0:0:0 (sample contains 5% granitic pebbles that will affect whole rock oxide percentages)	75 hornblende 25 biotite (includes 15 as wayx, talc-like shear seams; SEM confirmed)	0	0	0	1 leucoxene (unevenly disseminated)	0	KOMATIITE (clinopyroxenite)
PLE-15-RC-17-02	White with black flecks; moderately magnetic	Weakly foliated	Weakly feldspar-phyric with coarse-grained subhedral equigranular interlocking groundmass; biotite occurs as clusters of smaller flakes	5 (feldspar pheno-crysts)	NA	1.5-3	0	0	0	99	0	15:40:20:25 (NaK-spar includes 1 as phenocrysts)	15 biotite	0	0.2 titanite	3 calcite (disseminated within biotite clusters)	1 magnetite (diseminated within biotite clusters)	**Low-tr chalcopyrite**	GRANODIORITE
PLE-15-RC-18-02	Hematite-stained pale pink with black flecks; moderately magnetic	Weakly foliated	Weakly feldspar-phyric with very coarse-grained subhedral equigranular interlocking groundmass; biotite occurs as large cluasters of smaller flakes	8 (feldspar pheno-crysts)	NA	2-5	0	0	0	99	0	15:40:30:15 (NaK-spar includes 1 as pehnocrysts)	14 biotite 1 hornblende	0	0.2 epidote 0.3 titanite (both disseminated within biotite clusters)	2 calcite (disseminated within biotite clusters)	0.5 magnetite (dissemainted within biotite clusters)	0	QUARTZ-MONZONITE

OVERBURDEN DRILLING MANAGEMENT LIMITED
BEDROCK CUTTING LOG

Client Name: Osisko
Project: Poste Lemoyne Extension (PLEX)

				Grain Size (mm)			Textural Components (%)					Mineral Components							
							Crystals/ Sand Grains			Groundmass/ Matrix			Primary/Metamorphic/**Alteration** Minerals **(%)**						
													Silicates						
Sample No.	Colour and Magnetism	Structure	Primary/ Metamorphic Texture	Xls/ Sand Grains	Visible Frag-ments	Ground-mass/ Matrix	Qtz	Plag	Visible Frag-ments	Primary/ Met.	Tec-tonic/ Alt.	Ratio Mafics/Plag/ NaK-Spar/Qtz	Mafic	Ser	Other	Carbonates	FeTiCr Oxides	Sulphides	Lithology
PLE-15-RC-19-04	White to weakly limonite-stained yellow-ochre with black flecks; very weakly magnetic	Strongly foliated with attendant shear granulation	Weakly feldspar-phyric with coarse-grained anhedral equigranular interlocking groundmass; biotite occurs as coarse clusters of finer flakes that visibly replace coarse-grained hornblende	5 (feldspar pheno-crysts)	NA	1-2.5	0	0	0	70	30 (shear gran-ulation)	20:30:30:20 (NaK-spar includes 2 as phenocrysts)	19 biotite 1 hornblende	0	0.1 titanite	1 calcite (filling hairline fractures in crush zones)	0.1 magnetite (finely disseminated within biotite clusters)	0	QUARTZ-MONZONITE
PLE-15-RC-20-02A	White with black flecks; very weakly magnetic; contains 5% dark green-black cuttings as Sample 02B but no composite cuttings containing both lithologies	Moderately foliated with 10% fractured to granulated zones and 1% barren white qtz veins	Coarsely equigranular interlocking; mafic minerals occur as clusters of smaller grains	NA	NA	1.5-3	0	0	0	0	10 (granulated zones)	15:40:20:25	13 biotite 2 hornblende	0	0.5 titanite (0.1 in main biotitic phase, 5 in subordinate hornblende-bearing phase)	0	0.1 magnetite (finely disseminated within biotite clusters)	**0.3 pyrite** (fracture-hosted)	GRANODIORITE
PLE-15-RC-20-02B	Dark grey-black; nonmagnetic	Strongly foliated with 2% calc-silicate veinlets	Finely equigranular interlocking but hornfelsed with sugary recrystallization of feldspar (contact effect from granodiorite of Sample 02A); calc-silicate veinlets are medium-grained (0.5 mm) polygranular	NA	NA	0.2-0.4	0	0	0	98	2 (calc-silicate veinlets)	45:55:0:0	30 hornblende 15 biotite	0	Calc-silicate veinlets contains 30 diopside (SEM confirmed) and 2 titanite	0.5 calcite (20 in calc-silicate veinlets; absent from host rock)	0	**Tr pyrite** (mainly in calc-silicate veinlets)	BASALT (hornfelsed)
PLE-15-RC-21-02	Dark green-black; nonmagnetic	Weakly foliated	Finely equigranular interlocking with 2% amoeboid intercumulus feldspar segregations	1-2 (inter-cumulus feldspar)	NA	0.2-0.4	0	0	0	98	0	98:2:0:0 (plag occurs exclusively as intercumulus segregations)	70 hornblende 25-30 biotite	0	0	0	0	0	KOMATIITE (clnopyroxene)
PLE-15-RC-22-02	White to faintly hemtite-stained pale pink with black flecks; nonmagnetic	Weakly foliated	Weakly feldspar-phyric with coarsely subhedral to anhedral equigranular interlocking groundmass; mafic minerals occur mainly as clusters of smaller grains	5 (feldspar pheno-crysts)	NA	1.5-2	0	0	0	99	0	15:35:30:20 (NaK-spar includes 1 as phenocrysts)	12 biotite 3 hornblende	0	0.1 titanite Tr epidote	3 calcite (disseminated within mafic mineral clusters)	0	0	QUARTZ-MONZONITE

OVERBURDEN DRILLING MANAGEMENT LIMITED
BEDROCK CUTTING LOG

Client Name: Osisko
Project: Poste Lemoyne Extension (PLEX)

				Grain Size (mm)			Textural Components (%)					Mineral Components								
							Crystals/ Sand Grains			Groundmass/ Matrix			Primary/Metamorphic/**Alteration** Minerals **(%)**							
													Silicates							
Sample No.	Colour and Magnetism	Structure	Primary/ Metamorphic Texture	Xls/ Sand Grains	Visible Frag-ments	Ground-mass/ Matrix	Qtz	Plag	Visible Frag-ments	Primary/ Met.	Tec-tonic/ Alt.	Ratio Mafics/Plag/ NaK-Spar/Qtz	Mafic	Ser	Other	Carbonates	FeTiCr Oxides	Sulphides	Lithology
PLE-15-RC-23-08 (a)	85% of sample: Bronze brown; strongly magnetic	Massive to weakly foliated; cumulately interlayered with (b)	Amphibolitized; medium-grained acicular equigranular interlocking to weakly spinifex	NA	NA	0.5-1 (with local spinifex amphibole chains to 5)	0	0	0	100	0	100:0:0;0	80 anthophyllite (SEM confirmed; pale green to colourless; brown coour of rock is due to biotite being visible through transparent amphibole)	0	Tr titanite (restricted to a diopside-titanite calc-silicate veinlet comprising <1% of sample)	Tr calcite (restricted to calc-silicate veinlet)	5 magnetite (SEM confirmed; occurs as minute inclusions in both amphiboles)	**Tr pyrite** (restricted to calc-silicate veinlet)	KOMATIITE (orthopyroxene)
PLE-15-RC-23-08 (b)	15% of sample: Dark green-black; very strongly magnetic	Massive; cumulately interlayered with (a)	Amphibolitized; finely equigranular interlocking	NA	NA	0.15-0.3	0	0	0	100	0	80:20:0:0	20 biotite (SEM confirmed; not phlogopite)	0	0	3 calcite (disseminated)	3 magnetite (interstitial)	0	KOMATIITIC BASALT
PLE-15-RC-24-04	White to hemtite-stained salmon-pink with black flecks; nonmagnetic	Weakly foliated with single small <10 mm xenolith of basaltic komatiite	Weakly feldspar-phyric with coarse-grained equigranular interlocking groundmass; biotite occurs as clusters of smaller flakes; xenolith consists of coarse, cumulus hornblende with amoeboid intercumulus plag	5 (feldspar pheno-crysts)	<10 (basalt xenolith)	1.5-3	0	0	1 (basalt xenolith)	99	0	15:40:20:25 (NaK-spar includes 1 as phenocrysts)	15 biotite <1 hornblende	0	Tr titanite	1 calcite (disseminated within biotite clusters)	Tr magnetite	**Tr pyrite** (finely disseminated)	GRANODIORITE

Appendix D

Bedrock Geochemical, Whole Rock and Trace Element Analyses

Date Submitted:	14-Aug-15
Invoice No.:	A15-06701
Invoice Date:	02-Sep-15
Your Reference:	

Exploration Osisko Baie-James
300 Rue St. Paul, Suite 200
Quebec QC G1K 7R1
Canada

ATTN: Sylvain Trepanier

CERTIFICATE OF ANALYSIS

25 Crushed Rock samples were submitted for analysis.

The following analytical package was requested:

Code 1H INAA(INAAGEO)/Total Digestion ICP(TOTAL)
Code 4C (11+) Whole Rock Analysis-XRF

REPORT **A15-06701**

Notes:

Elements which exceed the upper limits should be analyzed by assay techniques. Some elements are reported by multiple techniques. These are indicated by MULT.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB
LAB Accrédité CCN

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Results

Analyte Symbol	Au	Ag	Cu	Cd	Mo	Pb	Ni	Zn	S	Al	As	Ba	Be	Bi	Br	Ca	Co	Cr	Cs	Eu	Fe	Hf	Hg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm
Lower Limit	2	0.3	1	0.3	1	3	1	1	0.01	0.01	0.5	50	1	2	0.5	0.01	1	2	1	0.2	0.01	1	1
Method Code	INAA	MULT INAA / TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	MULT INAA / TD-ICP	MULT INAA / TD-ICP	TD-ICP	TD-ICP	INAA	INAA	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA	INAA	INAA	INAA
PLE-15-001-03	< 2	< 0.3	9	< 0.3	1	14	26	70	< 0.01	8.24	6.5	910	1	< 2	< 0.5	2.18	10	40	< 1	0.7	2.41	3	< 1
PLE-15-002-02	< 2	< 0.3	24	< 0.3	< 1	10	28	32	< 0.01	8.14	5.3	950	2	< 2	< 0.5	1.50	9	45	< 1	0.7	2.47	4	< 1
PLE-15-003-02	< 2	< 0.3	18	< 0.3	< 1	15	25	62	< 0.01	7.70	4.8	1060	2	< 2	< 0.5	2.08	12	52	< 1	0.4	2.53	3	< 1
PLE-15-004-02	< 2	< 0.3	14	< 0.3	< 1	13	30	65	< 0.01	7.38	6.1	650	2	< 2	< 0.5	1.95	14	48	< 1	0.7	2.50	3	< 1
PLE-15-005-02	< 2	< 0.3	17	< 0.3	< 1	14	27	67	< 0.01	7.53	3.0	1130	2	< 2	< 0.5	2.32	12	59	< 1	0.9	2.52	3	< 1
PLE-15-006-02	< 2	< 0.3	2	< 0.3	< 1	11	29	73	< 0.01	7.88	5.1	1050	2	< 2	< 0.5	2.77	15	58	< 1	0.8	2.90	4	< 1
PLE-15-007-03	< 2	< 0.3	8	< 0.3	< 1	12	23	67	0.01	7.60	4.5	840	2	< 2	< 0.5	1.91	8	37	15	0.4	2.22	3	< 1
PLE-15-008-02	< 2	< 0.3	15	< 0.3	< 1	6	15	41	0.11	7.65	4.4	540	1	< 2	< 0.5	1.89	6	29	< 1	< 0.2	2.00	1	< 1
PLE-15-009-02	< 2	< 0.3	104	< 0.3	< 1	5	596	63	0.11	4.01	3.9	< 50	< 1	< 2	< 0.5	6.39	83	1820	7	0.3	8.15	1	< 1
PLE-15-010-02	< 2	< 0.3	52	< 0.3	< 1	< 3	311	80	0.02	6.22	1.5	< 50	< 1	< 2	< 0.5	5.92	74	895	< 1	< 0.2	8.29	1	< 1
PLE-15-011-02	< 2	< 0.3	31	< 0.3	< 1	< 3	445	68	0.03	5.20	3.2	120	< 1	< 2	< 0.5	6.23	79	1150	< 1	0.4	7.41	1	< 1
PLE-15-012-02	< 2	< 0.3	26	< 0.3	< 1	4	375	71	0.01	5.70	3.6	520	1	< 2	< 0.5	4.91	50	616	< 1	0.6	5.62	2	< 1
PLE-15-013-03	< 2	< 0.3	21	< 0.3	1	12	28	70	< 0.01	8.02	5.5	1240	2	< 2	< 0.5	2.46	14	50	< 1	0.8	2.60	4	< 1
PLE-15-014-02	< 2	< 0.3	103	< 0.3	< 1	< 3	127	60	0.07	7.73	2.5	< 50	< 1	< 2	< 0.5	7.43	53	344	< 1	0.3	7.20	< 1	< 1
PLE-15-015-03	< 2	< 0.3	61	< 0.3	< 1	< 3	80	88	0.01	7.34	< 0.5	< 50	< 1	< 2	< 0.5	6.94	50	198	< 1	0.3	8.36	1	< 1
PLE-15-016-07	< 2	< 0.3	3	< 0.3	< 1	< 3	792	65	< 0.01	5.14	2.9	240	< 1	< 2	< 0.5	4.74	167	1770	5	0.3	7.02	< 1	< 1
PLE-15-017-02	< 2	< 0.3	19	< 0.3	< 1	12	26	72	< 0.01	7.93	1.9	900	2	< 2	< 0.5	2.40	14	47	< 1	0.9	2.49	3	< 1
PLE-15-018-02	< 2	< 0.3	19	< 0.3	< 1	11	27	70	< 0.01	7.73	2.9	930	2	< 2	< 0.5	2.35	15	54	< 1	0.9	2.54	3	< 1
PLE-15-019-04	< 2	< 0.3	15	< 0.3	< 1	12	31	62	0.01	7.61	3.3	610	2	< 2	< 0.5	1.75	9	44	< 1	0.7	1.99	3	< 1
PLE-15-020-02A	< 2	< 0.3	34	< 0.3	< 1	10	28	51	0.13	7.39	1.8	510	1	< 2	< 0.5	2.62	11	67	< 1	0.9	2.12	2	< 1
PLE-15-020-02B	< 2	< 0.3	64	< 0.3	2	11	135	68	0.06	6.62	2.2	850	< 1	< 2	< 0.5	4.97	41	475	4	0.5	5.19	2	< 1
PLE-15-021-02	< 2	< 0.3	4	< 0.3	7	16	627	122	< 0.01	4.85	3.6	1030	3	< 2	< 0.5	4.34	53	836	7	1.2	5.21	3	< 1
PLE-15-022-02	< 2	< 0.3	8	< 0.3	< 1	11	22	53	< 0.01	7.54	4.2	690	2	< 2	< 0.5	2.15	6	42	< 1	0.6	1.92	2	< 1
PLE-15-023-08	< 2	< 0.3	56	< 0.3	< 1	8	772	67	0.15	3.97	5.8	480	< 1	< 2	< 0.5	5.32	72	1700	6	1.2	6.52	1	< 1
PLE-15-024-04	< 2	< 0.3	30	< 0.3	< 1	10	24	53	0.05	7.77	4.8	860	1	< 2	< 0.5	1.96	8	44	< 1	0.6	1.99	3	< 1

Results

Analyte Symbol	Ir	K	Li	Mg	Mn	Na	P	Rb	Sb	Sc	Se	Sr	Ta	Ti	Th	U	V	W	Y	La	Ce	Nd	Sm
Unit Symbol	ppb	%	ppm	%	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	5	0.01	1	0.01	1	0.01	0.001	15	0.1	0.1	3	1	0.5	0.01	0.2	0.5	2	1	1	0.5	3	5	0.1
Method Code	INAA	TD-ICP	TD-ICP	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA	TD-ICP	INAA	TD-ICP	INAA	INAA	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA
PLE-15-001-03	< 5	3.43	5	0.88	374	3.90	0.054	< 15	1.4	5.9	< 3	778	< 0.5	0.22	4.1	< 0.5	52	< 1	9	21.2	32	12	3.7
PLE-15-002-02	< 5	2.48	23	1.51	217	3.91	0.059	< 15	1.6	6.5	< 3	497	< 0.5	0.22	4.0	< 0.5	53	< 1	7	23.2	40	19	3.4
PLE-15-003-02	< 5	2.74	5	0.81	341	3.66	0.049	< 15	1.9	5.8	< 3	753	< 0.5	0.20	4.0	< 0.5	51	< 1	8	20.4	30	12	3.6
PLE-15-004-02	< 5	2.03	13	0.90	358	3.46	0.056	< 15	3.4	6.0	< 3	701	< 0.5	0.20	4.2	< 0.5	51	< 1	8	20.8	37	9	3.3
PLE-15-005-02	< 5	2.44	15	0.86	359	3.63	0.053	< 15	1.4	6.1	< 3	795	< 0.5	0.21	4.7	< 0.5	50	< 1	9	21.0	31	15	3.8
PLE-15-006-02	< 5	2.95	2	1.00	405	3.72	0.067	< 15	1.6	7.1	< 3	894	< 0.5	0.22	5.6	< 0.5	49	< 1	10	25.3	36	14	4.2
PLE-15-007-03	< 5	2.70	55	0.82	305	3.24	0.045	< 15	2.1	5.3	< 3	756	< 0.5	0.18	3.8	1.3	41	< 1	9	18.0	29	13	3.1
PLE-15-008-02	< 5	1.24	7	0.60	256	4.21	0.031	< 15	1.9	4.5	< 3	445	< 0.5	0.15	3.5	< 0.5	33	< 1	7	14.9	21	11	2.4
PLE-15-009-02	< 5	1.59	31	8.99	1220	0.73	0.017	75	3.2	28.8	< 3	76	< 0.5	0.36	< 0.2	< 0.5	169	< 1	13	2.3	7	< 5	1.5
PLE-15-010-02	< 5	0.88	31	7.28	1440	1.57	0.016	< 15	1.8	34.0	< 3	82	< 0.5	0.26	< 0.2	< 0.5	175	< 1	14	2.5	7	< 5	1.2
PLE-15-011-02	< 5	0.85	34	7.52	1310	1.46	0.031	< 15	0.8	28.7	< 3	192	< 0.5	0.34	< 0.2	< 0.5	174	< 1	14	5.2	9	< 5	1.8
PLE-15-012-02	< 5	1.46	19	6.23	1040	2.08	0.085	< 15	0.8	20.1	< 3	439	< 0.5	0.28	2.7	< 0.5	126	< 1	15	16.0	28	12	2.9
PLE-15-013-03	< 5	2.89	7	0.89	374	3.57	0.054	74	2.6	6.6	< 3	903	< 0.5	0.22	4.2	< 0.5	53	< 1	9	23.4	37	18	3.8
PLE-15-014-02	< 5	0.36	7	4.82	1230	1.28	0.018	< 15	0.6	36.9	< 3	117	< 0.5	0.36	< 0.2	< 0.5	202	< 1	15	2.8	8	< 5	1.4
PLE-15-015-03	< 5	0.28	5	3.83	1280	1.84	0.023	< 15	0.6	38.0	< 3	123	< 0.5	0.41	< 0.2	< 0.5	223	< 1	19	2.8	6	< 5	1.8
PLE-15-016-07	< 5	1.37	30	10.2	1150	0.82	0.033	< 15	7.7	23.8	< 3	197	< 0.5	0.30	1.5	< 0.5	166	523	11	5.4	7	< 5	1.5
PLE-15-017-02	< 5	3.09	11	0.94	385	3.61	0.053	< 15	1.1	6.8	< 3	804	< 0.5	0.22	4.1	< 0.5	54	< 1	9	25.8	43	18	3.8
PLE-15-018-02	< 5	3.09	16	0.88	379	3.64	0.055	< 15	1.0	6.7	< 3	742	< 0.5	0.20	4.2	< 0.5	50	< 1	9	25.3	40	15	3.9
PLE-15-019-04	< 5	3.03	10	0.82	315	3.52	0.047	< 15	0.7	5.4	< 3	569	< 0.5	0.17	5.7	< 0.5	41	< 1	8	21.4	37	11	3.0
PLE-15-020-02A	< 5	1.54	11	0.91	338	3.91	0.049	< 15	0.7	6.4	< 3	654	< 0.5	0.20	4.6	< 0.5	46	< 1	8	21.9	35	17	3.3
PLE-15-020-02B	< 5	2.42	20	4.66	944	2.10	0.077	< 15	0.7	23.2	< 3	438	< 0.5	0.28	2.7	< 0.5	137	< 1	13	13.1	23	7	2.4
PLE-15-021-02	< 5	3.32	29	8.57	1090	1.27	0.157	143	2.4	16.1	< 3	372	< 0.5	0.30	6.8	1.8	131	< 1	16	24.2	42	24	5.7
PLE-15-022-02	< 5	3.20	13	0.70	294	3.76	0.043	< 15	1.5	4.5	< 3	559	< 0.5	0.16	2.6	< 0.5	39	< 1	7	16.6	30	12	2.6
PLE-15-023-08	< 5	2.42	17	11.4	1120	0.65	0.110	109	3.9	20.9	< 3	704	< 0.5	0.35	6.9	< 0.5	137	< 1	12	32.5	52	26	5.1
PLE-15-024-04	< 5	2.55	14	0.86	278	3.82	0.048	< 15	1.9	4.8	< 3	589	< 0.5	0.16	3.2	< 0.5	38	< 1	7	17.9	30	14	2.8

Results

Analyte Symbol	Sn	Tb	Yb	Lu	Mass	Co3O4	CuO	NiO	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	Cr2O3	V2O5	LOI	Total
Unit Symbol	%	ppm	ppm	ppm	g	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	0.01	0.5	0.2	0.05		0.005	0.005	0.003	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.003		0.01
Method Code	INAA	INAA	INAA	INAA	INAA	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF
PLE-15-001-03	< 0.01	< 0.5	0.6	< 0.05	44.0	< 0.005	< 0.005	< 0.003	65.79	16.05	3.54	0.046	1.53	2.83	5.59	3.45	0.39	0.15	< 0.01	0.010	0.51	99.89
PLE-15-002-02	< 0.01	< 0.5	0.4	< 0.05	33.8	< 0.005	< 0.005	0.003	66.13	15.41	3.44	0.023	2.62	1.94	5.57	2.63	0.40	0.16	< 0.01	0.009	2.30	100.6
PLE-15-003-02	< 0.01	< 0.5	0.5	0.05	35.1	< 0.005	< 0.005	0.003	66.66	15.41	3.60	0.044	1.49	2.76	5.41	3.06	0.37	0.15	< 0.01	0.010	1.22	100.2
PLE-15-004-02	< 0.01	< 0.5	0.8	< 0.05	35.6	< 0.005	< 0.005	0.004	66.27	15.01	3.58	0.045	1.65	2.61	5.15	3.13	0.37	0.16	< 0.01	0.008	2.07	100.1
PLE-15-005-02	< 0.01	< 0.5	0.3	< 0.05	36.0	< 0.005	< 0.005	< 0.003	65.62	15.22	3.64	0.047	1.55	3.09	5.19	3.21	0.38	0.16	< 0.01	0.010	1.97	100.1
PLE-15-006-02	< 0.01	< 0.5	0.8	< 0.05	37.0	< 0.005	< 0.005	0.003	65.78	15.33	4.17	0.052	1.80	3.72	5.34	3.06	0.42	0.20	< 0.01	0.009	0.67	100.6
PLE-15-007-03	< 0.01	< 0.5	0.8	< 0.05	37.5	< 0.005	< 0.005	0.006	68.36	14.95	3.33	0.040	1.51	2.53	4.89	2.82	0.35	0.13	< 0.01	0.008	1.03	99.95
PLE-15-008-02	< 0.01	< 0.5	0.6	< 0.05	34.8	< 0.005	< 0.005	0.014	69.25	14.95	2.73	0.028	1.03	2.49	6.22	1.33	0.29	0.10	< 0.01	0.008	1.90	100.3
PLE-15-009-02	< 0.01	< 0.5	1.2	< 0.05	42.4	0.006	0.014	0.083	48.37	7.61	12.27	0.170	17.02	9.44	0.99	1.62	0.68	0.06	0.29	0.028	2.09	100.8
PLE-15-010-02	< 0.01	< 0.5	1.4	0.06	42.1	< 0.005	0.007	0.044	46.70	12.24	12.64	0.204	13.85	8.82	2.19	0.87	0.55	0.06	0.14	0.029	2.14	100.5
PLE-15-011-02	< 0.01	< 0.5	1.2	< 0.05	42.2	0.007	< 0.005	0.061	49.87	10.01	11.83	0.183	14.26	9.35	2.05	0.86	0.66	0.10	0.18	0.029	1.48	100.9
PLE-15-012-02	< 0.01	< 0.5	1.5	< 0.05	37.6	< 0.005	< 0.005	0.052	54.06	11.07	8.70	0.142	11.84	7.17	3.08	1.52	0.51	0.25	0.10	0.022	2.27	100.8
PLE-15-013-03	< 0.01	< 0.5	0.5	< 0.05	35.7	< 0.005	< 0.005	0.004	65.55	15.51	3.65	0.046	1.60	3.26	5.27	3.27	0.38	0.15	< 0.01	0.010	1.24	99.94
PLE-15-014-02	< 0.01	< 0.5	1.6	< 0.05	43.4	< 0.005	0.015	0.018	49.59	14.91	11.79	0.176	9.18	11.02	1.89	0.38	0.73	0.07	0.05	0.035	0.97	100.8
PLE-15-015-03	< 0.01	< 0.5	1.7	0.08	42.1	< 0.005	0.006	0.011	49.66	14.28	14.09	0.180	6.90	10.14	2.80	0.31	1.01	0.08	0.03	0.041	0.59	100.1
PLE-15-016-07	< 0.01	< 0.5	1.0	< 0.05	39.9	0.018	< 0.005	0.108	46.46	9.75	11.17	0.155	18.91	6.82	1.14	1.40	0.54	0.10	0.29	0.026	3.25	100.1
PLE-15-017-02	< 0.01	< 0.5	0.5	< 0.05	38.2	< 0.005	< 0.005	< 0.003	65.32	15.47	3.71	0.046	1.65	3.14	5.26	3.21	0.39	0.15	< 0.01	0.010	1.89	100.3
PLE-15-018-02	< 0.01	< 0.5	0.7	< 0.05	35.7	< 0.005	< 0.005	0.003	66.32	15.04	3.69	0.046	1.62	3.14	5.25	3.26	0.39	0.16	< 0.01	0.010	1.83	100.8
PLE-15-019-04	< 0.01	< 0.5	< 0.2	< 0.05	35.8	< 0.005	< 0.005	< 0.003	67.91	14.77	3.21	0.039	1.45	2.30	5.38	3.22	0.33	0.14	< 0.01	0.008	1.28	100.0
PLE-15-020-02A	< 0.01	< 0.5	0.6	< 0.05	37.7	< 0.005	0.005	0.003	66.92	14.90	3.43	0.042	1.67	3.54	5.80	1.66	0.36	0.15	< 0.01	0.011	1.85	100.3
PLE-15-020-02B	< 0.01	< 0.5	1.5	< 0.05	38.5	< 0.005	0.007	0.018	54.03	13.14	8.21	0.132	8.99	7.30	3.09	3.16	0.53	0.22	0.08	0.024	1.85	100.8
PLE-15-021-02	< 0.01	< 0.5	1.0	0.05	38.8	< 0.005	< 0.005	0.090	50.99	9.44	8.40	0.147	16.14	6.19	1.83	3.52	0.54	0.42	0.14	0.021	2.20	100.1
PLE-15-022-02	< 0.01	< 0.5	0.6	< 0.05	36.5	< 0.005	< 0.005	0.004	67.03	14.42	2.73	0.035	1.25	2.78	5.15	3.33	0.29	0.12	< 0.01	0.008	3.74	100.9
PLE-15-023-08	< 0.01	< 0.5	0.7	< 0.05	40.8	0.005	0.007	0.108	44.49	7.43	10.21	0.150	21.09	7.69	0.83	2.33	0.64	0.30	0.28	0.022	4.71	100.3
PLE-15-024-04	< 0.01	< 0.5	0.4	< 0.05	35.7	< 0.005	< 0.005	< 0.003	68.17	14.54	2.86	0.033	1.48	2.58	5.38	2.55	0.30	0.14	< 0.01	0.008	1.90	99.94

QC

Analyte Symbol	Au	Ag	Ag	Cu	Cd	Mo	Pb	Ni	Ni	Zn	Zn	S	Al	As	Ba	Be	Bi	Br	Ca	Co	Cr	Cs	Eu
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
Lower Limit	2	0.3	5	1	0.3	1	3	1	20	1	50	0.01	0.01	0.5	50	1	2	0.5	0.01	1	2	1	0.2
Method Code	INAA	TD-ICP	INAA	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	TD-ICP	TD-ICP	INAA	INAA	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA
GXR-1 Meas		30.8		1100	2.4	15	678	41		697		0.23	1.96			< 1	1310		0.85				
GXR-1 Cert		31.0		1110	3.30	18.0	730	41.0		760		0.257	3.52			1.22	1380		0.960				
MICA-FE Meas																							
MICA-FE Cert																							
GXR-4 Meas		3.5		6080	< 0.3	306	45	45		68		1.69	6.26			2	19		1.01				
GXR-4 Cert		4.0		6520	0.860	310	52.0	42.0		73.0		1.77	7.20			1.90	19.0		1.01				
SDC-1 Meas				27			21	35		91			7.92			3			1.01				
SDC-1 Cert				30.000			25.00	38.0		103.00			8.34			3.00			1.00				
BE-N Meas																							
BE-N Cert																							
AC-E Meas																							
AC-E Cert																							
AC-E Meas																							
AC-E Cert																							
DTS-2b Meas																							
DTS-2b Cert																							
DTS-2b Meas																							
DTS-2b Cert																							
Oreas 74a (Fusion) Meas																							
Oreas 74a (Fusion) Cert																							
BIR-1a Meas																							
BIR-1a Cert																							
DT-N Meas																							
DT-N Cert																							
DNC-1a Meas				104			3	249		56													
DNC-1a Cert				100.00			6.3	247		70.0													
NCS DC61105 Meas																							
NCS DC61105 Cert																							
SBC-1 Meas				30	< 0.3	1	27	84		167						3	< 2						
SBC-1 Cert				31.0000	0.40	2.40	35.0	82.8		186.0						3.20	0.70						
OREAS 45d (4-Acid) Meas				367		4	18	235		41		0.04	7.57			< 1	< 2		0.18				
OREAS 45d (4-Acid) Cert				371.0		2.500	21.8	231.0		45.7		0.049	8.150			0.79	0.31		0.185				
SdAR-M2 (U.S.G.S.) Meas				229	5.1	11	789	52		736						7	< 2						
SdAR-M2 (U.S.G.S.) Cert				236.0000	5.1	13.3	808	48.8		760						6.6	1.05						
DMMAS 118 Meas	1750													1730	1060					46	86		
DMMAS 118 Cert	1729													1661	1264					45	83		
PLE-15-012-02 Orig		< 0.3		25	< 0.3	< 1	4	376		71		0.01	5.73			1	< 2		4.94				
PLE-15-012-02 Dup		< 0.3		26	< 0.3	< 1	3	374		71		0.02	5.67			1	< 2		4.87				
PLE-15-017-02 Orig		< 0.3		19	< 0.3	< 1	12	27		73		< 0.01	7.89			2	< 2		2.40				
PLE-15-017-02 Dup		< 0.3		18	< 0.3	< 1	11	25		71		< 0.01	7.98			2	< 2		2.40				
PLE-15-024-04 Orig	< 2		< 5						< 20		< 50			4.9	850			< 0.5		8	44	< 1	0.6
PLE-15-024-04 Dup	< 2		< 5						< 20		< 50			4.7	860			< 0.5		8	44	< 1	0.7
Method Blank		< 0.3		< 1	< 0.3	< 1	< 3	< 1		< 1		< 0.01	0.04			< 1	< 2		< 0.01				
Method Blank		< 0.3		< 1	< 0.3	< 1	< 3	< 1		< 1		< 0.01	< 0.01			< 1	< 2		< 0.01				

Analyte Symbol	Au	Ag	Ag	Cu	Cd	Mo	Pb	Ni	Ni	Zn	Zn	S	Al	As	Ba	Be	Bi	Br	Ca	Co	Cr	Cs	Eu
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
Lower Limit	2	0.3	5	1	0.3	1	3	1	20	1	50	0.01	0.01	0.5	50	1	2	0.5	0.01	1	2	1	0.2
Method Code	INAA	TD-ICP	INAA	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	TD-ICP	TD-ICP	INAA	INAA	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA
Method Blank		< 0.3		< 1	< 0.3	< 1	< 3	< 1		< 1		< 0.01	< 0.01			< 1	< 2		< 0.01				
Method Blank	< 2		< 5						< 20		< 50			< 0.5	< 50			< 0.5		< 1	< 2	< 1	< 0.2
Method Blank																							
Method Blank																							

QC

Analyte Symbol	Fe	Hf	Hg	Ir	K	Li	Mg	Mn	Na	P	Rb	Sb	Sc	Se	Sr	Ta	Ti	Th	U	V	W	Y	La
Unit Symbol	%	ppm	ppm	ppb	%	ppm	%	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	1	1	5	0.01	1	0.01	1	0.01	0.001	15	0.1	0.1	3	1	0.5	0.01	0.2	0.5	2	1	1	0.5
Method Code	INAA	INAA	INAA	INAA	TD-ICP	TD-ICP	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA	TD-ICP	INAA	TD-ICP	INAA	INAA	TD-ICP	INAA	TD-ICP	INAA
GXR-1 Meas					0.05	7	0.20	867		0.055					275		0.02			85		33	
GXR-1 Cert					0.050	8.20	0.217	852		0.0650					275		0.036			80.0		32.0	
MICA-FE Meas																							
MICA-FE Cert																							
GXR-4 Meas					4.64	10	1.59	162		0.124					204		0.26			83		15	
GXR-4 Cert					4.01	11.1	1.66	155		0.120					221		0.29			87.0		14.0	
SDC-1 Meas					2.39	31	0.91	835		0.048					160		0.14			45			
SDC-1 Cert					2.72	34.00	1.02	880.00		0.0690					180.00		0.606			102.00			
BE-N Meas																							
BE-N Cert																							
AC-E Meas																							
AC-E Cert																							
AC-E Meas																							
AC-E Cert																							
DTS-2b Meas																							
DTS-2b Cert																							
DTS-2b Meas																							
DTS-2b Cert																							
Oreas 74a (Fusion) Meas																							
Oreas 74a (Fusion) Cert																							
BIR-1a Meas																							
BIR-1a Cert																							
DT-N Meas																							
DT-N Cert																							
DNC-1a Meas						4									120		0.27			135		15	
DNC-1a Cert						5.20									144.0		0.29			148.00		18.0	
NCS DC61105 Meas																							
NCS DC61105 Cert																							
SBC-1 Meas						148									163		0.50			203		29	
SBC-1 Cert						163.0									178.0		0.51			220.0		36.5	
OREAS 45d (4-Acid) Meas					0.47	20	0.22	489		0.033					29		0.29			132		11	
OREAS 45d (4-Acid) Cert					0.412	21.50	0.245	490.000		0.042					31.30		0.773			235.0		9.53	
SdAR-M2 (U.S.G.S.) Meas						17									135					23		28	
SdAR-M2 (U.S.G.S.)						17.9									144					25.2		32.7	

Analyte Symbol	Fe	Hf	Hg	Ir	K	Li	Mg	Mn	Na	P	Rb	Sb	Sc	Se	Sr	Ta	Ti	Th	U	V	W	Y	La
Unit Symbol	%	ppm	ppm	ppb	%	ppm	%	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	1	1	5	0.01	1	0.01	1	0.01	0.001	15	0.1	0.1	3	1	0.5	0.01	0.2	0.5	2	1	1	0.5
Method Code	INAA	INAA	INAA	INAA	TD-ICP	TD-ICP	TD-ICP	TD-ICP	INAA	TD-ICP	INAA	INAA	INAA	INAA	TD-ICP	INAA	TD-ICP	INAA	INAA	TD-ICP	INAA	TD-ICP	INAA
Cert																							
DMMAS 118 Meas	3.31								2.15			7.0	6.2						15.2				17.0
DMMAS 118 Cert	3.25								2.21			6.6	6.1						15.9				16.9
PLE-15-012-02 Orig					1.45	19	6.28	1050		0.085					441		0.28			127		15	
PLE-15-012-02 Dup					1.47	19	6.19	1030		0.084					436		0.28			125		15	
PLE-15-017-02 Orig					3.11	11	0.94	381		0.053					800		0.21			54		9	
PLE-15-017-02 Dup					3.07	12	0.94	389		0.053					808		0.22			54		9	
PLE-15-024-04 Orig	1.97	3	< 1	< 5					3.84		< 15	2.0	4.7	< 3		< 0.5		3.1	< 0.5		< 1		18.0
PLE-15-024-04 Dup	2.00	3	< 1	< 5					3.81		< 15	1.8	4.8	< 3		< 0.5		3.2	< 0.5		< 1		17.8
Method Blank					< 0.01	< 1	< 0.01			< 0.001					< 1		< 0.01			< 2		< 1	
Method Blank					< 0.01	< 1	< 0.01			< 0.001					< 1		< 0.01			< 2		< 1	
Method Blank					< 0.01	< 1	< 0.01			< 0.001					< 1		< 0.01			< 2		< 1	
Method Blank	< 0.01	< 1	< 1	< 5					< 0.01		< 15	< 0.1	< 0.1	< 3		< 0.5		< 0.2	< 0.5		< 1		< 0.5
Method Blank																							
Method Blank																							

QC

Analyte Symbol	Ce	Nd	Sm	Sn	Tb	Yb	Lu	Mass	Co_3O_4	CuO	NiO	SiO_2	Al_2O_3	Fe_2O_3(T)	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5	Cr_2O_3	V_2O_5
Unit Symbol	ppm	ppm	ppm	%	ppm	ppm	ppm	g	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	3	5	0.1	0.01	0.5	0.2	0.05		0.005	0.005	0.003	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.003
Method Code	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF
GXR-1 Meas																							
GXR-1 Cert																							
MICA-FE Meas									< 0.005	< 0.005	0.005	33.77	19.06	26.00	0.341	4.65	0.42	0.26	8.70	2.49	0.40	0.01	0.027
MICA-FE Cert									0.003	0.001	0.004	34.4	19.5	25.6	0.350	4.55	0.430	0.300	8.75	2.50	0.450	0.01	0.024
GXR-4 Meas																							
GXR-4 Cert																							
SDC-1 Meas																							
SDC-1 Cert																							
BE-N Meas									0.007	0.009	0.034	37.90	9.91	13.12	0.198	13.29	13.61	3.31	1.38	2.70	1.06	0.05	0.046
BE-N Cert									0.008	0.009	0.034	38.2	10.1	12.8	0.200	13.1	13.9	3.18	1.39	2.61	1.05	0.0500	0.042
AC-E Meas												71.06	14.95	2.64	0.060	0.02	0.36	6.95	4.63	0.12			
AC-E Cert												70.35	14.70	2.56	0.058	0.03	0.34	6.54	4.49	0.11			
AC-E Meas												71.06	14.95	2.64	0.060	0.02	0.36	6.95	4.63	0.12			
AC-E Cert												70.35	14.70	2.56	0.058	0.03	0.34	6.54	4.49	0.11			
DTS-2b Meas												38.67	0.43			49.34	0.14					2.34	
DTS-2b Cert												39.4	0.450			49.4	0.120					2.27	
DTS-2b Meas												38.67	0.43			49.34	0.15					2.34	
DTS-2b Cert												39.4	0.450			49.4	0.120					2.27	
Oreas 74a (Fusion) Meas									0.076	0.159	4.161	31.79	2.11			28.04							
Oreas 74a (Fusion) Cert									0.079	0.155	4.123	32.4	2.21			27.9							
BIR-1a Meas												48.35	15.72	11.85	0.172	9.88	13.23	1.97	0.04	1.01	0.04		
BIR-1a Cert												47.96	15.50	11.30	0.175	9.700	13.30	1.82	0.030	0.96	0.021		
DT-N Meas												36.54	58.83	0.58	0.007	0.05	0.05	0.05	0.13	1.38	0.07		
DT-N Cert												36.45	59.20	0.66	0.008	0.04	0.04	0.04	0.12	1.40	0.09		

Analyte Symbol	Ce	Nd	Sm	Sn	Tb	Yb	Lu	Mass	Co3O4	CuO	NiO	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	Cr2O3	V2O5
Unit Symbol	ppm	ppm	ppm	%	ppm	ppm	ppm	g	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	3	5	0.1	0.01	0.5	0.2	0.05		0.005	0.005	0.003	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.003
Method Code	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF
DNC-1a Meas																							
DNC-1a Cert																							
NCS DC61105 Meas												7.98	84.43	1.23		0.23	0.27	0.06	0.43	3.87			
NCS DC61105 Cert												8.17	85.07	1.18		0.21	0.24	0.08	0.44	3.76			
SBC-1 Meas																							
SBC-1 Cert																							
OREAS 45d (4-Acid) Meas																							
OREAS 45d (4-Acid) Cert																							
SdAR-M2 (U.S.G.S.) Meas																							
SdAR-M2 (U.S.G.S.) Cert																							
DMMAS 118 Meas	31		2.3																				
DMMAS 118 Cert	30		2.2																				
PLE-15-012-02 Orig																							
PLE-15-012-02 Dup																							
PLE-15-017-02 Orig																							
PLE-15-017-02 Dup																							
PLE-15-024-04 Orig	29	14	2.8	< 0.01	< 0.5	0.4	< 0.05	36.0															
PLE-15-024-04 Dup	30	14	2.8	< 0.01	< 0.5	0.4	< 0.05	35.3															
Method Blank																							
Method Blank																							
Method Blank																							
Method Blank	< 3	< 5	< 0.1	< 0.01	< 0.5	< 0.2	< 0.05	30.0															
Method Blank									< 0.005	< 0.005	< 0.003	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.003
Method Blank									< 0.005	< 0.005	< 0.003	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.003

Appendix E

Heavy Mineral Processing Weights, Physical Characteristics of the RC Till Samples, Gold Grain Summaries and Descriptions, and Calculated Visible Gold Values for the Nonferromagnetic Heavy Mineral Fraction of the RC Till Samples

OVERBURDEN DRILLING MANAGEMENT LIMITED
107-15 CAPELLA COURT, NEPEAN, ONTARIO, K2E 7X1
TELEPHONE: (613) 226-1771
FAX NO.: (613) 226-8753
EMAIL: odm@storm.ca

DATA TRANSMITTAL REPORT

DATE: 29-Sep-15

ATTENTION: **Mr. T. Girard**

CLIENT: **Exploration Osisko Baie-James**
300 Rue St.Paul, Bureau 200
Quebec, QC
G1K 7R1

E-MAIL: **tgirard@osiskogr.com** **strepanier@osiskogr.com**

NO. OF PAGES: 7

PROJECT: **Poste Lemoyne**

FILE NAME: **20156970 - Osisko - Girard - (PLE-15-RC) - August 2015**

SAMPLE NUMBERS: **PLE-15-RC-001-01 to 024-03**

BATCH NUMBER: **6970**

TOTAL SAMPLES: **43**

THESE SAMPLES WERE PROCESSED FOR: **GOLD GRAIN COUNT**
HMC

SPECIFICATIONS:

1. Submitted by client: ±10 kg reverse circulation drill samples, prescreened to <2.0 mm in the field.
2. Single ±500 g archival splits taken.
3. All samples panned for gold and metallic indicator minerals.
4. Heavy liquid separation specific gravity: 3.3.
5. Nonmagentic HMC submitted for geochemical assay.

REMARKS:

Calculated ppb gold based on actual NMHMC weights.

Rémy Huneault, P.Geo.
President

OVERBURDEN DRILLING MANAGEMENT LIMITED
RAW SAMPLE DESCRIPTIONS

Filename: 20156970 - Osisko - Girard - (PLE-15-RC) - August 2015
Total Number of Samples in this Report = 43
Batch Number: 6970

	Weight (kg wet)					-2.0 mm Table Concentrate Weight (g dry)					Sample Description												
							Heavy Liquid Separation (S.G. 3.3)					Clasts (> 2.0 mm)*				Matrix (<2.0 mm)							
								HMC				Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Archived Split	Table Split	+2.0 mm Clasts	Table Feed	Total	Lights	Total	Non Mag	Mag	Size	V/S	GR	LS	OT	S/U	SD	ST	CY	ORG	SD	CY	CLASS
PLE-RC-15-001-01	11.8	0.5	11.3	1.3	10.0	400.4	337.3	63.1	31.7	31.4	C	20	80	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-001-02	11.6	0.5	11.1	0.7	10.4	361.3	273.2	88.1	34.7	53.4	C	30	70	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-002-01	12.0	0.5	11.5	0.9	10.6	376.5	283.8	92.7	46.0	46.7	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-003-01	11.6	0.5	11.1	0.9	10.2	350.8	273.2	77.6	34.6	43.0	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-004-01	10.5	0.5	10.0	0.9	9.1	304.5	224.2	80.3	40.5	39.8	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-005-01	11.5	0.5	11.0	1.0	10.0	366.9	309.9	57.0	36.4	20.6	C	10	90	0	0	U	+	-	-	N	BE	BE	TILL
PLE-RC-15-006-01	11.3	0.5	10.8	1.1	9.7	297.8	263.6	34.2	12.8	21.4	C	10	90	0	0	S	MC	-	N	N	BE	NA	SAND + GRAVEL
PLE-RC-15-007-01	12.9	0.5	12.4	1.2	11.2	385.6	302.4	83.2	49.6	33.6	C	5	95	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-007-02	10.9	0.5	10.4	1.1	9.3	366.9	286.4	80.5	44.1	36.4	C	Tr	100	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-008-01	11.8	0.5	11.3	0.6	10.7	610.5	440.0	170.5	109.1	61.4	C	10	90	0	0	U	+	Y	-	Y	LOC	LOC	TILL
PLE-RC-15-009-01	10.1	0.5	9.6	1.0	8.6	318.2	287.1	31.1	21.3	9.8	C	20	80	0	0	U	+	Y	-	Y	GB	GB	TILL
PLE-RC-15-010-01	11.0	0.5	10.5	0.9	9.6	306.5	253.0	53.5	21.0	32.5	C	20	80	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-011-01	11.7	0.5	11.2	1.7	9.5	361.4	312.6	48.8	29.0	19.8	C	10	90	0	0	U	+	-	-	N	BE	BE	TILL
PLE-RC-15-012-01	9.1	0.5	8.6	1.7	6.9	251.9	207.4	44.5	23.4	21.1	C	10	90	0	0	U	+	-	-	N	BE	BE	TILL
PLE-RC-15-013-01	10.9	0.5	10.4	0.8	9.6	312.8	273.0	39.8	27.0	12.8	C	10	90	0	0	U	+	-	-	N	BE	BE	TILL
PLE-RC-15-013-02	12.0	0.5	11.5	0.9	10.6	348.7	267.7	81.0	36.7	44.3	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-014-01	11.8	0.5	11.3	0.6	10.7	413.2	331.6	81.6	37.0	44.6	C	20	80	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-015-01	11.9	0.5	11.4	0.7	10.7	674.8	518.9	155.9	87.1	68.8	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-015-02	9.9	0.5	9.4	0.9	8.5	354.1	279.0	75.1	35.7	39.4	C	20	80	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-016-01	11.6	0.5	11.1	1.1	10.0	304.1	263.2	40.9	29.9	11.0	C	10	90	0	0	S	MC	-	N	N	BE	NA	SAND + GRAVEL
PLE-RC-15-016-02	12.5	0.5	12.0	1.0	11.0	597.7	416.1	181.6	89.0	92.6	C	10	90	0	0	S	MC	-	N	N	BE	NA	SAND + GRAVEL
PLE-RC-15-016-03	11.9	0.5	11.4	0.7	10.7	281.2	197.8	83.4	42.1	41.3	C	10	90	0	0	S	MC	-	N	N	BE	NA	SAND + GRAVEL
PLE-RC-15-016-04	11.4	0.5	10.9	0.5	10.4	256.6	222.9	33.7	27.7	6.0	C	20	80	0	0	S	MC	-	N	N	BE	NA	SAND + GRAVEL
PLE-RC-15-016-05	12.9	0.5	12.4	1.2	11.2	259.8	219.9	39.9	29.1	10.8	C	10	90	0	0	U	+	-	-	N	GB	GB	TILL
PLE-RC-15-016-06	11.8	0.5	11.3	0.5	10.8	370.3	310.5	59.8	46.9	12.9	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-017-01	11.2	0.5	10.7	1.1	9.6	226.6	156.5	70.1	37.0	33.1	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-018-01	12.1	0.5	11.6	0.4	11.2	274.7	224.0	50.7	25.0	25.7	C	20	80	0	0	S	MC	-	N	N	BE	NA	SAND + GRAVEL
PLE-RC-15-019-01	10.4	0.5	9.9	0.1	9.8	351.5	244.9	106.6	70.3	36.3	C	50	50	0	0	S	FM	-	N	N	GB	NA	SAND
PLE-RC-15-019-02	11.4	0.5	10.9	1.0	9.9	248.2	177.2	71.0	41.9	29.1	C	20	80	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-019-03	11.1	0.5	10.6	1.5	9.1	267.6	188.4	79.2	39.9	39.3	C	20	80	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-020-01	11.8	0.5	11.3	0.5	10.8	444.1	309.3	134.8	93.8	41.0	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-021-01	11.7	0.5	11.2	0.8	10.4	299.6	190.0	109.6	70.4	39.2	C	30	70	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-022-01	10.0	0.5	9.5	1.0	8.5	246.0	185.7	60.3	27.5	32.8	C	30	70	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-023-01	12.0	0.5	11.5	0.9	10.6	339.2	252.8	86.4	51.8	34.6	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-023-02	11.7	0.5	11.2	0.5	10.7	320.5	247.9	72.6	41.0	31.6	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-023-03	21.0	0.5	20.5	0.9	19.6	289.8	226.4	63.4	36.9	26.5	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-023-04	12.7	0.5	12.2	1.0	11.2	322.2	241.9	80.3	48.3	32.0	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-023-05	11.0	0.5	10.5	0.9	9.6	304.3	236.4	67.9	40.4	27.5	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-023-06	10.7	0.5	10.2	0.5	9.7	323.0	260.2	62.8	36.6	26.2	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-023-07	12.0	0.5	11.5	0.7	10.8	318.3	250.4	67.9	38.7	29.2	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL
PLE-RC-15-024-01	12.0	0.5	11.5	1.1	10.4	268.1	211.4	56.7	32.3	24.4	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-024-02	11.3	0.5	10.8	0.9	9.9	328.1	272.2	55.9	32.7	23.2	C	10	90	0	0	U	+	Y	-	N	BE	BE	TILL
PLE-RC-15-024-03	12.2	0.5	11.7	0.6	11.1	294.0	222.3	71.7	41.7	30.0	C	10	90	0	0	U	+	Y	-	N	GB	GB	TILL

OVERBURDEN DRILLING MANAGEMENT LIMITED

GOLD GRAIN SUMMARY

Filename: 20156970 - Osisko - Girard - (PLE-15-RC) - August 2015

Total Number of Samples in this Report = 43

Batch Number: 6970

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight	Calculated PPB Visible Gold in HMC			
	Total	Reshaped	Modified	Pristine	(g)	Total	Reshaped	Modified	Pristine
PLE-RC-15-001-01	0	0	0	0	31.7	0	0	0	0
PLE-RC-15-001-02	0	0	0	0	34.7	0	0	0	0
PLE-RC-15-002-01	2	1	1	0	46.0	1	1	<1	0
PLE-RC-15-003-01	3	2	1	0	34.6	14	11	2	0
PLE-RC-15-004-01	7	6	1	0	40.5	63	62	1	0
PLE-RC-15-005-01	2	2	0	0	36.4	5	5	0	0
PLE-RC-15-006-01	3	2	0	1	12.8	22	7	0	15
PLE-RC-15-007-01	11	5	3	3	49.6	27	12	12	3
PLE-RC-15-007-02	6	3	3	0	44.1	7	2	5	0
PLE-RC-15-008-01	9	4	3	2	109.1	18	3	14	1
PLE-RC-15-009-01	4	4	0	0	21.3	31	31	0	0
PLE-RC-15-010-01	2	0	1	1	21.0	<1	0	<1	<1
PLE-RC-15-011-01	2	1	0	1	29.0	13	13	0	<1
PLE-RC-15-012-01	2	1	1	0	23.4	8	8	<1	0
PLE-RC-15-013-01	1	0	1	0	27.0	14	0	14	0
PLE-RC-15-013-02	3	2	1	0	36.7	20	10	10	0
PLE-RC-15-014-01	3	0	1	2	37.0	33	0	1	33
PLE-RC-15-015-01	6	1	4	1	87.1	14	7	6	1
PLE-RC-15-015-02	1	1	0	0	35.7	<1	<1	0	0
PLE-RC-15-016-01	1	0	0	1	29.9	1	0	0	1
PLE-RC-15-016-02	3	2	1	0	89.0	35	35	<1	0
PLE-RC-15-016-03	2	1	1	0	42.1	1	<1	1	0
PLE-RC-15-016-04	0	0	0	0	27.7	0	0	0	0
PLE-RC-15-016-05	1	0	0	1	29.1	1	0	0	1
PLE-RC-15-016-06	16	0	3	13	46.9	435	0	3	432
PLE-RC-15-017-01	1	1	0	0	37.0	<1	<1	0	0
PLE-RC-15-018-01	0	0	0	0	25.0	0	0	0	0
PLE-RC-15-019-01	3	1	1	1	70.3	3	3	<1	<1
PLE-RC-15-019-02	6	2	3	1	41.9	3	2	1	<1
PLE-RC-15-019-03	1	0	1	0	39.9	1	0	1	0
PLE-RC-15-020-01	7	6	1	0	93.8	8	8	<1	0
PLE-RC-15-021-01	9	5	3	1	70.4	3	3	<1	<1
PLE-RC-15-022-01	1	0	1	0	27.5	14	0	14	0
PLE-RC-15-023-01	7	5	2	0	51.8	29	28	2	0
PLE-RC-15-023-02	0	0	0	0	41.0	0	0	0	0
PLE-RC-15-023-03	4	3	1	0	36.9	13	8	5	0
PLE-RC-15-023-04	4	4	0	0	48.3	8	8	0	0
PLE-RC-15-023-05	0	0	0	0	40.4	0	0	0	0
PLE-RC-15-023-06	0	0	0	0	36.6	0	0	0	0
PLE-RC-15-023-07	3	3	0	0	38.7	12	12	0	0
PLE-RC-15-024-01	2	2	0	0	32.3	1	1	0	0
PLE-RC-15-024-02	0	0	0	0	32.7	0	0	0	0
PLE-RC-15-024-03	3	3	0	0	41.7	1	1	0	0

OVERBURDEN DRILLING MANAGEMENT LIMITED
DETAILED GOLD GRAIN DATA

Filename: 20156970 - Osisko - Girard - (PLE-15-RC) - August 2015
Total Number of Samples in this Report = 43
Batch Number: 6970

Sample Number	Panned Yes/No	Dimensions (microns)			Number of Visible Gold Grains				Nonmag HMC Weight*	Calculated V.G. Assay in HMC	Metallic Indicator Minerals in Pan Concentrate
		Thickness	Width	Length	Reshaped	Modified	Pristine	Total	(g)	(ppb)	
PLE-RC-15-001-01	Yes	NO VISIBLE GOLD									~10 scheelite (75-250µm). ~5000 grains pyrite (25-1000µm).
PLE-RC-15-001-02	Yes	NO VISIBLE GOLD									~10 scheelite (75-250µm). ~0.5% pyrite (25-1000µm).
PLE-RC-15-002-01	Yes	3 C	15	15		1		1		<1	~50 grains pyrite (25-100µm).
		5 C	25	25	1			1		1	
								2	46.0	1	
PLE-RC-15-003-01	Yes	5 C	25	25	1			1		1	~100 grains pyrite (25-250µm).
		8 C	25	50		1		1		2	
		13 C	50	75	1			1		11	
								3	34.6	14	
PLE-RC-15-004-01	Yes	3 C	15	15	1			1		<1	2 grains scheelite (200µm).
		5 C	25	25		1		1		1	~100 grains pyrite (25-250µm).
		8 C	25	50	1			1		2	
		10 C	50	50	1			1		5	
		13 C	50	75	2			2		18	
		20 C	75	125	1			1		37	
								7	40.5	63	
PLE-RC-15-005-01	Yes	3 C	15	15	1			1		<1	~2000 grains pyrite (25-1000µm).
		10 C	50	50	1			1		5	
								2	36.4	5	
PLE-RC-15-006-01	Yes	3 C	15	15	1			1		<1	1 grain copper (75µm; contamination).
		8 C	25	50	1			1		6	~2000 grains pyrite (25-1000µm).
		10 C	50	50			1	1		15	
								3	12.8	22	
PLE-RC-15-007-01	Yes	3 C	15	15	2	1	1	4		<1	~10 grains scheelite (50-500µm).
		5 C	25	25	1			1		<1	~1000 grains pyrite (25-1000µm).
		8 C	25	50			2	2		3	SEM check: 1 arsenopyrite versus
		10 C	50	50	1	1		2		8	tungsten carbide candidate = 1
		13 C	50	75	1	1		2		15	tungsten carbide (100µm).
								11	49.6	27	
PLE-RC-15-007-02	Yes	3 C	15	15	2	2		4		<1	~500 grains pyrite (25-1000µm).
		8 C	25	50	1			1		2	
		10 C	25	75		1		1		4	
								6	44.1	7	
PLE-RC-15-008-01	Yes	3 C	15	15		1	1	2		<1	~5000 grains pyrite (25-1000µm).
		5 C	25	25	2	1		3		1	
		8 C	25	50	1		1	2		1	
		10 C	25	75	1			1		2	
		20 C	75	125		1		1		14	
								9	109.1	18	
PLE-RC-15-009-01	Yes	3 C	15	15	1			1		<1	~1% pyrite (25-1000µm).
		8 C	25	50	1			1		4	~5000 grains marcasite (25-100µm).
		10 C	50	50	1			1		9	SEM checks: 1 of 5 molybdenite versus
		13 C	50	75	1			1		18	galena candidates = 1 molybdenite
								4	21.3	31	(50-100µm).
PLE-RC-15-010-01	Yes	3 C	15	15		1	1	2		1	~0.5% pyrite (25-1000µm).
								2	21.0	1	~200 grains marcasite (25-50µm).
PLE-RC-15-011-01	Yes	3 C	15	15			1	1		<1	~0.5% pyrite (25-1000µm).
		13 C	50	75	1			1		13	
								2	29.0	13	
PLE-RC-15-012-01	Yes	3 C	15	15		1		1		<1	~2000 grains pyrite (25-1000µm).
		10 C	50	50	1			1		8	
								2	23.4	8	

OVERBURDEN DRILLING MANAGEMENT LIMITED
DETAILED GOLD GRAIN DATA

Filename: 20156970 - Osisko - Girard - (PLE-15-RC) - August 2015
Total Number of Samples in this Report = 43
Batch Number: 6970

Sample Number	Panned Yes/No	Dimensions (microns)			Number of Visible Gold Grains				Nonmag HMC Weight*	Calculated V.G. Assay in HMC	Metallic Indicator Minerals in Pan Concentrate
		Thickness	Width	Length	Reshaped	Modified	Pristine	Total	(g)	(ppb)	
PLE-RC-15-013-01	Yes	13 C	50	75		1		1		14	~2000 grains pyrite (25-1000µm).
								1	27.0	14	
PLE-RC-15-013-02	Yes	3 C	15	15	1			1		<1	~0.5% pyrite (25-1000µm).
		13 C	50	75	1	1		2		20	SEM checks: 1 molybdenite candidate
								3	36.7	20	= 2 molybdenite (50µm).
PLE-RC-15-014-01	Yes	5 C	25	25		1		1		1	1 grain copper (25µm; contamination).
		10 C	50	50			1	1		5	1 grain scheelite (250µm).
		18 C	75	100			1	1		27	~1% pyrite (25-100µm).
								3	37.0	33	
PLE-RC-15-015-01	Yes	3 C	15	15		1		1		<1	~1% pyrite (25-100µm).
		5 C	25	25		1		1		<1	
		8 C	25	50		1	1	2		2	
		13 C	50	75		1		1		4	
		15 C	50	100	1			1		7	
								6	87.1	14	
PLE-RC-15-015-02	Yes	3 C	15	15	1			1		<1	2 grains scheelite (250µm).
								1	35.7	<1	~0.5% pyrite (25-100µm).
PLE-RC-15-016-01	Yes	5 C	25	25			1	1		1	~1000 grains pyrite (25-1000µm).
								1	29.9	1	SEM check: 1 arsenopyrite versus tungsten carbide candidate = 1 tungsten carbide (100µm).
PLE-RC-15-016-02	Yes	3 C	15	15		1		1		<1	~10 grains scheelite (75-500µm).
		10 C	50	50	1			1		2	~2000 grains pyrite (25-1000µm).
		25 C	125	125	1			1		33	SEM checks: 1 of 2 molybdenite
								3	89.0	35	candidates = 1 molybdenite (100µm); and 1 tungsten carbide versus arsenopyrite candidate = 1 tungsten carbide (100µm).
PLE-RC-15-016-03	Yes	3 C	15	15	1			1		<1	~100 grains molybdenite (50-100µm).
		5 C	25	25		1		1		1	~0.5% pyrite (25-1000µm).
								2	42.1	1	
PLE-RC-15-016-04	Yes	NO VISIBLE GOLD									~0.5% molybdenite (50-500µm). ~1% pyrite (25-1000µm).
PLE-RC-15-016-05	Yes	5 C	25	25			1	1		1	~50 grains molybdenite (50-100µm).
								1	29.1	1	~1% pyrite (25-1000µm).
PLE-RC-15-016-06	Yes	3 C	15	15			5	5		1	~50 grains molybdenite (50-100µm).
		5 C	25	25		2	4	6		3	~1% pyrite (25-1000µm).
		8 C	25	50		1	2	3		5	
		10 C	50	50			1	1		4	
		75 M	125	250			1	1		422	
								16	46.9	435	
PLE-RC-15-017-01	Yes	3 C	15	15	1			1		<1	3 grains molybdenite (50-100µm).
								1	37.0	<1	~100 pyrite (25-1000µm).
PLE-RC-15-018-01	Yes	NO VISIBLE GOLD									~1000 pyrite (25-1000µm).
PLE-RC-15-019-01	Yes	3 C	15	15		1	1	2		<1	~50 grains pyrite (25-100µm).
		10 C	50	50	1			1		3	
								3	70.3	3	

OVERBURDEN DRILLING MANAGEMENT LIMITED
DETAILED GOLD GRAIN DATA

Filename: 20156970 - Osisko - Girard - (PLE-15-RC) - August 2015
Total Number of Samples in this Report = 43
Batch Number: 6970

Sample Number	Panned Yes/No	Dimensions (microns)			Number of Visible Gold Grains				Nonmag HMC Weight*	Calculated V.G. Assay in HMC	Metallic Indicator Minerals in Pan Concentrate
		Thickness	Width	Length	Reshaped	Modified	Pristine	Total	(g)	(ppb)	
PLE-RC-15-019-02	Yes	3 C	15	15	1	2	1	4		1	~100 grains pyrite (25-100µm).
		5 C	25	25		1		1		1	
		8 C	25	50	1			1		2	
								6	41.9	3	
PLE-RC-15-019-03	Yes	5 C	25	25		1		1		1	1 grain molybdenite (50µm).
								1	39.9	1	~0.5% pyrite (25-1000µm).
PLE-RC-15-020-01	Yes	3 C	15	15	2	1		3		<1	~100 grains pyrite (25-500µm).
		5 C	25	25	2			2		1	
		8 C	25	50	1			1		1	
		15 C	75	75	1			1		7	
								7	93.8	8	
PLE-RC-15-021-01	Yes	3 C	15	15	2	2	1	5		<1	~1000 pyrite (25-1000µm).
		5 C	25	25	1	1		2		1	SEM checks: 2 of ~30 galena versus
		8 C	25	50	2			2		2	tungsten carbide candidate = 2 galena
								9	70.4	3	(50-100µm).
PLE-RC-15-022-01	Yes	13 C	50	75		1		1		14	~2000 grains pyrite (25-1000µm).
								1	27.5	14	
PLE-RC-15-023-01	Yes	3 C	15	15	1	1		2		<1	~2000 grains pyrite (25-1000µm).
		5 C	25	25	1			1		<1	
		8 C	25	50		1		1		2	
		10 C	50	50	2			2		7	
		18 C	75	100	1			1		20	
								7	51.8	29	
PLE-RC-15-023-02	Yes	NO VISIBLE GOLD									5 grains scheelite (75-500µm). ~10 grains arsenopyrite (50-100µm). ~2000 grains pyrite (25-1000µm).
PLE-RC-15-023-03	Yes	5 C	25	25	1			1		1	1 grain scheelite (100µm).
		8 C	25	50	1			1		2	~10 grains arsenopyrite (50-100µm).
		10 C	25	75	1			1		5	~2000 grains pyrite (25-1000µm).
		10 C	50	50		1		1		5	
								4	36.9	13	
PLE-RC-15-023-04	Yes	3 C	15	15	2			2		<1	2 grains scheelite (150µm).
		5 C	25	25	1			1		1	~200 grains pyrite (25-250µm).
		13 C	50	75	1			1		8	
								4	48.3	8	
PLE-RC-15-023-05	Yes	NO VISIBLE GOLD									5 grains scheelite (75-250µm). ~500 grains pyrite (25-500µm).
PLE-RC-15-023-06	Yes	NO VISIBLE GOLD									~0.5% pyrite (25-1000µm).
PLE-RC-15-023-07	Yes	5 C	25	25	1			1		1	~0.5% pyrite (25-1000µm).
		8 C	25	50	1			1		2	
		13 C	50	75	1			1		10	
								3	38.7	12	
PLE-RC-15-024-01	Yes	3 C	15	15	1			1		<1	~50 grains pyrite (25-250µm).
		5 C	25	25	1			1		1	
								2	32.3	1	
PLE-RC-15-024-02	Yes	NO VISIBLE GOLD									~50 grains pyrite (25-250µm).
PLE-RC-15-024-03	Yes	3 C	15	15	1			1		<1	~200 grains pyrite (25-250µm).
		5 C	25	25	2			2		1	
								3	41.7	1	

OVERBURDEN DRILLING MANAGEMENT LIMITED
HMC WEIGHTS

Filename: 20156970 - Osisko - Girard - (PLE-15-RC) - August 2015
Total Number of Samples in this Report = 43
Batch Number: 6970

	Weight (g)			
	Nonferromagnetic Heavy Mineral Concentrate			
			Analytical Split	
Sample Number	Total	Excess	INA	ICP
PLE-RC-15-001-01	31.7	0.0	26.7	5.0
PLE-RC-15-001-02	34.7	0.0	29.7	5.0
PLE-RC-15-002-01	46.0	0.0	41.0	5.0
PLE-RC-15-003-01	34.6	0.0	29.6	5.0
PLE-RC-15-004-01	40.5	0.0	35.5	5.0
PLE-RC-15-005-01	36.4	0.0	31.4	5.0
PLE-RC-15-006-01	12.8	0.0	9.8	3.0
PLE-RC-15-007-01	49.6	0.0	44.6	5.0
PLE-RC-15-007-02	44.1	0.0	39.1	5.0
PLE-RC-15-008-01	109.1	50.0	54.1	5.0
PLE-RC-15-009-01	21.3	0.0	16.3	5.0
PLE-RC-15-010-01	21.0	0.0	16.0	5.0
PLE-RC-15-011-01	29.0	0.0	24.0	5.0
PLE-RC-15-012-01	23.4	0.0	18.4	5.0
PLE-RC-15-013-01	27.0	0.0	22.0	5.0
PLE-RC-15-013-02	36.7	0.0	31.7	5.0
PLE-RC-15-014-01	37.0	0.0	32.0	5.0
PLE-RC-15-015-01	87.1	30.0	52.1	5.0
PLE-RC-15-015-02	35.7	0.0	30.7	5.0
PLE-RC-15-016-01	29.9	0.0	24.9	5.0
PLE-RC-15-016-02	89.0	20.0	64.0	5.0
PLE-RC-15-016-03	42.1	0.0	37.1	5.0
PLE-RC-15-016-04	27.7	0.0	22.7	5.0
PLE-RC-15-016-05	29.1	0.0	24.1	5.0
PLE-RC-15-016-06	46.9	0.0	41.9	5.0
PLE-RC-15-017-01	37.0	0.0	32.0	5.0
PLE-RC-15-018-01	25.0	0.0	20.0	5.0
PLE-RC-15-019-01	70.3	0.0	65.3	5.0
PLE-RC-15-019-02	41.9	0.0	36.9	5.0
PLE-RC-15-019-03	39.9	0.0	34.9	5.0
PLE-RC-15-020-01	93.8	35.0	53.8	5.0
PLE-RC-15-021-01	70.4	15.0	50.4	5.0
PLE-RC-15-022-01	27.5	0.0	22.5	5.0
PLE-RC-15-023-01	51.8	0.0	46.8	5.0
PLE-RC-15-023-02	41.0	0.0	36.0	5.0
PLE-RC-15-023-03	36.9	0.0	31.9	5.0
PLE-RC-15-023-04	48.3	0.0	43.3	5.0
PLE-RC-15-023-05	40.4	0.0	35.4	5.0
PLE-RC-15-023-06	36.6	0.0	31.6	5.0
PLE-RC-15-023-07	38.7	0.0	33.7	5.0
PLE-RC-15-024-01	32.3	0.0	27.3	5.0
PLE-RC-15-024-02	32.7	0.0	27.7	5.0
PLE-RC-15-024-03	41.7	0.0	36.7	5.0

Appendix F

Geochemical Analyses for the Nonferromagnetic Heavy Mineral Fraction of the RC Gravel Samples

Quality Analysis ... **Actlabs** *Innovative Technologies*

Date Submitted:	31-Aug-15
Invoice No.:	A15-07175
Invoice Date:	21-Sep-15
Your Reference:	PLE-15-RC

Exploration Osisko Baie-James
300 Rue St. Paul, Suite 200
Quebec QC G1K 7R1
Canada

ATTN: Sylvain Trepanier

CERTIFICATE OF ANALYSIS

43 Heavy Mineral Concentrates samples were submitted for analysis.

The following analytical package was requested: Code 3A-Large HMC INAA(INAAGEO)
Code 3C Aqua Regia ICP(AQUAGEO)

REPORT **A15-07175**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

Unaltered silicates and resistate minerals may not be dissolved. Values which exceed upper limit should be assayed.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB
LAB Accrédité CCN

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Results

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	S	Au	Ag	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	Hg	Ir	Mo
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm
Lower Limit	0.2	0.5	1	2	2	1	2	1	0.01	5	5	2	200	5	1	5	10	2	0.02	1	5	50	20
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA
PLE-15-RC-001-01	< 0.2	< 0.5	37	303	3	32	23	15	0.45	< 5	< 5	< 2	< 200	< 5	7	56	250	< 2	15.4	62	< 5	< 50	< 20
PLE-15-RC-001-02	< 0.2	< 0.5	52	533	5	33	19	20	0.37	50	< 5	4	< 200	< 5	1	53	240	< 2	17.0	59	< 5	< 50	< 20
PLE-15-RC-002-01	< 0.2	< 0.5	20	393	2	17	22	12	0.07	44	< 5	6	< 200	< 5	4	31	240	< 2	14.3	132	< 5	< 50	< 20
PLE-15-RC-003-01	< 0.2	< 0.5	41	419	< 2	27	23	19	0.06	6	< 5	< 2	< 200	< 5	3	52	250	< 2	15.5	139	< 5	< 50	< 20
PLE-15-RC-004-01	< 0.2	< 0.5	94	415	2	16	21	13	0.09	136	< 5	< 2	< 200	< 5	9	26	200	< 2	15.2	137	< 5	< 50	< 20
PLE-15-RC-005-01	< 0.2	< 0.5	176	365	2	15	24	17	0.24	32	< 5	< 2	< 200	< 5	9	38	270	< 2	16.7	109	< 5	< 50	< 20
PLE-15-RC-006-01	< 0.2	< 0.5	29	345	3	43	20	18	0.16	48	< 5	16	< 200	< 5	13	54	290	< 2	15.9	149	< 5	< 50	< 20
PLE-15-RC-007-01	< 0.2	< 0.5	31	377	< 2	18	19	16	0.10	46	< 5	3	< 200	< 5	1	31	230	< 2	16.9	118	< 5	< 50	< 20
PLE-15-RC-007-02	< 0.2	< 0.5	24	385	< 2	12	19	12	0.07	56	< 5	< 2	< 200	< 5	2	27	240	< 2	16.3	129	< 5	< 50	< 20
PLE-15-RC-008-01	< 0.2	< 0.5	14	390	< 2	17	14	11	0.52	37	< 5	< 2	< 200	< 5	1	35	240	< 2	14.5	181	< 5	< 50	< 20
PLE-15-RC-009-01	0.2	< 0.5	437	434	3	62	16	19	3.04	134	< 5	16	< 200	< 5	< 1	68	310	< 2	17.1	201	< 5	< 50	< 20
PLE-15-RC-010-01	0.2	< 0.5	206	333	39	70	25	18	1.43	35	< 5	9	< 200	< 5	16	143	290	< 2	12.9	115	< 5	< 50	< 20
PLE-15-RC-011-01	< 0.2	< 0.5	48	282	< 2	47	20	21	0.31	363	< 5	< 2	< 200	< 5	3	50	280	< 2	14.3	91	< 5	< 50	< 20
PLE-15-RC-012-01	< 0.2	< 0.5	39	379	3	20	22	13	0.10	123	< 5	8	< 200	< 5	6	37	360	< 2	21.4	127	< 5	< 50	20
PLE-15-RC-013-01	< 0.2	< 0.5	45	498	< 2	17	23	19	0.30	< 5	< 5	< 2	< 200	< 5	4	46	310	< 2	21.1	93	< 5	< 50	< 20
PLE-15-RC-013-02	0.6	< 0.5	376	307	< 2	24	31	16	1.09	< 5	< 5	< 2	< 200	< 5	10	49	260	< 2	17.9	60	< 5	< 50	< 20
PLE-15-RC-014-01	0.2	< 0.5	147	313	< 2	44	16	17	1.52	54	< 5	< 2	< 200	< 5	9	72	180	< 2	11.3	91	< 5	< 50	< 20
PLE-15-RC-015-01	< 0.2	< 0.5	84	293	< 2	20	8	17	0.52	112	< 5	< 2	< 200	< 5	9	58	240	< 2	11.7	22	< 5	< 50	< 20
PLE-15-RC-015-02	< 0.2	< 0.5	101	420	2	25	14	19	0.28	30	< 5	< 2	< 200	< 5	4	47	210	< 2	12.0	51	< 5	< 50	< 20
PLE-15-RC-016-01	< 0.2	< 0.5	19	434	< 2	13	30	16	0.09	19	< 5	< 2	< 200	< 5	6	38	340	< 2	21.8	103	< 5	< 50	< 20
PLE-15-RC-016-02	< 0.2	< 0.5	21	310	< 2	13	19	16	0.09	< 5	< 5	< 2	< 200	< 5	< 1	30	310	< 2	24.0	28	< 5	< 50	< 20
PLE-15-RC-016-03	< 0.2	< 0.5	86	347	59	19	23	17	0.26	436	< 5	< 2	< 200	< 5	< 1	41	250	< 2	20.8	41	< 5	< 50	50
PLE-15-RC-016-04	< 0.2	< 0.5	67	390	6540	36	24	20	0.75	< 5	< 5	< 2	< 200	< 5	3	50	230	< 2	17.2	116	< 5	< 50	7430
PLE-15-RC-016-05	< 0.2	< 0.5	53	395	58	28	31	20	0.41	30	< 5	< 2	< 200	< 5	7	54	280	< 2	17.8	105	< 5	< 50	< 20
PLE-15-RC-016-06	< 0.2	< 0.5	225	356	15	24	41	28	0.42	460	< 5	< 2	< 200	< 5	4	49	220	< 2	17.0	63	< 5	< 50	< 20
PLE-15-RC-017-01	< 0.2	< 0.5	68	367	5	12	17	13	0.06	< 5	< 5	< 2	< 200	< 5	6	31	220	< 2	12.5	151	< 5	< 50	< 20
PLE-15-RC-018-01	< 0.2	< 0.5	48	422	4	19	29	15	0.14	< 5	< 5	< 2	< 200	< 5	10	48	330	< 2	20.5	173	< 5	< 50	< 20
PLE-15-RC-019-01	< 0.2	< 0.5	9	347	3	8	14	15	0.02	11	< 5	< 2	< 200	< 5	1	28	220	< 2	11.3	144	< 5	< 50	< 20
PLE-15-RC-019-02	< 0.2	< 0.5	24	344	4	16	14	15	0.07	38	< 5	< 2	< 200	< 5	5	33	240	< 2	15.4	193	< 5	< 50	< 20
PLE-15-RC-019-03	< 0.2	< 0.5	26	316	2	19	24	14	0.47	12	< 5	< 2	< 200	< 5	2	53	210	< 2	13.9	83	< 5	< 50	< 20
PLE-15-RC-020-01	< 0.2	< 0.5	13	376	< 2	13	14	13	0.20	10	< 5	< 2	< 200	< 5	< 1	37	240	< 2	13.0	146	< 5	< 50	< 20
PLE-15-RC-021-01	< 0.2	< 0.5	16	359	5	44	17	15	0.33	5	< 5	< 2	< 200	< 5	9	40	340	< 2	13.2	165	< 5	< 50	< 20
PLE-15-RC-022-01	< 0.2	< 0.5	322	362	4	173	23	16	0.30	33	< 5	6	< 200	< 5	7	84	330	< 2	17.0	143	< 5	< 50	< 20
PLE-15-RC-023-01	< 0.2	< 0.5	74	379	4	24	24	12	1.17	38	< 5	12	< 200	< 5	< 1	45	220	< 2	15.6	109	< 5	< 50	< 20
PLE-15-RC-023-02	< 0.2	< 0.5	127	384	3	26	27	17	1.53	45	< 5	46	< 200	< 5	11	59	240	< 2	20.3	134	< 5	< 50	< 20
PLE-15-RC-023-03	< 0.2	< 0.5	135	372	3	24	24	16	1.35	35	< 5	13	< 200	< 5	5	65	270	< 2	18.7	197	< 5	< 50	< 20
PLE-15-RC-023-04	< 0.2	< 0.5	53	373	3	12	24	13	0.31	< 5	< 5	< 2	< 200	< 5	1	42	240	< 2	18.3	132	< 5	< 50	< 20
PLE-15-RC-023-05	< 0.2	< 0.5	45	366	3	13	26	21	0.24	< 5	< 5	< 2	< 200	< 5	1	29	230	< 2	15.3	151	< 5	< 50	< 20
PLE-15-RC-023-06	< 0.2	< 0.5	246	354	4	69	33	21	1.52	38	< 5	6	< 200	< 5	8	79	230	< 2	19.9	148	< 5	< 50	< 20
PLE-15-RC-023-07	1.7	< 0.5	168	380	3	24	28	16	1.26	33	< 5	< 2	< 200	< 5	10	58	200	< 2	17.1	141	< 5	< 50	< 20
PLE-15-RC-024-01	< 0.2	< 0.5	88	411	3	13	29	14	0.23	28	< 5	11	< 200	< 5	< 1	35	240	< 2	21.5	192	< 5	< 50	< 20
PLE-15-RC-024-02	< 0.2	< 0.5	79	406	3	11	29	13	0.13	28	< 5	< 2	< 200	< 5	6	33	230	< 2	20.1	178	< 5	< 50	40
PLE-15-RC-024-03	< 0.2	< 0.5	95	365	3	15	41	14	0.68	72	< 5	13	< 200	< 5	6	39	250	< 2	18.7	158	< 5	< 50	< 20

Results

Analyte Symbol	Na	Ni	Rb	Sb	Sc	Se	Sr	Ta	Th	U	W	Zn	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Mass
Unit Symbol	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	g
Lower Limit	0.05	200	50	0.2	0.1	20	0.2	1	0.5	0.5	4	200	1	3	10	0.1	0.2	2	0.2	0.05	
Method Code	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA
PLE-15-RC-001-01	0.54	< 200	< 50	2.1	60.1	< 20	< 0.2	24	63.1	16.6	< 4	< 200	147	333	260	48.0	11.0	4	17.2	1.74	26.7
PLE-15-RC-001-02	0.46	< 200	< 50	1.5	46.1	< 20	< 0.2	21	66.9	17.1	< 4	< 200	128	212	150	31.4	8.9	< 2	19.8	1.36	29.7
PLE-15-RC-002-01	0.39	< 200	< 50	2.6	48.7	< 20	< 0.2	25	73.6	22.5	< 4	< 200	167	283	120	34.2	8.8	4	19.8	1.40	41.0
PLE-15-RC-003-01	0.42	< 200	< 50	3.3	50.0	< 20	< 0.2	12	89.0	18.9	< 4	< 200	171	359	120	32.9	8.6	4	18.3	1.17	29.6
PLE-15-RC-004-01	0.32	< 200	< 50	6.0	50.0	< 20	< 0.2	17	64.4	30.9	< 4	< 200	161	265	190	35.6	10.2	4	18.3	1.23	35.5
PLE-15-RC-005-01	0.37	< 200	< 50	0.6	58.6	< 20	< 0.2	21	78.3	17.6	< 4	< 200	196	413	240	50.0	11.4	3	19.2	2.11	31.4
PLE-15-RC-006-01	0.60	< 200	< 50	7.6	59.0	< 20	< 0.2	18	68.6	27.7	< 4	< 200	221	459	410	62.9	14.0	5	19.7	2.39	9.80
PLE-15-RC-007-01	0.26	< 200	< 50	3.3	50.1	< 20	< 0.2	< 1	67.9	19.0	< 4	< 200	151	238	120	29.0	8.1	< 2	17.6	1.16	44.6
PLE-15-RC-007-02	0.40	< 200	< 50	4.8	55.3	< 20	< 0.2	< 1	66.6	22.9	< 4	< 200	156	245	120	32.7	9.8	5	18.2	1.24	39.1
PLE-15-RC-008-01	0.29	< 200	< 50	1.4	59.6	< 20	< 0.2	14	71.4	18.2	< 4	< 200	170	249	120	29.4	9.5	3	18.6	1.35	54.1
PLE-15-RC-009-01	0.30	< 200	< 50	4.8	58.7	< 20	< 0.2	27	58.3	18.2	41	< 200	181	331	240	40.2	10.2	4	21.1	2.89	16.3
PLE-15-RC-010-01	0.49	< 200	< 50	2.9	47.2	< 20	< 0.2	13	37.1	13.2	23	< 200	124	264	360	44.6	11.9	5	13.6	1.33	16.0
PLE-15-RC-011-01	0.57	< 200	< 50	2.4	56.2	< 20	< 0.2	15	54.4	17.2	< 4	< 200	140	340	230	52.6	12.4	4	15.9	1.53	24.0
PLE-15-RC-012-01	0.35	< 200	< 50	0.5	59.2	< 20	0.2	19	90.4	26.1	< 4	< 200	206	501	390	52.9	10.9	4	22.9	2.86	18.4
PLE-15-RC-013-01	0.37	< 200	< 50	1.3	61.1	< 20	< 0.2	18	80.1	19.5	< 4	< 200	174	380	180	41.9	10.3	4	20.7	2.37	22.0
PLE-15-RC-013-02	0.43	< 200	< 50	5.5	38.6	< 20	< 0.2	37	76.7	19.9	51	< 200	108	212	220	35.1	10.3	4	15.0	1.00	31.7
PLE-15-RC-014-01	0.50	< 200	< 50	1.1	40.9	< 20	< 0.2	< 1	38.8	11.0	< 4	< 200	85	157	100	25.9	8.7	2	11.9	0.72	32.0
PLE-15-RC-015-01	0.70	< 200	< 50	1.4	47.0	< 20	< 0.2	3	17.9	6.2	< 4	< 200	57	98	40	13.9	3.9	2	7.5	0.39	52.1
PLE-15-RC-015-02	0.50	< 200	< 50	2.7	52.8	< 20	< 0.2	14	31.0	14.4	< 4	< 200	105	186	160	32.5	9.9	5	14.9	0.82	30.7
PLE-15-RC-016-01	0.38	< 200	< 50	< 0.2	63.9	< 20	< 0.2	33	78.8	20.4	44	< 200	164	324	160	36.7	8.3	3	21.3	2.35	24.9
PLE-15-RC-016-02	0.33	< 200	< 50	0.6	37.8	< 20	< 0.2	30	57.7	17.7	63	< 200	88	141	60	14.9	4.1	< 2	14.3	1.04	64.0
PLE-15-RC-016-03	0.40	< 200	< 50	0.7	45.2	< 20	< 0.2	28	55.2	20.7	64	< 200	91	166	60	21.7	6.5	< 2	17.5	1.22	37.1
PLE-15-RC-016-04	0.41	< 200	< 50	1.2	55.9	< 20	< 0.2	30	51.4	14.8	< 4	< 200	130	278	320	48.6	11.8	6	22.8	2.39	22.7
PLE-15-RC-016-05	0.41	< 200	< 50	1.6	55.3	< 20	< 0.2	23	63.2	19.9	66	< 200	132	300	190	46.3	11.3	5	18.8	1.88	24.1
PLE-15-RC-016-06	0.37	< 200	< 50	2.1	38.1	< 20	< 0.2	18	67.6	17.4	41	< 200	106	194	110	28.7	7.8	3	15.5	0.93	41.9
PLE-15-RC-017-01	0.48	< 200	< 50	3.0	50.6	< 20	< 0.2	18	61.7	20.2	< 4	< 200	162	274	170	38.9	10.4	4	18.7	1.26	32.0
PLE-15-RC-018-01	0.46	< 200	< 50	2.5	66.7	< 20	< 0.2	30	111	29.8	< 4	< 200	255	565	370	64.6	14.1	6	23.9	2.79	20.0
PLE-15-RC-019-01	0.47	< 200	< 50	0.2	48.9	< 20	< 0.2	12	50.4	15.0	< 4	< 200	132	201	90	24.4	7.1	3	13.7	1.01	65.3
PLE-15-RC-019-02	0.54	< 200	< 50	< 0.2	48.9	< 20	< 0.2	10	66.0	15.5	< 4	< 200	148	239	120	28.9	8.0	< 2	15.4	1.12	36.9
PLE-15-RC-019-03	0.42	< 200	< 50	2.1	46.4	< 20	< 0.2	11	39.9	26.1	< 4	< 200	120	220	160	32.8	10.3	3	13.9	0.91	34.9
PLE-15-RC-020-01	0.62	< 200	< 50	< 0.2	53.4	< 20	< 0.2	9	58.5	19.5	< 4	< 200	144	217	110	27.5	7.4	2	15.9	1.00	53.8
PLE-15-RC-021-01	0.55	< 200	< 50	1.1	56.6	< 20	< 0.2	2	65.6	18.4	< 4	< 200	151	234	110	28.1	8.7	2	16.0	1.03	50.4
PLE-15-RC-022-01	0.50	< 200	< 50	4.0	65.7	< 20	< 0.2	22	80.7	20.0	< 4	< 200	208	444	350	57.3	12.8	3	18.9	1.97	22.5
PLE-15-RC-023-01	0.37	< 200	< 50	0.5	39.6	< 20	< 0.2	18	80.4	24.8	< 4	< 200	165	270	190	31.4	9.4	4	17.1	1.12	46.8
PLE-15-RC-023-02	0.34	< 200	< 50	0.7	43.3	< 20	< 0.2	19	93.2	32.4	< 4	< 200	199	315	140	36.6	9.8	< 2	20.7	1.40	36.0
PLE-15-RC-023-03	0.40	< 200	< 50	1.2	53.6	< 20	< 0.2	25	84.8	22.2	< 4	< 200	225	473	310	50.9	11.3	3	21.5	2.70	31.9
PLE-15-RC-023-04	0.32	300	< 50	< 0.2	46.4	< 20	< 0.2	29	90.6	26.2	< 4	< 200	192	320	180	38.1	10.7	4	21.0	1.35	43.3
PLE-15-RC-023-05	0.33	< 200	< 50	0.5	44.3	< 20	< 0.2	21	98.5	29.0	< 4	< 200	196	331	140	39.2	11.3	4	20.5	1.40	35.4
PLE-15-RC-023-06	0.35	< 200	< 50	< 0.2	48.7	< 20	< 0.2	25	121	31.2	< 4	< 200	239	517	220	46.5	11.1	2	20.4	2.38	31.6
PLE-15-RC-023-07	0.35	< 200	< 50	0.4	41.5	< 20	< 0.2	27	137	30.4	< 4	< 200	232	371	230	41.9	11.4	< 2	22.3	1.53	33.7
PLE-15-RC-024-01	0.33	< 200	< 50	< 0.2	49.0	< 20	< 0.2	25	127	26.8	< 4	< 200	258	523	260	48.6	11.0	2	21.2	2.64	27.3
PLE-15-RC-024-02	0.32	< 200	< 50	< 0.2	50.9	< 20	< 0.2	25	117	29.8	< 4	< 200	262	574	270	52.2	11.8	4	22.4	2.75	27.7
PLE-15-RC-024-03	0.38	< 200	< 50	1.2	44.9	< 20	< 0.2	22	154	29.7	< 4	< 200	249	393	180	43.1	11.6	< 2	22.4	1.48	36.7

QC

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	S	Au	Ag	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	Hg	Ir	Mo
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm
Lower Limit	0.2	0.5	1	2	2	1	2	1	0.01	5	5	2	200	5	1	5	10	2	0.02	1	5	50	20
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA
GXR-1 Meas	30.8	1.9	1150	776	17	29	646	691	0.21														
GXR-1 Cert	31.0	3.30	1110	852	18.0	41.0	730	760	0.257														
GXR-1 Meas	28.4	1.8	1050	750	15	27	591	638	0.19														
GXR-1 Cert	31.0	3.30	1110	852	18.0	41.0	730	760	0.257														
GXR-4 Meas	3.8	< 0.5	6560	144	339	38	43	70	1.79														
GXR-4 Cert	4.0	0.860	6520	155	310	42.0	52.0	73.0	1.77														
GXR-4 Meas	3.6	< 0.5	6320	134	324	36	40	66	1.67														
GXR-4 Cert	4.0	0.860	6520	155	310	42.0	52.0	73.0	1.77														
GXR-6 Meas	0.3	< 0.5	68	1050	4	23	91	123	0.01														
GXR-6 Cert	1.30	1.00	66.0	1010	2.40	27.0	101	118	0.0160														
GXR-6 Meas	0.4	< 0.5	67	1020	< 2	22	94	120	0.02														
GXR-6 Cert	1.30	1.00	66.0	1010	2.40	27.0	101	118	0.0160														
SdAR-M2 (U.S.G.S.) Meas		5.3	262		15	48	849	837															
SdAR-M2 (U.S.G.S.) Cert		5.1	236.0000		13.3	48.8	808	760															
DMMAS 118 Meas										1770		1740	1400			43	90		3.39				
DMMAS 118 Cert										1729		1661	1264			45	83		3.25				
DMMAS 118 Meas										1600		1690	1300			43	90		3.28				
DMMAS 118 Cert										1729		1661	1264			45	83		3.25				
DMMAS 118 Meas										1710		1710	1300			44	90		3.25				
DMMAS 118 Cert										1729		1661	1264			45	83		3.25				
DMMAS 118 Meas										1770		1710	1200			42	90		3.36				
DMMAS 118 Cert										1729		1661	1264			45	83		3.25				
PLE-15-RC-007-02 Orig	< 0.2	< 0.5	22	385	< 2	13	20	13	0.08														
PLE-15-RC-007-02 Dup	< 0.2	< 0.5	26	384	< 2	12	19	12	0.06														
PLE-15-RC-016-04 Orig	< 0.2	< 0.5	44	376	5890	33	26	19	0.65														
PLE-15-RC-016-04 Dup	< 0.2	< 0.5	90	404	7180	39	23	21	0.84														
PLE-15-RC-024-01 Orig	< 0.2	< 0.5	131	354	3	12	28	13	0.20														
PLE-15-RC-024-01 Dup	< 0.2	< 0.5	46	468	3	14	31	14	0.26														
Method Blank	< 0.2	< 0.5	2	< 2	< 2	< 1	< 2	2	< 0.01														
Method Blank	< 0.2	< 0.5	< 1	< 2	< 2	< 1	< 2	< 1	< 0.01														
Method Blank	< 0.2	< 0.5	< 1	< 2	< 2	< 1	< 2	< 1	< 0.01														
Method Blank										< 5	< 5	< 2	< 200	< 5	< 1	< 5	< 10	< 2	0.09	< 1	< 5	< 50	< 20
Method Blank										< 5	< 5	< 2	< 200	< 5	< 1	< 5	< 10	< 2	< 0.02	< 1	< 5	< 50	< 20
Method Blank										< 5	< 5	< 2	< 200	< 5	< 1	< 5	< 10	< 2	< 0.02	< 1	< 5	< 50	< 20
Method Blank										< 5	< 5	< 2	< 200	< 5	< 1	< 5	< 10	< 2	< 0.02	< 1	< 5	< 50	< 20

QC

Analyte Symbol	Na	Ni	Rb	Sb	Sc	Se	Sr	Ta	Th	U	W	Zn	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Mass
Unit Symbol	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	g
Lower Limit	0.05	200	50	0.2	0.1	20	0.2	1	0.5	0.5	4	200	1	3	10	0.1	0.2	2	0.2	0.05	
Method Code	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA
GXR-1 Meas																					
GXR-1 Cert																					
GXR-1 Meas																					
GXR-1 Cert																					
GXR-4 Meas																					
GXR-4 Cert																					
GXR-4 Meas																					
GXR-4 Cert																					
GXR-6 Meas																					
GXR-6 Cert																					
GXR-6 Meas																					
GXR-6 Cert																					
SdAR-M2 (U.S.G.S.) Meas																					
SdAR-M2 (U.S.G.S.) Cert																					
DMMAS 118 Meas	2.17			6.6	6.0					15.7			16	26		2.2					
DMMAS 118 Cert	2.21			6.6	6.1					15.9			16.9	30		2.2					
DMMAS 118 Meas	2.17			6.7	6.1					16.6			16	34		2.0					
DMMAS 118 Cert	2.21			6.6	6.1					15.9			16.9	30		2.2					
DMMAS 118 Meas	2.13			6.9	6.1					16.7			17	27		2.4					
DMMAS 118 Cert	2.21			6.6	6.1					15.9			16.9	30		2.2					
DMMAS 118 Meas	2.14			6.6	6.3					15.5			17	28		2.0					
DMMAS 118 Cert	2.21			6.6	6.1					15.9			16.9	30		2.2					
PLE-15-RC-007-02 Orig																					
PLE-15-RC-007-02 Dup																					
PLE-15-RC-016-04 Orig																					
PLE-15-RC-016-04 Dup																					
PLE-15-RC-024-01 Orig																					
PLE-15-RC-024-01 Dup																					
Method Blank																					
Method Blank																					
Method Blank																					
Method Blank	< 0.05	< 200	< 50	< 0.2	< 0.1	< 20	< 0.2	< 1	< 0.5	< 0.5	< 4	< 200	< 1	< 3	< 10	< 0.1	< 0.2	< 2	< 0.2	< 0.05	10.0
Method Blank	< 0.05	< 200	< 50	< 0.2	< 0.1	< 20	< 0.2	< 1	< 0.5	< 0.5	< 4	< 200	< 1	< 3	< 10	< 0.1	< 0.2	< 2	< 0.2	< 0.05	30.0
Method Blank	< 0.05	< 200	< 50	< 0.2	< 0.1	< 20	< 0.2	< 1	< 0.5	< 0.5	< 4	< 200	< 1	< 3	< 10	< 0.1	< 0.2	< 2	< 0.2	< 0.05	30.0
Method Blank	< 0.05	< 200	< 50	< 0.2	< 0.1	< 20	< 0.2	< 1	< 0.5	< 0.5	< 4	< 200	< 1	< 3	< 10	< 0.1	< 0.2	< 2	< 0.2	< 0.05	30.0