

**Technical Report for the Fraser Bay 1-3 Property,  
Melville Peninsula, Nunavut, Canada**

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**November 30, 2010  
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## Table of Contents

SUMMARY .....	1
INTRODUCTION .....	4
RELIANCE ON OTHER EXPERTS .....	4
PROPERTY DESCRIPTION AND LOCATION .....	6
ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY .....	7
Short-Term Access.....	7
Long-Term Access .....	9
Climate and Physiography .....	10
HISTORY .....	11
GEOLOGICAL SETTING .....	15
Regional Geology .....	15
Property Geology .....	16
Fraser (Borealis) Iron Formation Geology .....	17
DEPOSIT TYPES .....	18
Iron Ore .....	18
Gold.....	19
Kimberlites .....	20
MINERALIZATION.....	20
EXPLORATION 2010 .....	21
DRILLING .....	26
SAMPLING METHOD AND APPROACH .....	26
SAMPLE PREPARATION, ANALYSES AND SECURITY .....	27
DATA VERIFICATION .....	28
ADJACENT PROPERTIES.....	29
MINERAL PROCESSING AND METALLURGICAL TESTING .....	29
MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES .....	30
OTHER RELEVANT DATA AND INFORMATION .....	30
INTERPRETATION AND CONCLUSIONS.....	30
RECOMMENDATIONS.....	32
REFERENCES .....	33
CERTIFICATE OF AUTHOR .....	37

## Figures

Figure 1 Property location .....	5
Figure 2 Historical Samples and Iron Formations on Total Field Magnetics .....	12
Figure 3 Location 2010 Samples .....	22
Figure 4 Location 2010 Samples – Scarpa Lake 1 <sup>st</sup> VD of Total Field Magnetics .....	24

## Tables

Table 1 Roche Bay PLC Mineral Lease Summary.....	6
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Table 2 Results from the 1968-1970 sampling programs. ....	13
Table 3 Average Dimensions for the Principal Iron Formations on the Fraser Bay 1-3 Property.....	17
Table 4 Estimated cost to conduct Stage 1 exploration program during 2011 ...	32

## **Plates**

Plate 1 Prominent 120 m wide outcrop of Fraser 1 banded iron formation (BIF), clearly visible from the air. ....	3
Plate 2 Outcrop of Fraser 1 BIF with helicopter for scale.....	3
Plate 3 Airstrip at Mackar Inlet DEW line site.....	8
Plate 4 Town of Hall Beach.....	8
Plate 5 Typical flat plateau like topography along potential road route to Roche Bay. ....	10
Plate 6 Eastern contact zone of Fraser 2 BIF and country rock. Location for rock grab sample 10MDP109.....	21
Plate 7 Frost heaved blocks and location for 10MDP107 from Fraser 1 BIF ...	25
Plate 8 Large block of BIF sloughed off of western contact of Fraser 1 BIF ...	25
Plate 9 Looking east at west edge of Fraser 1 banded iron formation with person on top of ridge for scale .....	26

## **Appendices**

Appendix 1 Fraser Bay 1-3 Property Sample Locations & Descriptions...At End	
Appendix 2 Geochemical Results for Fraser Bay 1-3 Property Samples...At End	

## **SUMMARY**

APEX Geoscience Ltd. ("APEX") was retained in 2010 as independent consultants to conduct a property visit and complete a Technical Report on the iron ore potential of the Fraser Bay 1-3 Property held by Roche Bay PLC ("Roche Bay"). The author, Mr. Michael Dufresne, a Qualified Person, most recently visited the Fraser Bay 1-3 Property August 24 and 25, 2010. The report is written to comply with standards set out in National Instrument (NI) 43-101, Companion Policy 43-101CP and Form 43-101F1 for the Canadian Securities Administration (CSA). This Report is a technical summary of available geological, geophysical and geochemical information for the Property.

The Fraser Bay 1-3 Property is located near the west coast of Melville Peninsula in Nunavut Territory, Canada. The property covers 3,228 acres and consists of a single mineral lease, which is wholly owned by Roche Bay and is situated along the central western coast of Melville Peninsula.

Field observations in combination with the analytical results for samples collected by the author confirm the presence of Archean banded iron formation (BIF) with high concentrations of total iron (Fe) in the form of magnetite with lesser amounts of hematite as previously reported from historical sampling. Historical sampling of the BIFs has yielded between 29 and 38% total Fe. Samples collected by the author returned up to 64.9% total Fe with the highest grade sample collected from the Fraser 1 (known historically as the Borealis 1) BIF.

Rock grab samples 10MDP101 and 10MDP103, which yielded 64.9% and 56.69% total Fe respectively, were collected from what appears to be a relatively continuous core zone of near massive magnetite BIF that is 40 to 50 m wide and at least 200 m in length within the Fraser 1 BIF. Although the samples are simple rock grab samples they were relatively representative of the core high grade zone. Both samples yielded low concentrations of most other major elements and other critical deleterious elements such as phosphorous and sulphur. The phosphorous and sulphur results compare favourably to other major iron projects in the region at Roche Bay and at Mary River. Diamond drilling will be required to determine the full extent and continuity of the high grade magnetite core zone within the Fraser 1 BIF. Reconnaissance helicopter based fieldwork has confirmed that the Fraser 1 (Borealis 1) BIF is approximately 2.2 km in strike length, ranges from 120 m to 340 m in surface width and is the most prospective BIF for high grade iron ore. Fraser 2 (Borealis 2) is approximately 1.4 km in length, ranges from 200 m to 300 m in width and is also prospective for high grade iron ore. Both BIFs are well exposed and form prominent bluffs as displayed in Plates 1 and 2.

The Fraser 1 BIF and, possibly, the Fraser 2 BIF have the potential to host a direct ship core zone of iron ore with greater than 60% total Fe within a much larger deposit of iron ore that contains 30 to 35% total Fe and that is comparable

to the Roche Bay iron ore deposit on the east side of Melville Peninsula. This is significant because there is only one other direct ship iron ore body in North America, the Mary River Iron Ore Project, and very few undeveloped direct ship iron ore bodies in the world. Direct ship iron ore is highly desirable because it would have a significant positive impact on the economics of an iron ore project, particularly in the Arctic north. Having a portion of the deposit that could be mined as direct ship iron ore would be a huge advantage in comparison to other iron ore deposits such as Roche Bay for a number of reasons: it would require the building and operation of a much smaller processing plant along with little or no tailings pond resulting therefore in a much smaller environmental footprint. This scenario would have a positive impact on the lead time to permit and construct a mine as well as would significantly reduce the initial capital cost to construct such a mine.

Future exploration at the Fraser 1-3 Property should consist of an aggressive Stage 1 fieldwork and drilling program. It is strongly recommended that a minimum of 2,500 m of diamond drilling should be performed during summer 2011 with a series of 2 or 3 hole fences to be drilled across the Fraser 1 BIF in order to determine the size and extent of the BIF along with any high grade core zone that might be present. Fieldwork should consist of surface mapping, sampling and ground geophysical surveys to accurately determine the surface size and extent of the Fraser 1 and 2 BIFs. The estimated cost to conduct the Stage 1 program is \$2,500,000.

The estimated costs include a provision to purchase fuel, supplies and a 10-12 man camp and then marshal them in Yellowknife or Churchill along with a drill. The fuel, supplies, camp and drill will have to be mobilized by Hercules Aircraft to one of Pelly Bay or Hall Beach and then likely by Buffalo Aircraft on to the Mackar Inlet airstrip. Twin Otter and helicopter will be required to move the camp, fuel, supplies and drill to the Fraser Bay 1-3 Property.

Although the work completed by APEX during 2010 was reconnaissance in nature, it confirmed the potential for a significant iron ore deposit on the Fraser Bay 1-3 Property. The Fraser 1 BIF and, possibly, the Fraser 2 BIF, have the potential to host a core zone of direct ship greater than 60% total Fe iron ore that could be the basis for a startup high grade deposit. As such, the Fraser Bay 1-3 Property warrants a significant drilling program during summer 2011 in order to outline the potential size of the deposit and the potential for it to host a high grade core zone of direct ship iron ore.



Plate 1. Prominent 120 m wide outcrop of Fraser 1 banded iron formation (BIF), clearly visible from the air.

Plate 2. Outcrop of Fraser 1 BIF with helicopter for scale.

## **INTRODUCTION**

This report is written as a Technical Report (the “Report”) on the iron ore potential of the Fraser Bay 1-3 Property held by Roche Bay PLC (“Roche Bay”) (Figure 1). The report is written to comply with standards set out in National Instrument (NI) 43-101, Companion Policy 43-101CP and Form 43-101F1 for the Canadian Securities Administration (CSA). This Report is a technical summary of available geological, geophysical and geochemical information for the Property.

APEX Geoscience Ltd. (“APEX”) was retained in 2010 as consultants to complete an independent technical report on behalf of Roche Bay, specific to the Fraser Bay 1-3 Property. Mr. Michael Dufresne, M.Sc., P.Geol., a principal with APEX, and a Qualified Person has conducted a variety of property visits and managed a number of exploration programs throughout the Canadian Arctic for numerous clients and for a variety of commodities since 1986. The author, Mr. Dufresne, has extensive experience in exploration focused on Archean banded iron formation (BIF) in the Canadian Arctic and has most recently visited the Fraser Bay 1-3 Property August 24 and 25, 2010 and collected 6 rock grab samples. Although the Property has received little modern exploration and has not been drill tested, it can be classified as an intermediate to advanced stage exploration property as it contains an iron deposit of significant size.

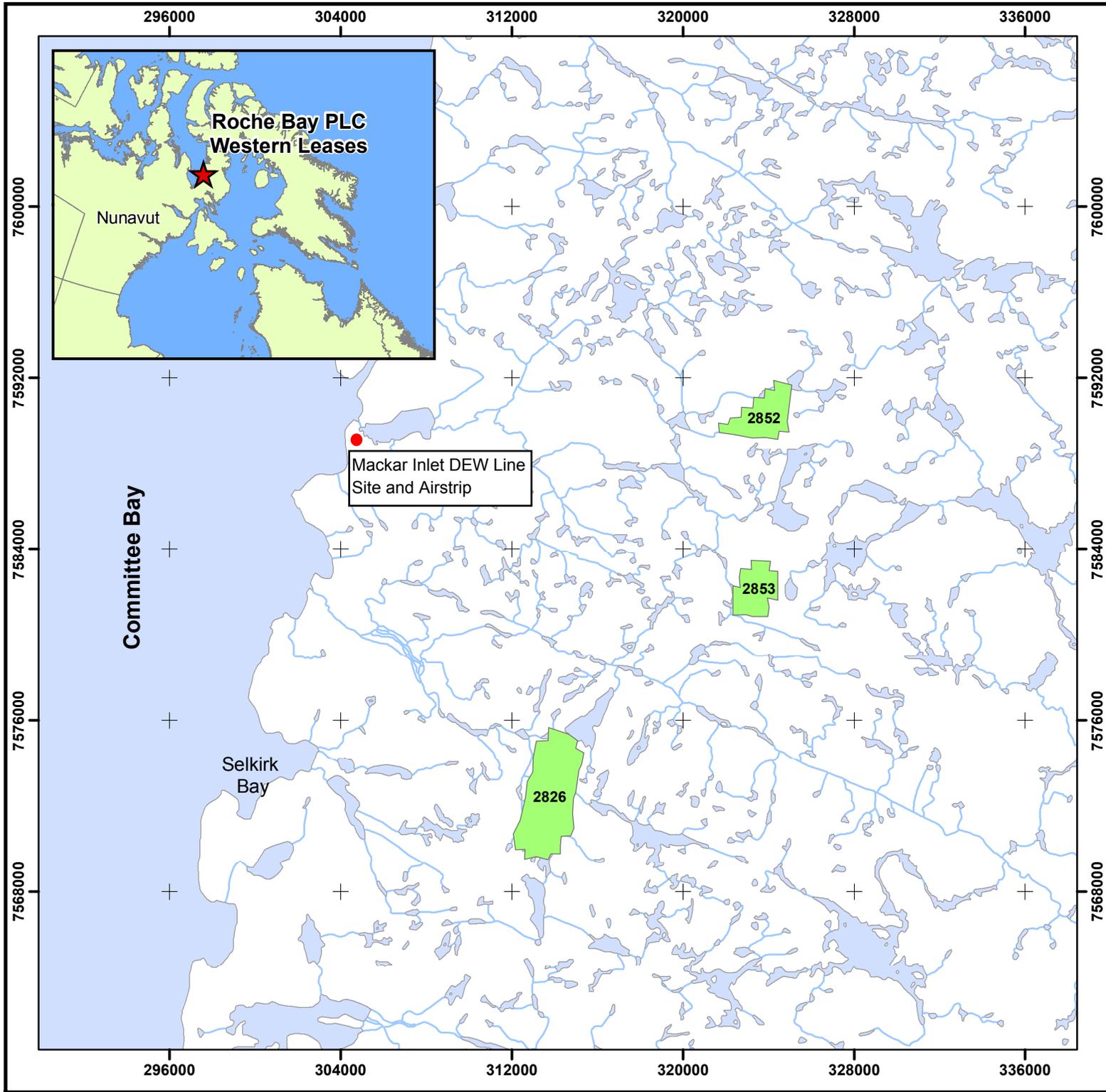
The supporting documents which were used as background information are referenced in this Report in the ‘History’, ‘Geological Setting’ and ‘References’ sections below. The nature and extent to which these documents have been used is discussed below in the section entitled ‘Reliance on Other Experts’.

Any reference in this Report to the ‘current author’ refers to Mr. Dufresne. Unless otherwise stated, all coordinates are presented in the North American Datum (NAD) 1983, Universal Transverse Mercator (UTM) Zone 17 and dollar amounts are in Canadian currency.

## **RELIANCE ON OTHER EXPERTS**

The author’s site visit to the Property is documented in the ‘Exploration’ section of this Report. Based upon the site visit and the author’s experience in the region, the author has no reason to believe that exploration conducted by Roche Bay or previous explorers was completed in a manner inconsistent with normal exploration practices and has no reason not to rely on such historic data and information.

The author, in writing this Report, used sources of information as listed in the ‘References’ section. This Report, written by Mr. Dufresne, M.Sc., P.Geol., a Qualified Person, is a compilation of proprietary and publicly available information as well as information obtained during the site visit to the Property.



**Legend**

Western Leases

**Roche Bay PLC**

Property Location

0    3    6    12  
 Km

1:250,000  
 Nad 83, Zone 17  
 Nunavut, Canada  
**Figure 1**

APEX Geoscience Ltd.  
 Edmonton, AB      April, 2010

The author has made no attempt to verify the legal status and ownership of the Property, nor is he qualified to do so. The Property is comprised of a single mineral lease, Lease 2826 as shown online on Indian and Northern Affairs Canada's SID Viewer website, and is listed as being in good standing in the name of Roche Bay PLC. The lease has been legally surveyed and has an expiry date of February 25, 2019.

## **PROPERTY DESCRIPTION AND LOCATION**

The Property is located in Nunavut Territory, Canada within the 1:250,000 scale National Topographic System (NTS) map area 47B. The property covers 3,228 acres and consists of a single mineral lease along the central western coast of the Melville Peninsula (Figure 1, Table 1). The mineral lease is wholly-owned by Roche Bay PLC.

<b>Lease #</b>	<b>Acres</b>	<b>Expiry Dates</b>
2826	3,228	Feb 25, 2019

**Table 1.** Roche Bay PLC Mineral Lease Summary.

In Nunavut, the Northwest Territories and Nunavut Mining Regulations (NTNUMR) govern the location of mineral claims and subsequent leases. To locate a mineral claim in Nunavut an individual or corporation must hold a valid Licence to Prospect. Corporations must be registered with the Registrar of companies pursuant to the *Companies Ordinance* of the Territories. A single mineral claim cannot exceed 2582.5 acres in size and must be physically located in accordance with the NTNUMR and registered with the Nunavut Mining Recorder. Mineral claims require representation work commitments of \$4/acre for the first two years and \$2/acre for each year thereafter, up to a maximum of ten years. Representation work must be filed with the Mining Recorder within 30 days of the anniversary date of the claim or within 60 days of the date of the lapsing notice. At the end of the tenth year the record holder of the mineral claim can apply for lease status, at which time a yearly payment of \$1/acre must be made with no further work commitments and/or expenditures; the claim must be legally surveyed as part of the lease application. A mineral lease is valid for a period of 21 years and may be renewed indefinitely. Renewal of a mineral lease for subsequent 21 year periods requires a payment of \$2/acre.

Physical work within mineral claims and leases, other than remote sensing (e.g. airborne surveys) requires a number of permits and approvals. The 1993 Nunavut Lands Claims Agreement gave Inuit title to 356,000 square kilometers (km) of land. Inuit Owned Lands (IOL) comprise a number of parcels for which Inuit hold surface and/or subsurface title. Work within IOL requires notification of the applicable Regional Inuit Association (RIA). In the case of the Fraser Bay 1-3 Property the operator must hold land use licences issued by the Qikiqtani Inuit

Association (QIA) as the lease lies within a surface title IOL parcel (HB-08); the Inuit people control the surface rights but not the subsurface or mineral rights of this parcel. Local Inuit communities such as Hall Beach and Igloolik would also have to be notified and consulted. Water use activities (i.e. a camp or drilling) within Nunavut require a Water Licence to be granted by the Nunavut Water Board (Article 12 of Nunavut Land Claims Agreement). To establish an exploration camp on Crown Lands in Nunavut requires a land use permit issued by Indian and Northern Affairs Canada (INAC). All IOL licences, water licences and INAC land use applications are screened by the Nunavut Impact Review Board (NIRB) under Article 13 of Nunavut Land Claim Agreement. NIRB screens project proposals to determine whether they may have significantly adverse environmental and socio-economic impact potential. No work permits are currently issued for the Property.

The author is not aware of any agreements, encumbrances or environmental liabilities to which the Property is subject.

## **ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **Short-Term Access**

The Fraser Bay 1-3 Property is located 180 km east of Kugaaruk, 188 km north of Repulse Bay, and 180 km and 200 km southwest of Hall Beach and Igloolik, respectively (Figure 1).

Access to the Property can be gained by Hercules or Buffalo Aircraft to the Mackar Inlet Defence Early Warning (DEW line) site, which is 16.5 km northwest of the Fraser Bay 1-3 Property (Figure 1, Plate 3). This airstrip that is part of the Mackar Inlet DEW line site, which was built as part of the 1950s DEW line and is an all weather gravel strip that is approximately 1,200 m in length and is in excellent condition with good approaches east and west of the strip (Plate 1). At the airstrip there is a Quonset hut and a number of all weather semi permanent trailers. The Mackar Inlet airstrip is 170 km east of Kugaaruk, 190 km from Hall Beach and 200 km from Repulse Bay.

Local access to and around the Fraser 1-3 Property will be by either helicopter, fixed wing aircraft with tundra tires or float plane. Due to the excellent strip at Mackar Inlet, the rational mobilization point for all supplies will be the Mackar Inlet strip.

There is scheduled commercial aircraft with Canadian North and/or First Air from Iqaluit to Hall Beach daily except Sunday. There is also commercial service from Rankin Inlet to Repulse Bay daily except Sunday. From both Rankin and Iqaluit there are flights south and west to Yellowknife, NT, Winnipeg, MB, Montreal, QC



Plate 3. Airstrip at Mackar Inlet DEW line site.  
Plate 4. The town of Hall Beach.

or Ottawa, ON. Both Hall Beach and Repulse Bay are serviced seasonally by barge. The Mackar Inlet DEW line site is situated on tidewater of Committee Bay, however, presently the sea ice at Committee Bay does not permit regular shipping access.

During the summer months no aircraft are based in Igloolik, Hall Beach or Repulse Bay however, fixed wing aircraft and helicopters can be chartered on a casual or full time basis from Yellowknife and Rankin Inlet. Several services, including groceries and hotels, are available in Igloolik, Hall Beach and/or Repulse Bay (Plate 4). All other supplies that are not available in Igloolik, Hall Beach and/or Repulse Bay can be shipped directly from Yellowknife, Edmonton, Winnipeg, Iqaluit, Ottawa or Montreal via the scheduled air service.

### **Long-Term Access**

The Fraser Bay 1-3 Property is less than 15 km from the tidewater of Committee Bay. The sea ice of Committee Bay does not permit regular shipping although with improved ice breaking technology and further global warming it is possible that in future regular shipping to Committee Bay could occur. The Fraser Bay 1-3 Property is 121 km from the Roche Bay Harbour on the east side of Melville Peninsula, which has the potential for a natural deep water port. Within 7 km of the harbor, Advanced Explorations Inc. (AEI) in a joint venture with Roche Bay have identified an Inferred Resource of 357 million tonnes grading 28.07% total iron (Fe) in a banded iron formation (BIF) that is 43-101 compliant (Shaw and Palmer, 2009; Dorval *et al.*, 2010). The author has visited the property but has not verified the resource. Dorval *et al.* (2010) indicate that the Roche Bay Magnetite Project should proceed to a full feasibility study. AEI indicates that they are proceeding through the required steps toward preparing an application for a mining permit. The construction of an open pit mine and port facility at Roche Bay by the AEI and Roche Bay joint venture would have a significant impact on the long term infrastructure envisioned for the Fraser Bay 1-3 Property.

As an example, the cost and difficulty of construction of an all weather overland road from the Fraser Bay 1-3 Property to Roche Bay would need to be reviewed and considered if the AEI and Roche Bay joint venture proceed to construction and mining. Of the 121 km between the Fraser Bay 1-3 Property and Roche Bay, the first 20 km west from the Roche Bay harbour yields a rise of roughly 270 m, with most of the rise within 4-5 km of the bay. The next 80 km is high, relatively flat plateau (Plate 5). This plateau has decent bedrock, limited boggy tundra, and no major rivers between Roche Bay and the Fraser Bay 1-3 Property (Plate 5). The westernmost 20 km is hilly with a range of 50-80 m of rise over a number of hills. The iron deposit that exists on the Fraser 1-3 Property is one of the closest iron deposits to tidewater in the world.



Plate 5. Typical flat plateau-like topography along potential road route to Roche Bay.

### **Climate and Physiography**

The climate is typical of the eastern sub-arctic, being cold in the winter (minus (-) 20 to -45 degrees Celsius) and mild in the summer (5 to 15 degrees Celsius). Precipitation is moderate with approximately 25 cm of rain and 125 cm of snow (equivalent to a total of roughly 37.5 cm of rain) annually. Fog is often a problem near the coast during the summer and fall months. For comparison, Consolidated Thompson Iron Mines Ltd. faces close to 3 times the precipitation at their Bloom Lake Property near Labrador City: “the area has a sub-arctic climate with temperatures ranging from -40°C in winter to 25°C in summer. The average annual temperature is -3.6°C and the average total precipitation is 88 cm”.

Topography in the area is variable. Along the shore relatively flat lying glacial drift deposits are common. Inland, the area is characterized by nearly continuous outcrop of the Prince Albert Hills (Plates 1 and 2). In this area the hills are generally 360 m to 400 m high but reach up to a maximum of 540 m (Plates 1 and 2). River systems, where present, follow major fault valleys and major lineament trends. Approximately 75-80% of the area is well exposed outcrop (Plates 1 and 2). This area has been modified by continental glaciation, which is reflected in the gently undulating tops of the Prince Albert Hills. The area lies well north of the tree-line and is thus characterized by flora and fauna typical for arctic

tundra. Elevation ranges from 40 m to about 480 m above sea level. Glacial erosional and depositional features indicate paleo-ice flow directions to the west with local variations ranging from south-south-west to north-north-west.

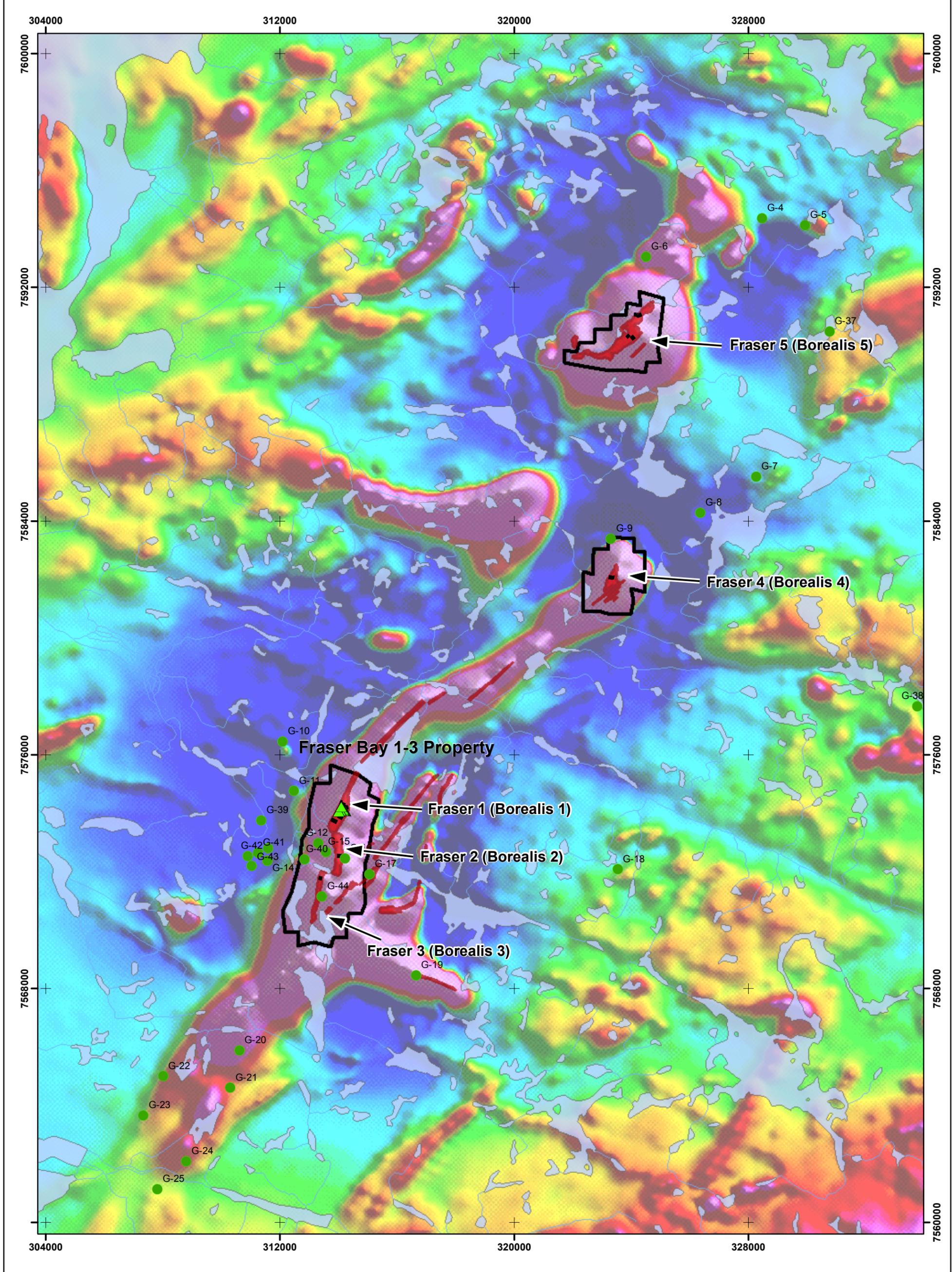
## **HISTORY**

The first systematic geological mapping of the southern half of Melville Peninsula was conducted by Heywood (1967) at a scale of 1:506,880. Parts of southern Melville Peninsula have since been remapped by Frisch (1982) at a scale of 1:250,000 and by Henderson (1983, 1987) at a scale of 1:100,000. Schau (1981, 1993) has mapped northern Melville Peninsula at scales of 1:500,000 and 1:125,000. Airborne magnetic surveys have been performed over the entire Melville Peninsula, including NTS map areas 46M, N, O, P and 47A, B and C by the Geological Survey of Canada (“GSC”) (1978a,b,c,d,e,f). More recently the GSC completed a regional aeromagnetic survey (Coyle, 2010) over the central portion of the Melville Peninsula encompassing the Fraser Bay 1-3 Property (Figure 2).

Mineral exploration on the Melville Peninsula has been carried out since the late 1960’s by several companies. Based on the initial GSC surveys, Borealis Exploration Ltd. (“Borealis”) completed exploration to delineate magnetite iron ore deposits within both the eastern and western Melville Peninsula from 1968 to 1970 and 1979 to 1983.

Borealis’ 1968 exploration program included limited work in the area covering the Fraser Bay 1-3 Property including cursory visual examination from the air followed by ground examination and sampling of an outcropping iron formation. The iron formation occurs as discontinuous layers contained within Prince Alberta Group greenstone and quartzite, and is cross-cut by two east-west trending faults that are visible in the magnetic signature and on the ground (Figure 2). South of the southern fault (within Fraser 3) the dominant iron oxide is hematite whereas north of the southern fault magnetite was found to be the dominant iron oxide within Fraser 1 and 2. One section (Z) of channel samples was collected along a 1000 foot (ft) length at 100 ft intervals. The samples returned an average of 38% soluble iron content (Table 2; Henderson, 1968).

A follow-up exploration program was conducted in the area covering the Fraser Bay 1-3 Property in 1969 by Borealis (Underhill, 1969). During the program the area of iron formation discovered in 1968 was divided into the Fraser 1, 2 and 3 (Borealis 1, 2 and 3) zones separated by the faults and became known as the principal zone (Figure 2). Two additional iron formations were discovered: Fraser 4 (Borealis 4), which is located approximately 11 km north of the principal zone and Fraser 5 (Borealis 5), which occurs approximately 17 km north of the

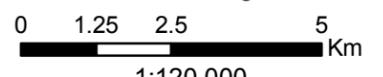


**Legend**

- Historic Gossan Locations
- ▲ Historic Bulk Samples
- Historic Channel Samples
- Iron Formations
- Western Leases

**Roche Bay PLC**

Historical Samples and Iron Formations on Total Field Magnetics



1:120,000

Nad 83, Zone 17  
Nunavut, Canada

**Figure 2**

APEX Geoscience Ltd.  
Edmonton, AB April, 2010

principal zone (Figure 2). Detailed mapping was completed over all the iron formations (Underhill, 1969).

**Table 2:** Results from the 1968-1970 sampling programs.

Iron Formation	Section	Year	Length (ft)	Sample Interval (ft)	Average soluble iron (Fe) content (%)
Fraser 1 (Borealis 1)	R	1969	976	20	
	S	1969	700	20	36
	T	1969	1230	20	36
	Z	1968	1000	100	38
Fraser 2 (Borealis 2)	Y	1969	600	30	33
Fraser 3 (Borealis 3)	Q	1970	335		
Fraser 4 (Borealis 4)	X	1969	860	30	38
Fraser 5 (Borealis 5)	V	1969	800	50	29
	W	1969	800	50	34

Channel samples were collected from iron formations 1, 2, 4 and 5 and returned average soluble iron contents up to 38% (Table 2; Figure 2; Underhill, 1969). Additionally 30 gossanous zones of interest were located and sampled throughout the area, four of which fall within the Fraser Bay 1-3 Property (Figure 2). Several of the gossans were found to contain metal mineralization other than iron. Of note are gossan G-12, located within Lease 2826, yielded 11.63 ounces per ton (oz/t) silver (Ag), 13.45% zinc (Zn), 8.05% lead (Pb) and 0.13% copper (Cu). Gossan G-17, located 200 m west of Lease 2826, yielded 0.38% Cu, 0.2 oz/t Ag and 0.04 oz/t gold (Au). An airborne radiometrics survey was completed over 2 areas of quartzite and conglomerate near Folster Lake, south of the Fraser Bay 1-3 Property, but no anomalies were detected (Underhill, 1969).

The 1970 exploration program included remapping of the Borealis 4 iron formation, sampling of the Borealis 3 iron formation and a magnetometer survey over Borealis 5. Channel samples along Section Q were collected at Borealis 3. The magnetometer survey over Borealis 5 was conducted to determine the western limit of iron formation below overburden. Additionally, 13 new gossans were discovered, 2 of which lie within the western leases. Follow-up sampling and geophysical surveys over 6 gossans of interest, including G-12, concluded that most were uneconomic and warranted no further work (Underhill, 1970).

From 1976 to 1980 Noranda Exploration Company Ltd. evaluated claims in the Folster Lake area, just south of the Fraser Bay 1-3 Property, for uranium and molybdenum mineralized zones in the Prince Albert Group. Exploration work included prospecting, detailed geological mapping, stream sediment sampling and rock sampling. Some uranium mineralization was encountered but it was considered insignificant. Molybdenum mineralization was found to occur in both the granitoid rocks and adjacent greenstones (Wark, 1980).

In 1977, a GSC uranium reconnaissance lake sediment and water geochemical sampling program covered a large area of the southern Melville Peninsula including the area of the Fraser Bay 1-3 Property. The results of the survey were published as open file reports 521 and 522 and led to a large staking rush by Cominco in NTS sheets 46N, O and P covering rocks of the Proterozoic Penrhyn Group (Nikhanj, 1984).

From 1983 to 1986, Borealis conducted precious metal exploration on several prospecting permits and mineral leases in southern, eastern and western Melville Peninsula. The highest gold assay reported from their fieldwork was 3.3 grams per tonne (g/t) Au from a gossan zone in rusty pelitic gneiss in south-central Melville Peninsula (Walls, 1986). Permits just north of the Fraser Bay 1-3 Property were found to be prospective for Zn, Ag and Au (Nikhanj, 1984). Additionally, Borealis reported a gold assay of 5.82 g/t Au from a non-magnetic tailings sample from iron ore drill core near Roche Bay (Ashley *et al.*, 1983).

In 1994, BHP Minerals Canada Ltd. conducted exploration for base metals in the southern Melville Peninsula resulting in the identification of gossanous metasediments with graphite and pyrrhotite occurrences in the Penrhyn Basin (Marmont, 1995). In 1996, the exploration was expanded to include gold and included geological mapping and geochemical sampling. Base metal anomalies with up to 1.0% Zn and 0.6% Cu associated with gossanous pelitic gneiss were identified (MacConnel and Harrison, 1996).

During 1994 and 1995, APEX conducted exploration for gold on selected parts of the Melville Peninsula, including to the north east of the Fraser Bay 1-3 Property, on behalf of the Melville Joint Venture ("MJV"). The program involved the examination of gossans and sulphide occurrences, which had been compiled from existing GSC maps and industry assessment reports, to evaluate the potential of metasedimentary and metavolcanic rocks of the Archean Prince Albert Group, as well as selected locales underlain by the Aphebian Penrhyn Group, to host gold-bearing zones. Additionally, airborne prospecting was conducted along prospective metasedimentary and metavolcanic belts and along aeromagnetic anomalies that had been identified from government maps. Low grade gold was discovered associated with sulphidic zones within iron formations, metasedimentary rocks, metavolcanic rocks and high strain zones in Archean rocks (Besserer and Olson, 1995, 1996).

During summer 2001, Hunter Exploration conducted regional beach sand sampling throughout the Melville Peninsula resulting in the discovery of diamond indicator minerals. Exploration was conducted by APEX on the subsequently staked ground during summer 2002 on behalf of Northern Empire Minerals Ltd., Stornoway Ventures Ltd. and Hunter Exploration. In total, 491 samples were collected in and around what is now known as the Aviat property located in the northern Melville Peninsula. Of the 491 samples, 65 were considered anomalous with respect to diamond indicator minerals. The 2002 exploration resulted in the

discovery of a highly diamondiferous kimberlite outcrop (the AV-1 Kimberlite) and the occurrence of diamond bearing kimberlite float in the northern Melville Peninsula (Besserer, 2003).

## **GEOLOGICAL SETTING**

### **Regional Geology**

The Melville Peninsula lies within the northern part of the Churchill Structural Province of the Precambrian Canadian Shield. It forms a horst between the Foxe Basin and Committee Bay. The Melville Peninsula is underlain by Archean tonalite-granodiorite gneiss, Archean Prince Albert Group metasedimentary and metavolcanic rocks, Archean granites of the Hall Lake Plutonic Complex, Aphebian Penrhyn Group metasedimentary rocks, Helikian sandstones and conglomerates of the Folster Lake Formation and Fury and Hecla Supergroup, Archean to Proterozoic metadiabase and diabase dykes, and early Paleozoic carbonate rocks. Large areas of the peninsula are covered by Quaternary glacial drift (Besserer and Olson, 1995).

The oldest rocks on the Melville Peninsula are partially retrogressed tonalite-granodiorite gneisses, which in some area are crosscut by leucogranite dykes and metamorphosed mafic sills and dykes (Schau, 1993). Supracrustal rocks of the Prince Albert Group unconformably overlie the gneisses. The term Prince Albert Group was introduced by Heywood (1967) to *"refer to a sequence of Aphebian (early Proterozoic) or Archean metamorphosed sedimentary and volcanic rocks"*, which exist mainly in two belts on the Melville Peninsula and one belt southwest of Committee Bay. Subsequent geological and isotopic analyses by Frisch and Goulet (1975) and Schau (1975) determined that the Prince Albert Group is, in fact, Archean in age. Schau (1993) described the Prince Albert Group as *"a volcanogenic sequence containing meta-ultramafic rocks, metabasalt, acid volcanic rocks, quartzite, banded iron formations, as well as more common pelitic and other clastic metasedimentary rocks"*. Small (100 to 400 m diameter) showings of serpentinized ultramafic rock within foliated porphyritic to megacrystic granite have been mapped in portions of the Melville Peninsula (Besserer and Olson, 1995).

The Prince Albert Group is exposed in numerous belts and in a few isolated rafts on the Melville Peninsula. The largest belt is up to 20 km wide and extends from the west-central Melville Peninsula, northeastwards to Roche Bay, then strikes northwards past Hall Lake, for a total distance of nearly 200 km. The other belts and rafts of Prince Albert Group rocks are up to 55 km long and 10 km wide (Besserer and Olson, 1995).

The tonalite-granodiorite gneiss and Prince Albert Group were intruded by Late Archean metagabbroic stocks, then deformed by a complex series of folds and

faults, and finally were metamorphosed and intruded by granites of the Hall Lake Plutonic Complex. Metamorphism in the Late Archean reached upper amphibolite grade throughout most of Melville Peninsula, but ranged from greenschist grade in a few regions on the east coast, through granulite grade in the northwest part of the Peninsula (Besserer and Olson, 1995).

Metasedimentary rocks of the Penrhyn Group were deposited during the Aphebian (early Proterozoic), mainly in the southern Melville Peninsula. The Penrhyn Group and underlying basement were subsequently deformed in at least two separate episodes associated with the late Aphebian Hudsonian Orogeny, and metamorphosed to amphibolite grade. Northeast-trending high-strain zones associated with this deformation are present along the contacts between the Penrhyn Group and basement rocks, and at several locations in the northwestern Melville Peninsula (Besserer and Olson, 1995).

The Melville Peninsula was uplifted during the Helikian (middle Proterozoic), and cross-cut by numerous east-southeast trending 'latitudinal faults' (Schau, 1993). These latitudinal faults occur throughout the Melville Peninsula, but are more common in the north half of the Peninsula. A few granitic stocks are emplaced along these latitudinal fault zones. Sandstone and conglomerate clastic sequences were deposited later in the Helikian, first in the Folster Lake Formation on the west coast, then in the Fury and Hecla Supergroup on the north coast of Melville Peninsula. Diabase dykes, of the Mackenzie Series and of the Franklin Series, were intruded into all of the above rock units during the Late Helikian and Hadrynian (Upper Proterozoic). Ordovician carbonate rocks were deposited both on the east coast and adjacent to the west coast of Melville Peninsula, and are the youngest rock units preserved. Renewed uplift of the Melville Peninsula to near its present erosional surface occurred during the Devonian and Cretaceous. In the Quaternary thick glacial sediments were locally deposited along the west coast (Besserer and Olson, 1995).

### **Property Geology**

The geology underlying the Fraser Bay 1-3 Property was detailed in two reports by Underhill (1969, 1970). These reports also describe the geology for the Fraser 1 to 5 (Borealis 1-5) banded iron formations (BIFs) and form the basis for the following summary.

The Fraser Bay 1-3 Property is underlain by granitic gneiss basement rocks which are overlain by sedimentary, including iron formation, and volcanic rocks of the Prince Albert Group (PAG); locally peridotites mark this contact. The segment of the PAG which hosts the Fraser 1 to 4 (Borealis 1 to 4) iron formations strikes discontinuously in a general north-south direction for approximately 17 km and has a maximum width of 3 km. Granitic intrusions have disconnected this segment from the Fraser 5 (Borealis 5) iron formation which is located approximately 6 km north of the Fraser 4 (Borealis 4) iron formation.

Folding has affected the PAg rocks with (pene-) contemporaneous intrusion of granites. East-west trending strike-slip faults post-date this intrusive activity with sinistral movement offsetting the north-south striking stratigraphy. Proterozoic quartzites unconformably overlie the Archean supracrustal rocks and older basement. East to southeasterly striking diabase dykes cross-cut the entire suite.

The rocks of the PAg are steeply dipping and affected by steeply-plunging tight folds. The folding resulted in thickening of the iron formation units which range up to 450 m in thickness on the Fraser Bay 1-3 Property (Underhill, 1970).

### Fraser (Borealis) Iron Formation Geology

The iron formations that comprise the Fraser 1 to 5 (Borealis 1 to 5) iron ore deposits are Algoma-type Banded Iron Formation (BIF) that are dominated by a quartz-magnetite mineralogy with locally present hematite. Individual beds of these minerals are present on the millimeter to centimeter scale. Total iron (Fe) contents of the Fraser iron formations typically range from 29 to 38%.

On the Fraser Bay 1-3 Property, the Fraser 1 to 3 (Borealis 1 to 3) BIF's represent fault offset segments of the same iron formation horizon and lie within mineral lease 2826. The average surface dimensions of the Fraser 1 to 5 (Borealis 1 to 5) iron formations are given in Table 3. The Fraser 1 and 2 (Borealis 1 and 2) iron formations dip vertically to steeply west with steeply plunging folds. The Fraser 1 (Borealis 1) iron formation ranges in width from 120 m to 340 m with an average width of 275 m (Table 3). The Fraser 2 (Borealis 2) iron formation ranges in width from 200 m to 300 m with an average width of 210 m (Table 3). Late east-west trending strike-slip faults form large escarpments between the Fraser 1, 2 and 3 (Borealis 1, 2 and 3) iron formations allowing excellent exposure of the BIFs in the third dimension (depth). Fraser 3 (Borealis 3) represents a fold closure and comprises an eastern and western limb. Underhill (1969 and 1970) suggests that the Fraser 1 and 2 (Borealis 1 and 2) iron formations are magnetite dominated with the Fraser 3 iron formation containing significantly more hematite.

Area	Length (m)	Width (m)
Fraser 1 (Borealis 1)	1400	275
Fraser 2 (Borealis 2)	1370	210
Fraser 3 (Borealis 3)*	2740	100
Fraser 4 (Borealis 4)	1220	150
Fraser 5 (Borealis 5)	1830	300

**Table 3.** Average Dimensions for the Principal Iron Formations (Fraser 1, 2 and 3) on the Fraser Bay 1-3 Property. (*from* Underhill, 1970) (\*length of two fold limbs combined and thickness averaged)

Fraser 4 (Borealis 4) lies within mineral lease 2853, 11 km northeast of the Fraser Bay 1-3 Property. The iron formation dips vertically and is folded into a

large, steeply plunging drag fold (Underhill, 1970). Fraser 4 (Borealis 4) reaches a maximum thickness of 300 m tapering to the north and south to 30 m (Table 3).

Fraser 5 (Borealis 5) is covered by mineral lease 2852 and lies 6 km north of Fraser 4 (Borealis 4). The iron formation is isoclinally-folded with a steep northerly plunge and outcrops over 3 km with a maximum width of 550 m (Table 3). Elongation directions of deformed pebbles in an adjacent conglomerate are parallel and confirm the steep plunge of the fold axes.

## **DEPOSIT TYPES**

The following section makes reference to deposit types that are the focus of current exploration as well as to those that have the potential to be located on the Fraser Bay 1-3 Property given the geological setting.

### **Iron Ore**

The primary interest on the Fraser Bay 1-3 Property is for iron ore, which is related to the presence of Archean Algoma-type, oxide-facies Banded Iron Formations (BIFs). Algoma-type BIFs are present throughout the geologic record within marine depositional environments associated with volcanic and sedimentary rock packages (Gross, 1993). These BIFs are particularly prevalent in Archean-aged greenstone belts akin to those that underlie the Fraser Bay 1-3 Property. Significant volumes of iron formation are present in Prince Albert Group rocks along strike to the southwest within the Committee Bay Greenstone Belt and to the east in the Roche Bay Belt.

Algoma-type BIFs typically occur as laminated horizons of iron rich minerals that are continuous to discontinuous for several kilometers up to 10's of kilometers and are typically 5-150 m thick. They typically comprise alternating millimeter- to decimeter-scale bands of quartz and magnetite with or without hematite. Often accompanying these primary minerals are additional iron-rich silicate minerals including chlorite, biotite, various amphiboles including hornblende and grunerite, and sulphide minerals including pyrite, pyrrhotite and arsenopyrite. The BIFs on the Fraser Bay 1-3 Property have been metamorphosed and recrystallized but remain largely fine-grained.

Due to the weathering-resistant mineralogy of quartz and magnetite in iron formations they generally outcrop as prominent, rounded knobs with a steely blue colour. BIFs have inherent strong magnetic qualities that make them readily detectable by airborne and ground magnetic surveys on which they will typically appear as thin, contorted bodies.

Iron ore mined throughout the world is generally produced from Superior-type BIFs which are younger in age (Proterozoic), thicker and more iron-rich.

However, commercial production of iron ore has been realized from Algoma-type BIFs including several in Ontario, Canada. Production in 1986 from oxide-facies BIFs at the Adams, Griffith and Sherman mines included eight million long tons of ore grading 19-27% iron (Gross, 1993). Typical iron content of the oxide-facies iron formations at these mines ranged from 29.7 to 38.8% total Fe.

The Mary River Iron Ore Project on Baffin Island, approximately 450 km northeast of the Fraser Bay 1-3 Property, is advancing to production following a positive Definitive Feasibility Study in 2008 (Holmes *et al.*, 2008). The Mary River Project will produce iron ore from Archean oxide-facies BIFs which are found within the same group of rocks as those on the Fraser Bay 1-3 Property (Prince Albert Group). The Mary River Project currently comprises a Mineral Reserve of 365 million tonnes with an average grade of 64.66% total Fe along with Mineral Resources exclusive of Reserves of 52.4 million tonnes of measured and indicated grading 64.61% total Fe and 448 million tonnes of inferred at a grade of 65.48% total Fe (Holmes *et al.*, 2008). The author has not verified the Reserves and Resources at the Mary River Project.

## **Gold**

Gold hosted within iron formation or shear zone-quartz vein (i.e. lode gold) settings may be potentially significant on the Property. These deposit types form significant gold mines/deposits in other regions including iron-formation-hosted deposits at the Committee Bay and Meadowbank areas (north of Baker Lake, Nunavut), Musselwhite (northern Ontario) and Homestake (South Dakota, USA) and lode gold deposits in the Timmins and Kalgoorlie camps of Canada and Australia, respectively. Of particular note is the Three Bluffs gold deposit hosted within a folded iron formation in the Committee Bay Greenstone Belt approximately 300 km southwest of the Fraser Bay 1-3 Property but within the southwest extension of the same greenstone belt that hosts the Fraser 1 to 3 iron formations. Iron-formation-hosted deposits are typically characterized by quartz veins and silicification which can intensify near fold hinges or along *formational* contacts where dilational regimes or contrasting rheology are present. Sulphide minerals, typically pyrite, pyrrhotite and arsenopyrite, are present within, and adjacent to, these quartz veins; gold is usually associated with the sulphide minerals. The sulphide minerals can form massive to semi-massive layers or beds, or can be disseminated as individual grains. The extremely iron-rich nature of the iron formation host rock creates an excellent chemical trap which drives the precipitation of sulphide minerals and gold from mineralizing fluids (Phillips *et al.*, 1984).

Shear zone hosted gold deposits are markedly more important globally for gold production. These types of deposits are present in Archean age (and younger) rocks throughout the world. They are typified by major structures or shear zones with secondary and/or tertiary splays that create conduits for gold-bearing fluids (see Robert *et al.*, 1991 for a thorough review). Because these deposits are

primarily controlled by structural elements they are present in virtually any rock type and are characterized by quartz veins with associated sulphides and alteration mineralogy.

### **Kimberlites**

Diamond-bearing peridotite and eclogite occur as discontinuous pods and horizons in the upper mantle, typically underlying the thickest, most stable regions of Archean continental crust or cratons (Helmstaedt, 1993). As a result, almost all of the economic diamond-bearing kimberlites occur in the middle of stable Archean cratons like the Churchill Province within which the Fraser Bay 1-3 Property resides. In a simplified cross section a kimberlite diatreme appears as a near-vertical, roughly "carrot shaped" body of solidified kimberlite magma capped by a broad shallow crater on surface that is both ringed and filled with tuffaceous kimberlite and country rock fragments (Mitchell, 1986, 1989, 1991).

Diamond indicator minerals (DIMs) include minerals that have crystallized directly from a kimberlitic magma (phenocrysts), or mantle derived minerals (xenocrysts) that have been incorporated into the kimberlitic magma as it ascends to the earth's surface. DIMs include picroilmenite, titanium and magnesium-rich chromite, chromium diopside, magnesium-rich olivine, pyrope and eclogite garnets. Diamond Indicator Minerals are used not only to deduce the presence of kimberlites in regional exploration programs but also to assess whether the kimberlites have the potential to contain diamonds.

Due to the unique geometry of a kimberlite pipe and the manner in which the kimberlite has intruded a pre-existing host rock type, there are typically differences in the physical characteristics of a kimberlite and the host rock. Sometimes these contrasting physical characteristics are significant enough to be detected by airborne or ground geophysical surveys. Two of the most commonly used geophysical techniques are airborne or ground magnetic surveys and electromagnetic (EM) surveys. It is extremely important that other information such as DIM surveys (through till sampling) be used in tandem with geophysical evidence to confirm whether there is support for the presence of kimberlites in an area (Fipke *et al.*, 1995).

### **MINERALIZATION**

The principal iron rich horizons of interest within the Fraser Bay 1-3 Property are the Fraser 1, 2 and 3 (Borealis 1, 2 and 3) iron formations within mineral lease 2826. These iron formations are present over a fairly continuous strike length of approximately 7.3 km and range up to 300 m wide. They are comprised of quartz and magnetite with lesser amounts of hematite. Historical sampling from these iron formations has yielded total iron contents between 29% and 38%.

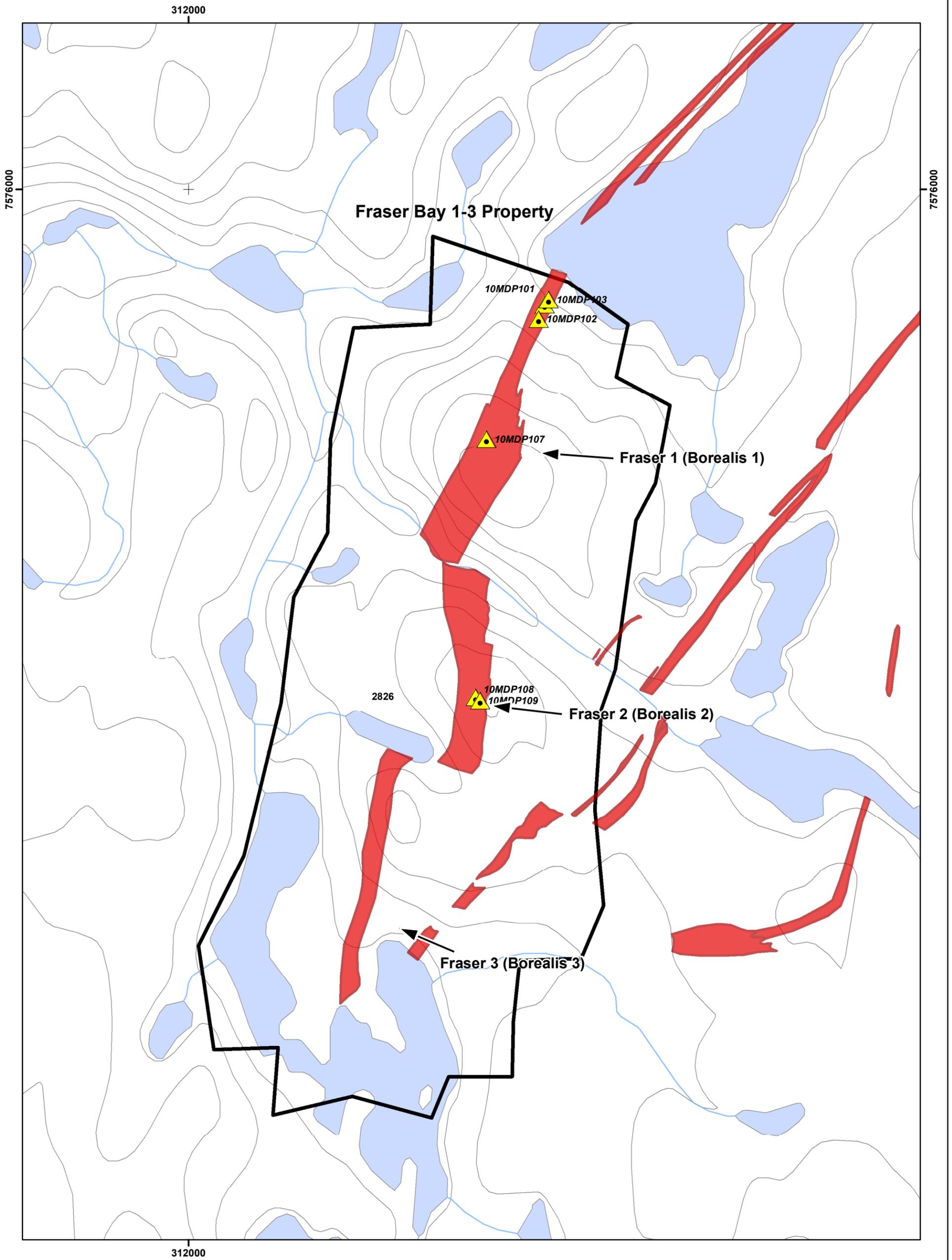
## **EXPLORATION 2010**

The author conducted a property visit on August 24 and 25, 2010 and collected 6 rock grab samples (Figure 3). Rock grab samples 10MDP101, 10MDP103 and 10MDP107 were collected to assess the iron and magnetite content of the Fraser 1 (Borealis 1) Banded Iron Formation (BIF). Rock grab samples 10MDP102, 10MDP108 and 10MDP109 were collected from rusty material at the contact of the BIF and country rocks to assess the gold (Au) and base metal potential of the sulphide bearing material at the contact (Plate 6). A rock sample list along with brief descriptions are provided in Appendix 1. The locations of the samples are shown on Figure 3.

Samples 10MDP101, 10MDP103 and 10MDP107 were analyzed by aqua regia digestion followed by fire assay (FA) and inductively coupled plasma (ICP) multi-element analysis at ALS Minerals (ALS) in North Vancouver, B.C. The samples were then subjected to a standard whole rock analysis for major elements by X-Ray Fluorescence (XRF) and a Loss On Ignition (LOI) analysis (Appendix 2). Rock samples 10MDP102, 10MDP108 and 10MDP109 were analyzed by FA and ICP analysis at ALS in North Vancouver, B.C., however the samples were not submitted for XRF and LOI analysis (Appendix 2).



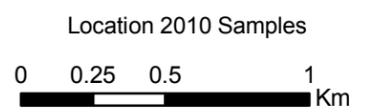
Plate 6. Eastern contact zone of Fraser 2 BIF and country rock. Location for rock grab sample 10MDP109.



**Legend**

-  Fraser Bay 2010 Sample
-  Iron Formations
-  Western Leases
-  Elevation Contours
-  Drainage
-  Lakes

**Roche Bay PLC**



1:25,000

Nad 83, Zone 17  
Nunavut, Canada

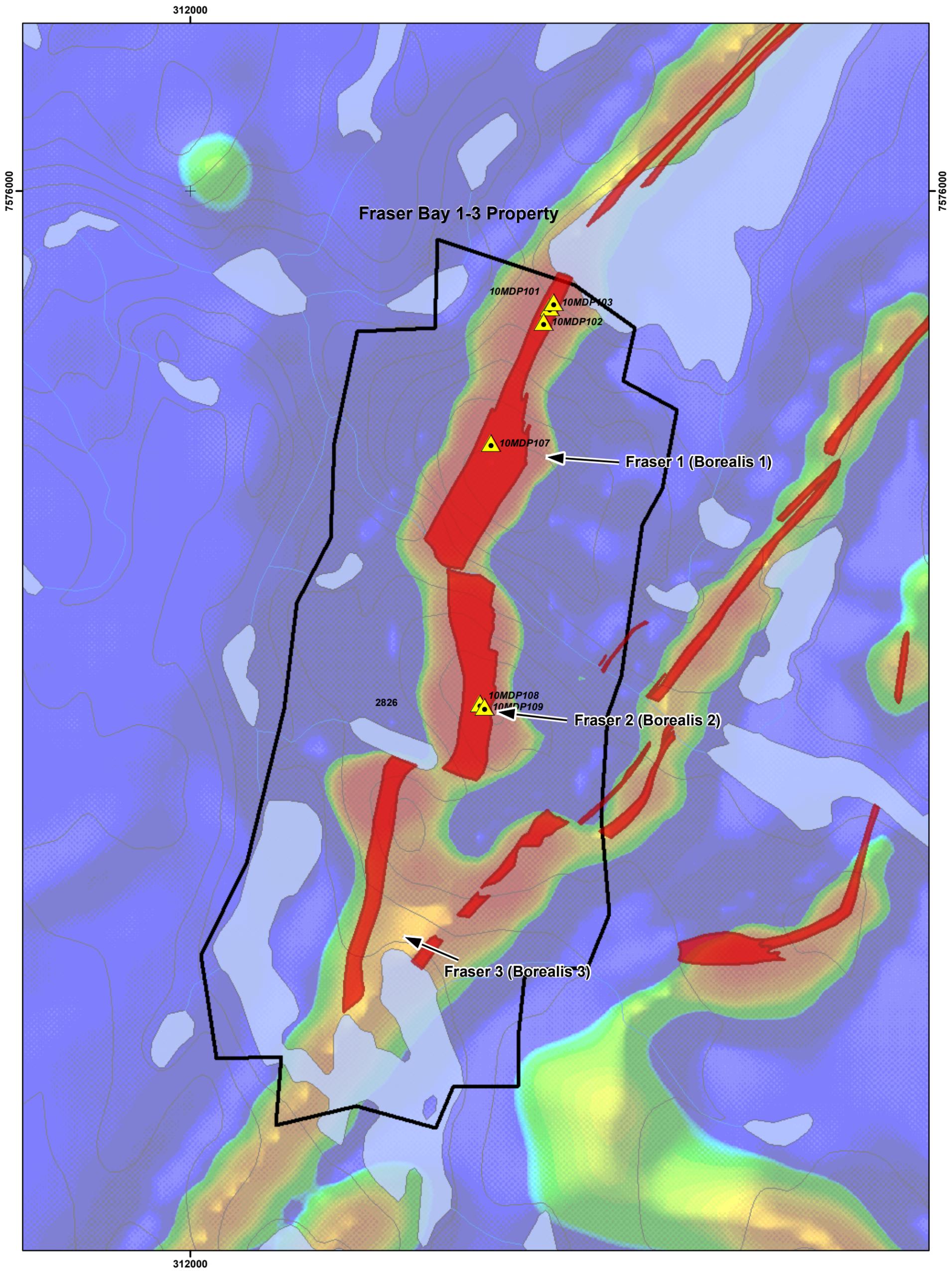
**Figure 3**

APEX Geoscience Ltd.  
Edmonton, AB November, 2010

Samples 10MDP101, 10MDP103 and 10MDP107 yielded total whole rock iron contents (Fe) of 39.6% to 64.9% Fe. The sample with the highest iron content, 10MDP101, was collected from the northernmost portion of the Fraser 1 BIF. Additionally sample 10MDP103, which yielded 56.69% Fe, was also collected from the Fraser 1 BIF approximately 45 m north along strike from 10MDP101 (Figure 4; Appendix 2). Rock grab samples 10MDP101 and 10MDP103 were collected from what appears to be a relatively continuous core zone of near massive magnetite BIF that is 40 to 50 m wide and at least 200 m in length. Although the samples are simple grab samples they were relatively representative of the core high grade zone and they demonstrate the distinct paucity of chert and silicate layers within the zone. Both samples yielded low concentrations of most other major elements other than silicon (Si), with 2.80 and 7.68% Si respectively (Appendix 2). Both samples yielded low concentrations of other critical deleterious elements such as phosphorous (0.33 and 0.5% P, respectively) and sulphur (<0.01 and 0.12% S, respectively). The phosphorous and sulphur results for samples 10MDP101 and 10MDP103 compare favourably to both the Roche Bay and Mary River BIF results (Holmes *et al.*, 2008; Shaw and Palmer, 2009). Diamond drilling will be required to determine the full extent and continuity of the high grade magnetite core zone within the Fraser 1 BIF.

Rock grab sample 10MDP107 was collected From the Fraser 1 BIF roughly 1 km southwest along strike from sample 10MDP101 (Figures 3 and 4; Plates 7 and 8). The rock grab sample was collected from BIF that based upon visual inspection had a little more in the way of fine chert layers than the iron formation sampled to the north but was still considered “high grade” magnetite BIF (Plates 7, 8 and 9). Sample 10MDP107 yielded 39.06% Fe along with 20.18% Si, which was significantly higher than the values of 2.80% and 7.68% Si for samples 10MDP101 and 10MDP103, respectively. The major and minor element geochemistry for sample 10MDP107 was similar in most all other respects to samples 10MDP101 and 10MDP103 (Appendix2).

Reconnaissance helicopter based fieldwork has confirmed that the Fraser 1 (Borealis 1) BIF is approximately 2.2 km in strike length, ranges from 120 m to 340 m in surface width and is the most prospective BIF for high grade iron ore (Figures 3 and 4). The Fraser 2 (Borealis 2) BIF is approximately 1.4 km in length, ranges from 200 m to 300 m in surface width and is also prospective for high grade iron ore. Both BIFs are well exposed and form prominent bluffs (Plates 1, 2, 7, 8 and 9). The Fraser 3 (Borealis 3) BIF is not as well exposed and is not as strong a magnetic anomaly (Figure 4). The BIF forms a fold nose that yields approximately 2.3 km of total strike length (Figure 4), however, it is not clear what the potential is for high grade iron ore in the Fraser 3 BIF. The weak magnetic signature could be the result of the presence of more hematite than is apparent for the Fraser 1 and 2 BIFs or the BIF could contain overall lower iron grades. The historic exploration did suggest that there was more hematite present, however, this is yet to be confirmed.

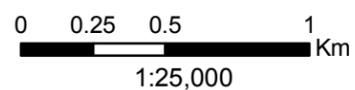


**Legend**

-  Fraser Bay 2010 Sample
-  Iron Formations
-  Western Leases
-  Drainage
-  Lakes
-  Elevation Contours

**Roche Bay PLC**

Location 2010 Samples - Scarpa Lake 1st VD of Total Field Magnetics



1:25,000

Nad 83, Zone 17  
Nunavut, Canada

**Figure 4**

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Plate 7. Frost heaved blocks and location for 10MDP107 from Fraser 1 BIF.  
Plate 8. Large block of BIF sloughed off of western contact of Fraser 1 BIF.



Plate 9. Looking east at west edge of Fraser 1 banded iron formation with person on top of ridge for scale.

Rock grab samples 10MDP102, 10MDP108 and 10MDP109 yielded no significant concentrations of Au. However, sample 10MDP108 yielded highly anomalous silver (7.1 ppm Ag), copper (5,000 ppm Cu) and tungsten (460 ppm W). In addition, sample 10MDP109 yielded highly anomalous arsenic with 3,710 ppm As (Appendix 2). High concentrations of arsenic are commonly associated with gold in Archean iron formation and shear zone hosted gold deposits. Samples 10MDP108 and 10MDP109 were both collected from the Fraser 2 BIF approximately 2.8 km south of sample 10MDP101, which was collected from the Fraser 1 BIF (Figure 4).

## **DRILLING**

The author is not aware of any drilling either historic or more recent that has been conducted on the Property. Visual inspection yielded evidence of the historic surface sampling but no indications of drilling.

## **SAMPLING METHOD AND APPROACH**

Rock grab samples were collected from outcrop and/or frost heaved outcrop of selected oxide facies BIF. For samples 10MDP101, 10MDP103 and 10MDP107

sampling was inherently biased to rocks that appeared magnetite- or hematite-rich and attempted to confirm previously reported Fe results and to quickly assess potential future drilling targets for Fe. Rock grab sampling for 10MDP102, 10MDP108 and 10MDP109 was heavily biased to collecting sulphide rich material from within or at the contact of the BIF in order to search for the presence of anomalous precious and/or base metals. Samples were collected by the author using a rock hammer and then were tagged, identified and stored in clear plastic bags. Rock sample sizes were between 1 and 5 kilograms (kg). The sample identifier was written on the outside of each bag (on both sides) and a piece of flagging or aluminum tag was placed in the bag with the sample number written on it. The sample bags were closed using cable ties. The samples were then placed within larger poly woven (rice) bags for shipping by air to the APEX office in Edmonton, AB. Subsequently, the samples were shipped to the ALS Laboratory in North Vancouver, BC. All relevant information was recorded in the authors field book and a sample number tag left at the field location on site. Rock sample sites were located with a handheld GPS.

## **SAMPLE PREPARATION, ANALYSES AND SECURITY**

Rock sampling was conducted by the author (a Qualified Person) and comprised collecting a number of fist size pieces placed in a plastic bag along with a sample tag. GPS locations of each sample were recorded in the field. Samples were kept within the author's control until they were shipped to Edmonton, AB from the field and then were in APEX's locked warehouse until being shipped to the ALS laboratory in North Vancouver, BC. No additional security measures (numbered security tags, etc.) were taken. The samples were received by the laboratory which reported nothing unusual with respect to the shipment. The author had complete control over the samples until they were shipped to Edmonton, AB. The author did not have control over the samples from the time they left APEX's Edmonton warehouse to the time they were received by the laboratory in North Vancouver. However, there is no reason to believe that the security of the samples was compromised. Once the samples arrived at the laboratory they remained in the custody of the independent laboratory until final processing was completed. The ALS Laboratory conforms to programs developed from guidelines published by the International Standards Organization (ISO) commonly referred to as ISO/IEC17025 Guidelines.

Because of the exploration stage of the project, the author did not submit standards or blanks with the rock samples.

Rock samples submitted to ALS are first sorted and dried prior to preparation. The entire sample is then coarse crushed to better than 70% of the sample passing a 2mm (-10 mesh) screen. The sample is then riffle split to get a homogenized 250 gram split which is then pulverized to 85% of the sample passing a 75 micron (-200 mesh) screen or better. The ALS equipment is

cleaned between each sample with compressed air and brushes. Also, in order to verify compliance with QC specifications, the lab performs a screen test at minimum at the start of each group, change of operator, change of machine or environmental conditions, or nature of sample appears different. All screen data is recorded in a QC book, which is available for examination at the request of the client. In addition, the pulverizers are cleaned with a sand wash when required or between each sample if requested by the client. All samples were analysed for Au content. Gold was analyzed using FA with an aqua regia digestion followed by ICP-AES (inductively coupled plasma coupled with atomic emission spectroscopy) analysis performed on a 30 gram aliquot. The detection limits for gold by FA/ICP-AES is 0.001 ppm.

A 1 gram aliquot of the pulverized split is also analyzed for trace elements by aqua regia digestion followed by ICP-AES analysis. The ICP-AES analysis detects 34 elements. The elements are detected by their characteristic wavelength specific light, which is measured by the AES Spectrometer. Additionally, samples 10MDP101, 10MDP103 and 10MDP107 were processed for whole rock analysis by lithium borate fusion followed by XRF (X-Ray Fluorescence) Spectroscopy. XRF analyses 13 element oxides with detection limits of 0.2-10 ppm for most metals and 100 ppm for major elements.

All ALS Mineral Laboratories employees are required to sign a Confidentiality Agreement and only management and supervisory personnel have access to results.

## **DATA VERIFICATION**

Results from previous work has been extensively reviewed by the author and deemed to have followed standard industry practices for the collection, handling, shipping and analysis of samples; a site visit was also conducted by the author in order to verify the prior work. The previous work is deemed accurate and of good quality.

Due to the limited nature and budget of previous sampling programs (i.e. prospecting and surface sampling), and the limited number of samples collected during the current program, a rigorous quality assurance and quality control (QA/QC) program was not warranted. No blank samples or standard samples were sent to the laboratory for analysis. However, in future as the project progresses blanks and standards will be required.

The mineral processing facilities used for these programs by APEX use standard quality assurance and control policies in all aspects of laboratory operations. The programs were developed from guidelines published by the International Standards Organization (ISO) commonly referred to as ISO/IEC17025 Guidelines.

## **ADJACENT PROPERTIES**

A significant iron ore project, the Roche Bay Project of Advanced Explorations Inc. and Roche Bay PLC, is located 110 km east-northeast of the Fraser Bay 1-3 Property along the east coast of the Melville Peninsula. This exploration project has focused on identifying and defining an iron resource in BIFs of the Prince Albert Group rocks that lie along strike from the Fraser Bay 1-3 Property.

The Roche Bay Project has undergone a preliminary economic assessment utilizing an inferred resource estimate of 357 million tonnes of 28.07% Fe from the C-zone using a 25% Fe cut-off (Dorval, 2010). Recommendations from the assessment included a recommendation to increase the confidence in the resources and progress the project to a Feasibility Study to further refine the economic viability of the project. The author has not verified the inferred resource.

Advanced Explorations Inc. recently formed a partnership with XinXing Pipes Group, a Chinese iron and steel company, to progress the Roche Bay Project to development. The Chinese company will earn a 50% direct interest in a newly formed joint venture and receive 50% off-take once the project is in production.

## **MINERAL PROCESSING AND METALLURGICAL TESTING**

Preliminary metallurgical analyses were conducted on samples of the Fraser Bay 1-3 Property BIFs in 1969 and 1970 by H.E. Neal and Associates Ltd. (Neal, 1969 and 1970). The analyses were conducted at the Mineral Dressing pilot plant of the Ontario Research Foundation and comprised Davis Tube tests and screen analysis of the samples used for the Davis Tube tests. Samples used in the metallurgical tests came from various sections taken across Borealis 1 (Fraser 1), Borealis 2 (Fraser 2), Borealis 4 and Borealis 5. The author is not qualified to comment on the validity of the procedures used in the metallurgical analyses and summarizes them below for information purposes only.

Each 9 to 11.5 kg field sample was put through a jaw crusher to yield pieces less than 0.635 cm which were then riffle split. A portion of the riffle split sample was then roll crushed to -10 mesh and riffle split again. A portion of the 2<sup>nd</sup> riffle split was either rod milled (600 gram sample) or swing pulverized (50 gram sample). This fine crush material was then used for the head assay for iron, a 20 gram wet sieve analysis and a 20 gram Davis Tube test.

All Davis Tube tests were run in two duplicate tests of 10 grams each, which were combined, weighed and assayed for soluble iron. The electromagnet was kept at a power level of 1 ampere. Water flow occurred at a rate of 400 cubic centimeters per minute with a tube agitation of 80 strokes per minute.

Neal (1970) concluded that the Davis Tube concentrates consistently contained 68-70% soluble iron at grind levels of 85-90% passing the 325 mesh. He also concluded that flotation was not required to produce a super concentrate as was the case with most iron ores and that the Fraser Bay 1-3 Property BIFs contained only minor amounts of detrimental elements like silica, nickel, chromium, phosphorous, sulphur and titanium. He summarized his findings stating that the preliminary metallurgical results were “very favourable”.

## **MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

There are currently no mineral reserves or resources on the property.

## **OTHER RELEVANT DATA AND INFORMATION**

The author is not aware of any other relevant information with respect to the Fraser Bay 1-3 Property.

## **INTERPRETATION AND CONCLUSIONS**

Analytical results for the samples collected by the author confirm the presence of Archean BIF with high total Fe previously reported from historical sampling. Historical sampling from the BIFs has yielded total Fe concentrations between 29 and 38% total Fe. Samples collected by the author returned up to 64.9% total Fe with the highest grade sample collected from the Fraser 1 BIF (sample 10MDP101).

Rock grab samples 10MDP101 and 10MDP103, which yielded 64.9% and 56.69% Fe respectively, were collected from what appears to be a relatively continuous core zone of near massive magnetite BIF that is 40 to 50 m wide and at least 200 m in length. Although the samples are simple grab samples they were relatively representative of the core high grade zone. Both samples yielded low concentrations of most other major elements and other critical deleterious elements such as phosphorous and sulphur. The phosphorous and sulphur results for samples 10MDP101 and 10MDP103 compare favourably to both the Roche Bay and Mary River BIF results (Holmes *et al.*, 2008; Shaw and Palmer, 2009). Diamond drilling will be required to determine the full extent and continuity of the high grade magnetite core zone within the Fraser 1 BIF. Reconnaissance helicopter based fieldwork has confirmed that the Fraser 1 (Borealis 1) BIF is approximately 2.2 km in strike length, ranges from 120 to 340 m in width and is the most prospective BIF for high grade iron ore. Fraser 2 (Borealis 2) is approximately 1.4 km in length and is also prospective for high grade iron ore. Both BIFs are well exposed and form prominent bluffs.

The Fraser 1 BIF and, possibly, the Fraser 2 BIF have the potential to host a direct ship >60% total Fe core zone within a much larger 30 to 35% total Fe iron ore deposit that is comparable to the Roche Bay iron ore deposit. This is significant because there is only one other direct ship iron ore body in North America, the Mary River Iron Ore Project, and very few undeveloped direct ship iron ore bodies in the world. Direct ship iron ore is highly desirable because it would have a significant positive impact on the economics of a potential iron ore mine, particularly in the Arctic north. Having a portion of the deposit that could be mined as direct ship iron ore would be a huge advantage in comparison to other iron ore deposits such as Roche Bay for a number of reasons:

- **Small mill:** Direct ship ore requires significantly less on-site processing, with limited milling requirements and water use. A larger more traditional mill can be built as the high grade direct ship ore is exhausted.
- **No tailings pond:** A mine shipping a 67% total Fe product processed from a 64.5% total Fe ore vs. 28% total Fe ore with a 95% recovery results in ~10% tailings product vs. ~135% tailings product for the lower grade deposit. This will result in a much smaller tailings pond and an overall significantly smaller environmental footprint.
- **No water consumption and no freezing:** Creating a high grade concentrate in the Arctic requires water to process the raw ore. Then the concentrate needs to be dried out, while direct ship ore can be dry processed.
- **Trucking possible:** A core zone of direct ship iron ore could serve as a starter project that could utilize a road from the ore body to either Committee Bay or Roche Bay and would provide significant local employment in construction of a road, maintenance of the road and ongoing trucking of the ore.
- **Two stages:** First a trucking operation with a small dry processing (crushing) plant, then a larger rail- or conveyor-based beneficiation project with a bigger processing plant.
- **Scalable:** Can support a smaller operation because a simpler mill will be less of an economic bottleneck.
- **Premium pricing:** Steel mills can pay a premium for some types of direct ship ore.

Although the work completed by APEX during 2010 was reconnaissance in nature, it confirmed that potential exists for a significant iron ore deposit on the Fraser Bay 1-3 Property. Rock samples collected by the author yielded assays of up to 64.9% total Fe at the Fraser 1 BIF. The Fraser 1 BIF outcrops and is at least 2.2 km long with an average thickness of greater than 200 m. The Fraser 1 BIF and, possibly, the Fraser 2 BIF, have the potential to host a core zone of direct ship >60% total Fe iron ore that could be the basis for a startup high grade deposit. As such, the Fraser Bay 1-3 Property warrants a significant drilling program during summer 2011 in order to outline the potential size of the deposit and the potential for it to host a high grade core zone of direct ship iron ore.

## **RECOMMENDATIONS**

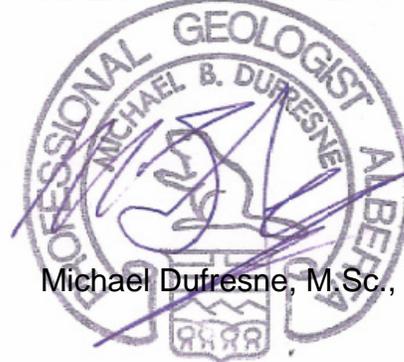
Based upon the results of the 2010 compilation and fieldwork, future exploration should consist of an aggressive Stage 1 fieldwork and drilling program. It is strongly recommended that a minimum of 2,500 m of diamond drilling should be performed during summer 2011 with a series of 2 or 3 hole fences to be drilled across the Fraser 1 BIF in order to determine the size and extent of the BIF along with any high grade core zone that might be present. Fieldwork should consist of surface mapping, sampling and ground geophysical surveys to accurately determine the surface size and extent of the Fraser 1 and 2 BIFs. The estimated cost to conduct the Stage 1 program is \$2,500,000 (Table 4).

Table 4. Estimated cost to conduct Stage 1 exploration program during 2011

<b>Item</b>	<b>Unit Cost</b>	<b>Units</b>	<b>Subtotal</b>
<b>1 Drilling 2,500 m</b> Includes drilling contract costs, Hercules & Buffalo Mob & Demob costs, Fuel, Helicopter & Twin Otter contracts, Geological and Assaying	\$800/m	2500	\$2,000,000
<b>2 Camp Construction &amp; Supplies</b>	\$200,000	1	\$200,000
<b>3 Fieldwork</b> Includes ground geophysical surveys, mapping and surface sampling	\$300,000	1	\$300,000
<b>TOTAL STAGE 1 COSTS</b>			<b>\$2,500,000</b>

The estimated costs include a provision to purchase fuel, supplies and a 10-12 man camp and then marshal them in Yellowknife or Churchill along with a helicopter transportable diamond drill. The fuel, supplies, camp and drill will have to be mobilized by Hercules Aircraft to one of Pelly Bay or Hall Beach and then on to the Mackar Inlet DEW line airstrip likely by Buffalo Aircraft. Twin Otter and helicopter will be required to move the camp, fuel, supplies and drill to the Fraser Bay 1-3 Property.

**APEX Geoscience Ltd.**



Michael Dufresne, M.Sc., P.Geol.

November 30th, 2010  
Edmonton, Alberta, Canada

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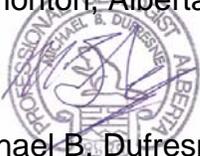
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## **CERTIFICATE OF AUTHOR**

I, Michael B. Dufresne, M.Sc., P.Geol., do hereby certify that:

1. I am President of:           APEX Geoscience Ltd.  
Suite 200, 9797 – 45th Avenue  
Edmonton, Alberta T6E 5V8
2. I graduated with a B.Sc. in Geology from the University of North Carolina at Wilmington in 1983 and with a M.Sc. in Economic Geology from the University of Alberta in 1987.
3. I am and have been registered as a Professional Geologist with the Association of Professional Engineers, Geologists and Geophysicists of Alberta since 1989.
4. I have worked as a geologist for more than 20 years since my graduation from university.
5. I have read the definition of “Qualified Person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am responsible for and have supervised the preparation of the Technical Report titled “*Technical Report for the Fraser Bay 1-3 Property, Melville Peninsula, Nunavut*”, and dated November 30th, 2010 (the “Technical Report”). I visited the Property August 24th and August 25th, 2010.
7. I am not aware of any scientific or technical information with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
8. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form. I am independent of the issuer applying all of the tests in section 1.4 of NI 43-101.
10. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files or their websites.

Dated this November 30th, 2010  
Edmonton, Alberta, Canada



Michael B. Dufresne, M.Sc., P.Geol.

**APPENDIX 1. Fraser Bay 1-3 Property 2010 Sample Locations and Descriptions**

Sample ID	Date	Time	Zone	East NAD83	North NAD83	Elevation m asl	Type	Comment
10MDP101	24-Aug-10	2:11:12PM	16	562692	7569213	272	Sample	Fraser 1 Grab Sample Massive Mt BIF; Core zone 10 - 30m, 50-60% Mt?
10MDP102	24-Aug-10	2:26:09PM	16	562661	7569108	267	Sample	Fraser 1 Grab Sample of 1-2m wide rusty sulphide bearing material at East contact of BIF; 75degW dip
10MDP103	24-Aug-10	2:47:05PM	16	562717	7569252	279	Sample	Fraser 1 Grab Sample of Massive Mt BIF; Top of Ocp 50 m wide mssv core zone
10MDP107	25-Aug-10	3:15:14PM	16	562379	7568232	373	Sample	Fraser 1 Grab Sample of chracteristic higher grade Mt BIF up the hill from HG BIF at Lake
10MDP108	25-Aug-10	4:18:13PM	16	562479	7566418	390	Sample	Fraser 2 Grab Sample Gossanous Zone within the BIF; Qtz-Clrt-pyrt-trc cpy (2-5% sulphide)
10MDP109	25-Aug-10	4:26:41PM	16	562512	7566398	388	Sample	Fraser 2 Grab Sample Gossanous Zone at contact between BIF - amphibolite, Qtz vein

**APPENDIX 2. Geochemical Results for Fraser Bay 1-3 Property 2010 Samples**

SAMPLE	Lithology	Au (ppm)	Ag (ppm)	Al (%)	As (ppm)	B (ppm)	Ba (ppm)	Be (ppm)	Bi (ppm)	Ca (%)	Cd (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Fe (%)	Ga (ppm)	Hg (ppm)
Method		Au-ICP21	ME-ICP41														
10MDP101	High Grade BIF	0.009	0.2	0.19	<2	<10	10	<0.5	12	0.75	<0.5	<1	<1	4	>50	<10	1
10MDP103	High Grade BIF	0.002	<0.2	0.45	<2	<10	10	<0.5	6	1.14	<0.5	<1	2	4	>50	<10	1
10MDP107	High Grade BIF	0.002	0.4	0.13	<2	<10	10	<0.5	6	0.6	<0.5	<1	6	<1	39.5	<10	<1
10MDP102	Sulphidic BIF	0.002	0.8	1.34	<2	<10	30	<0.5	6	0.11	<0.5	7	96	324	19.8	10	<1
10MDP108	Sulphidic BIF	0.018	7.1	0.03	<2	<10	<10	0.9	3	0.1	1.6	<1	10	5000	7.18	<10	<1
10MDP109	Sulphidic BIF	0.012	0.6	3.34	3710	<10	<10	<0.5	5	0.12	<0.5	23	86	303	12.15	10	<1

**APPENDIX 2. Geochemical Results for Fraser Bay 1-3 Property 2010 Samples**

SAMPLE	K (%)	La (ppm)	Mg (%)	Mn (ppm)	Mo (ppm)	Na (%)	Ni (ppm)	P (ppm)	Pb (ppm)	S (%)	Sb (ppm)	Sc (ppm)	Sr (ppm)	Th (ppm)	Ti (%)	Tl (ppm)	U (ppm)
Method	ME-ICP41																
10MDP101	0.01	<10	0.14	29	<1	0.01	<1	3590	21	<0.01	6	<1	14	<20	0.01	<10	10
10MDP103	0.01	<10	0.4	56	5	<0.01	<1	5490	19	0.12	9	<1	24	<20	<0.01	<10	10
10MDP107	<0.01	<10	0.12	152	<1	<0.01	<1	2790	12	<0.01	4	<1	17	<20	<0.01	<10	10
10MDP102	0.16	<10	0.59	531	2	0.03	51	310	14	6.8	<2	6	2	<20	0.2	<10	<10
10MDP108	<0.01	<10	0.09	166	11	<0.01	1	30	<2	1.33	5	<1	1	<20	<0.01	<10	<10
10MDP109	<0.01	10	1.36	505	<1	<0.01	56	620	6	4.45	2	8	1	<20	0.01	<10	<10



