GEOLOGICAL SURVEY OF CANADA

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PRELIMINARY ACCOUNT OF THE
RESOURCE ASSESSMENT STUDY
OF
PROPOSED NATIONAL PARK,
WAGER BAY - SOUTHAMPTON ISLAND AREAS,
DISTRICT OF KEEWATIN

C.W. Jefferson
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Energy, Mines and
Resources Canada

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Summary

In 1978 Parks Canada, now Canadian Parks Service (CPS) identified Wager Bay as an area worthy of consideration for a new national park. In keeping with the policy of Indian and Northern Affairs Canada (DIAND), a mineral and energy resource assessment (MERA) of the proposed Wager Bay national park was initiated, to include a terrestrial area east of 92° longitude, and between 65° and 66°20' north latitude. Previous reconnaissance geophysical and geological data were re-interpreted to complete the larger area of interest shown in Fig. 1.

The area of Figure 1 is underlain by a number of irregular shaped geological domains with moderate mineral potential. The westernmost domain, west of 92° longitude, has moderate to high mineral potential. The remaining domains in the study area are assigned lower mineral potential. The Wager Bay terrestrial study area is assigned very low (VL) hydrocarbon potential. The part of Southampton Island underlain by near-surface oil shales is assigned high potential (H) for directly recoverable hydrocarbons, because the shales are so rich (30-120 kg per tonne yields). The potential for fluid hydrocarbons is low (L) on Southampton Island but moderate to high (MH) in the southern and southeastern offshore. Wager Bay and Roes Welcome Sound have **not** been assessed here.

Fig. 2 summarizes the geological domains, regional structures and anomalous geochemical results that were gathered and compiled for the resource assessment. Table 1 summarizes the assessments by domain. The highest rating is high (H) for hydrocarbons from oil shales on Southampton Island. The next highest rating is moderate to high (MH) for lead, zinc, copper, nickel and gold west of 92° longitude where the study area intersects the Archean Prince Albert Group of supracrustal rocks. Moderate potential (M), is located 15 to 20 km north of Ford Lake, where Domains 1, 4 and 5 intersect. Penrhyn Group metasediments in this locality are intruded by granitic plutons which yield coincident lead and zinc geochemical anomalies in till. Moderate potential (M) is also assigned to Domain 1 supracrustal rocks in general because a number of anomalous lead, zinc, copper, barium and nickel values were obtained for rock samples taken from gossans in the Paliak Islands belt, and for reconnaissance till samples that coincided with this and other supracrustal belts. Low to Moderate potential (LM) is assigned to lead-zinc in Domains 7 and 4, because no geochemical anomalies and no lithological evidence have been obtained that could suggest any exploration targets, even though the geological setting appears to be favourable. Other terrestrial geologic domains are assigned low potential for minerals and very low potential for hydrocarbons because of the lack of geochemical anomalies and the high degrees of metamorphism and deformation.

The hinterlands of Wager Bay were not included in this assessment because they are well outside of the study area identified by CPS. In January 1991, CPS identified for the first time a preliminary park boundary that completely surrounds and is proposed to include the marine waters of Wager Bay. Although the regional resource exploration and development implications of such a park are not widely understood, it is clear that Wager Bay has significant value as a gateway to the interior and as a port. The Prince Albert Group in the hinterland contains a number of copper, nickel, lead and zinc prospects, and is therefore tentatively assigned moderate-to-high mineral potential. Provision for access to tidewater through the Wager Bay proposed park is therefore supported by the present data base, and will be provided for in the park establishment agreement and/or the park management plan. A further MERA is planned to assess the terrestrial area west of 92°, and to assess the marine portion of the proposed Wager Bay national park.

Table I. Geologic domains and mineral potential in the Wager Bay - northern Southampton Island region. Domains are shown on Fig. 1; Ratings are explained in Table II.

Domain	Rating	Rock Types Present
1. Paliak / Prince Albert	M (Au, Cu, Ni, Zn, PGE)	>10% supracrustal gneiss (quartzite+semipelite+ iron-formation+mafic gneiss interleaved with orthogneiss and foliated granite
2. Foliated Granite	VL	Well foliated, moderately magnetic, salmon pink granite to granodiorite.
3. Gneiss	VL	Pink and grey gneisses
4. Penrhyn Group	LM (Pb, Zn)	Meta-arenite, marble and metapelite
5. Ford	M (Pb, Zn)	Composite granitic batholiths
6. Daly Bay	LM (Ni, PGE, Cu)	Overthrust metamorphic complex
7. Paleozoic	H (oil shale) M (Pb, Zn)	Cambrian to Silurian platformal carbonate rocks

Table II. Explanation of mineral and energy potential rating categories (after Jackson and Sangster, 1987 and Jefferson et al., 1988), based on the application of deposit-type[1] models (e.g. Eckstrand, 1984) to data bases that include only geology, mineral occurrences and reconnaissance geochemistry.

Symbol	Potential	Criteria
VH	Very High	- Geologic environment is very favourable - Significant deposits[1] are known - Presence of undiscovered deposits very likely
H	High	- Geologic environment is very favourable - Occurrences[2] are known - Presence of undiscovered deposits is likely
MH	Moderate to High	- Intermediate between moderate and high potential - Reflects greater uncertainty due to fewer data
M	Moderate	- Geologic environment is favourable - Occurrences may or may not be known - Presence of undiscovered deposits is permissible
LM	Low to moderate	- Intermediate between low and moderate potential - Reflects greater uncertainty due to fewer data
L	Low	- Some aspects of the geologic environment are favourable but are limited in extent - Few occurrences may or may not be known. - Presence of undiscovered deposits is unlikely.
VL	Very Low	- Geologic environment is unfavourable. - No occurrences are known. - Presence of undiscovered deposits very unlikely.

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[1] "Deposit" refers to a resource of a size that could be developed.

[2] "Occurrence" refers to a drilled or exposed resource that may or may not be part of a hidden deposit.

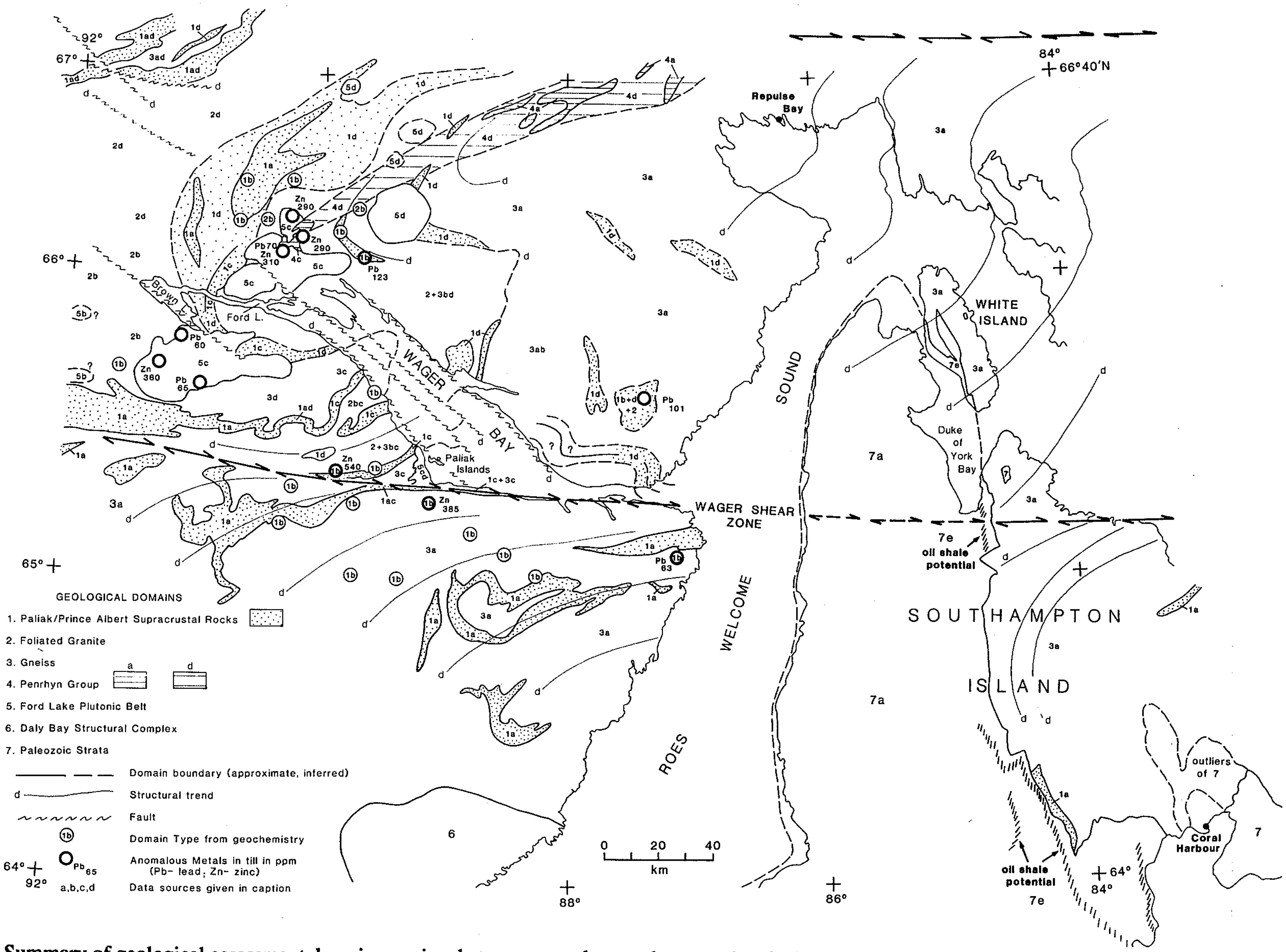


Figure 2. Summary of geological assessment domains, regional structures and anomalous geochemical samples in the Wager Bay - Southampton Island region. The outlines of the domains, the faults and the structural trends shown here were derived from data sources indicated by lower case letters keyed to the figure, as follows:

a- or no subscript- Gordon (1980) (unit 6), Heywood et al. (1967) (units 1-3), Henderson (1983) (unit 4), Heywood and Sanford (1976) (Southampton Island), Schau (1982) (area west of 92°).

b- bedrock descriptions and till geochemistry reported by Smith (1990 and tables submitted for DSS Contract 34SZ.23233-6-0408)

c- mapping by Henderson et al. (1986, 1991), LeCheminant et al. (1987) and Derome (1988)

d- magnetic anomaly maps (e.g. Fig. 5) derived by Broome (1990 and in Henderson and Broome, 1988 from Geological Survey of Canada (1974, 1977, 1984a, 1984b)

e- mapping and stratigraphic studies by Jefferson and Hamilton (1987), Copper et al. (1987), Hamilton (1990).

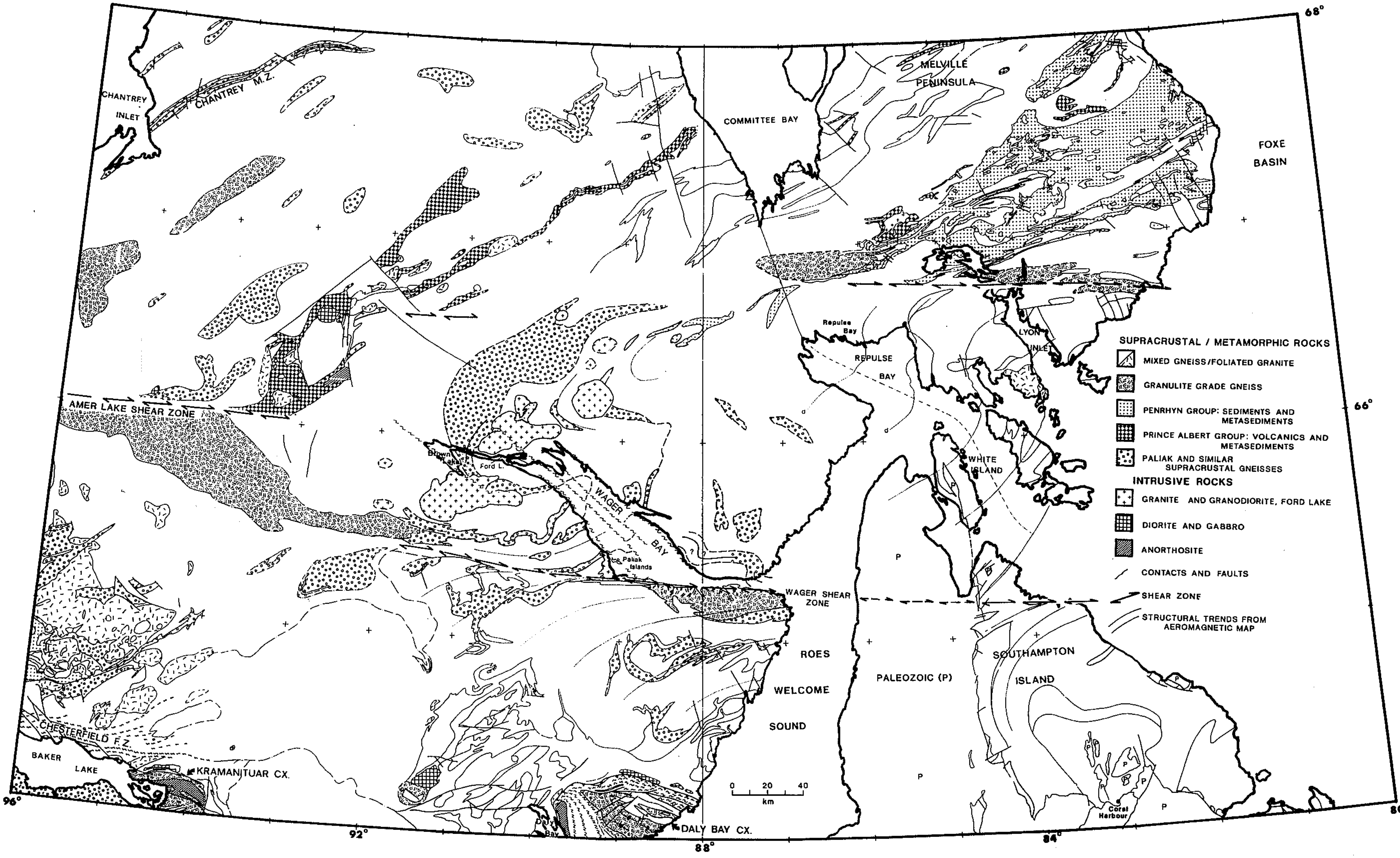


Figure 3. Regional geological setting of the northeastern District of Keewatin surrounding Wager Bay and Southampton Island. Compilation after Broome (1990, Fig. 2), unpublished 1:1,000,000 compilation maps by P.F. Hoffman, and airborne geophysical maps (e.g. Fig. 5).

Introduction

Organization and Methodology

This report consists of 1) summary of the resource assessment, 2) descriptions of the bedrock and surficial geology of the Wager Bay region, organized by domain, 3) summary of bedrock geochemical analyses, 4) summary of surficial geochemical studies, and 5) resource assessments which are organized by deposit type, with reference to specific domains. This study builds on previous resource assessments, organized by commodity, which were done for the Keewatin Region and the Eastern Arctic Islands and Hudson Region, by Energy, Mines and Resources, Canada (1977); Economic Geology Division (1980); Findlay et al. (1981)

The rating scheme used in this study (Table II) is qualitative, but consistent with those used for previous and on-going resource assessments across Canada (e.g. Jefferson et al., 1988; Jackson and Sangster 1987; Jefferson, 1990). A visual representation of a similar rating scheme used by the British Columbia Geological Survey (McLaren, 1990) is given in Fig. 4.

The process of Mineral and Energy Resource Appraisals (MERA) in northern Canada was given by Sangster (1983), updated by Scoates et al (1986) and by Jefferson (1990). This MERA of Wager Bay has been used to help design proposed boundaries for the Wager Bay national park. This MERA has been approved for public discussion by the senior MERA committee, which senior officials of DIAND, CPS, EMR, and Government of the Northwest Territories (GNWT). After its publication, this report will be used for public consultation regarding the boundaries of the proposed Wager Bay national park. Any criticisms or additional information on this MERA are welcomed by the first author and the MERA committees, and will be considered in subsequent revisions of this report. Final park boundaries will be determined after public consultation.

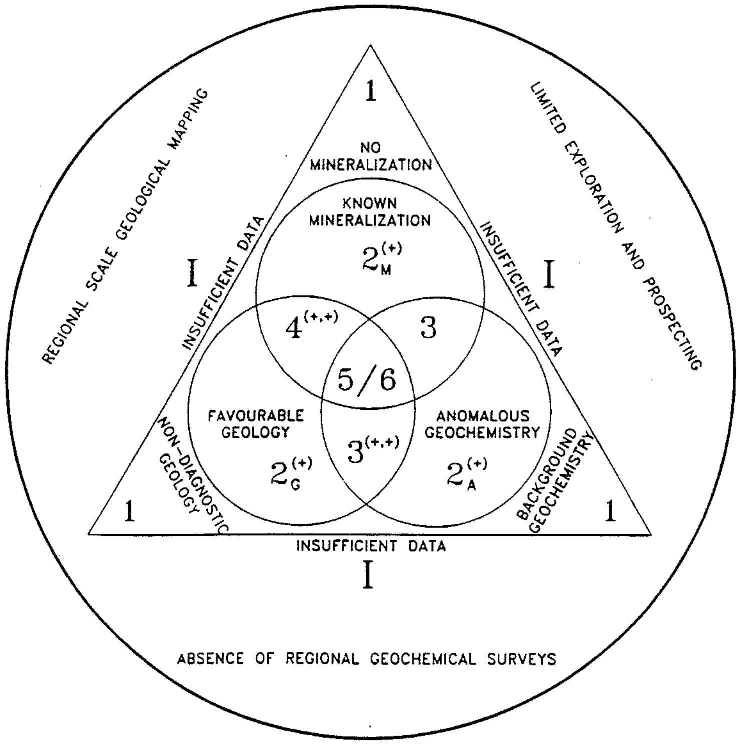
Present Study

The Wager Bay area is very remote and poorly known. The nearest communities are located some distance from central Wager Bay: Repulse Bay (180 km), Coral Harbour (310 km), Rankin Inlet (320 km) and Baker Lake (350 km). Until this project began, little mapping had been done since the 1:500,000-scale 1964 reconnaissance by Heywood (1967) and the 1968-1969 reconnaissance by Heywood and Sanford (1976).

The bathymetry of Wager Bay has only been surveyed by a single line of soundings from its mouth to Douglas Harbour, although the Arctic Pilot, a book published by the Department of Fisheries and Oceans, indicates deep water available throughout most of the Bay (Ian Marr, Canadian Coastguard, pers. comm., 1991). The seabed geology of Wager Bay is unknown.

Resource assessment of the Wager Bay-Southampton Island area commenced in response to a general proposal of interest by CPS (Parks Canada, 1978b). Work by CPS in 1984 indicated Ford Lake area as having the greatest park potential, although White Island and Duke of York Bay are also being considered (M. McComb, pers. comm. 1984). Based on these indications, the resource assessment area was defined to include the area shown in Fig. 2: the surroundings of Wager Bay east of 92° and northwestern Southampton Island.

In 1985 and 1986 selected areas of the bedrock around the shores of Wager Bay were mapped at 1:50,000 scale (Fig. 5). Field work combined projects from Mineral Resources Division of GSC (C.W. Jefferson, R.F.J. Scoates and M. Henderson), and Lithosphere and Canadian Shield Division of GSC (J.R. Henderson and A.N. LeCheminant) (Derome, 1988; Henderson et al., 1986, 1991; LeCheminant et al., 1987a). In 1986, surficial mapping and geochemical sampling was conducted by J.E.M. Smith as part of an M.Sc. thesis at Carleton University, supervised by F.A. Michel, W.W. Shilts and C.W. Jefferson (Smith, 1990). Also in 1986, P. Copper (Laurentian University) supervised studies of Paleozoic stratigraphy on Southampton Island, by S.M. Hamilton and K. Dewing (Dewing et al., 1987; Dewing, 1988; Hamilton, 1987). Coincidentally, J. Broome (1990; also in Henderson and Broome, 1990) enhanced existing geophysical maps (Geological Survey of Canada, 1984a, b) and generated a variety of new geophysical images (e.g. Fig. 5) which were very useful in extending field observations made in 1985-86 as well as observations made by previous mappers (Heywood, 1961, 1967; Heywood and Sanford, 1976). In 1991, geological mapping by Schau (1982) of the Prince Albert Group, and mineral occurrence data in that belt were reviewed to provide a preliminary (Phase 1) assessment of the area west of 92^0. A phase 2 (field work involved) MERA is planned for this area.



QUALITATIVE DESCRIPTIONS OF MINERAL POTENTIAL CLASSIFICATIONS

Class	Mineral Potential	Description
6	Very High	Known deposits with identified resources in the ground. Favourable supporting data from all three sources; high degree of confidence in designation. Continued exploration highly probable; potential for mine development is high.
5	High	Known occurrences in highly favourable metallogenic environment. Supporting data from all three sources; high degree of confidence in designation. Future exploration highly probable.
4	Moderate	Known or indicated mineral resources in favourable geological environment. Supporting data from these two sources specifically; moderate degree of confidence in designation. Future exploration to be expected.
3	Moderate	Favourable geological and geochemical environment, but significant mineral occurrences lacking. Supportive data from these two sources; moderate degree of confidence in designation. Future exploration likely, particularly if near areas of higher potential.
2	Moderate to Low	Supporting data from one of three sources, usually geological or geochemical; areas generally lack sufficient prospecting to identify mineralization. Moderate to low degree of confidence in designation. Reconnaissance exploration to be expected. Good potential for upgrading of classification.
1	Low	Current data is non-diagnostic for favourable metallogenic environment. Moderate to high degree of confidence in designation. Little likelihood of future exploration for deposit types considered.
I	Indeterminate	Current data is either outdated or insufficiently detailed for a reasoned determination of mineral potential. High degree of confidence in designation. Future exploration to be expected in parts of the area.

NOTE: Plus signs (+) are used to indicate localized areas of particularly favourable data. Subscripts in Class 2 designations define the single type of favourable data.

Figure 4. Diagrammatic classification of mineral potential used by McLaren (1990) for a relatively detailed resource assessment in British Columbia. The classes given here are qualitatively similar to those used by the GSC, but are more distinctly defined because of his relatively complete data base. The triangular diagram is an aid to visualizing how the various mineral deposit indicators complement each other in resource assessment rating schemes. The sparse data base makes application of this scheme, and schemes used by the United States Geological Survey, inappropriate for the Wager Bay area. GSC must be able to assign a variety of mineral potential ratings based on only geology plus possibly one additional criterion in frontier areas such as Wager Bay.

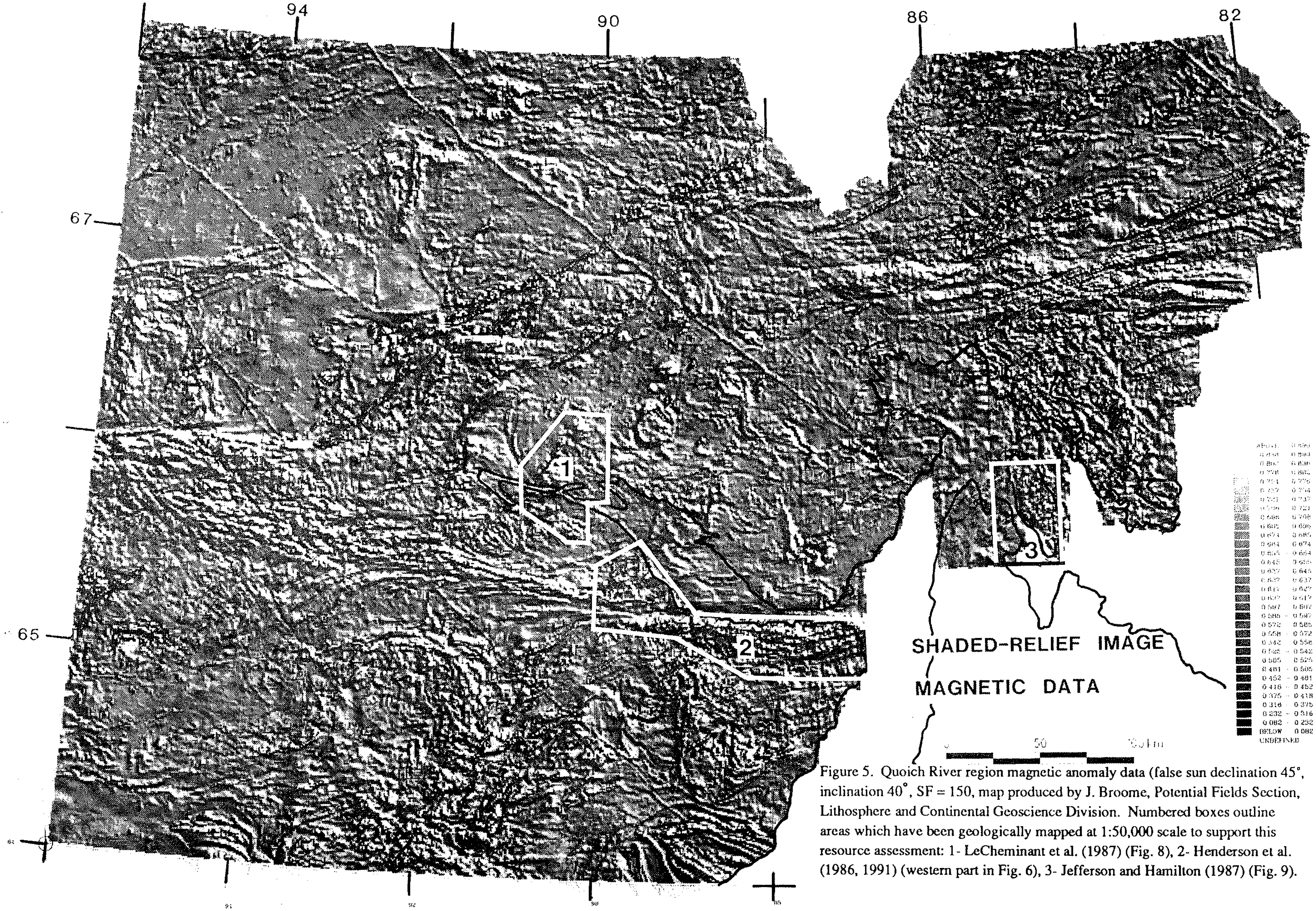


Figure 5. Quoich River region magnetic anomaly data (false sun declination 45°, inclination 40°, SF = 150, map produced by J. Broome, Potential Fields Section, Lithosphere and Continental Geoscience Division. Numbered boxes outline areas which have been geologically mapped at 1:50,000 scale to support this resource assessment: 1- LeCheminant et al. (1987) (Fig. 8), 2- Henderson et al. (1986, 1991) (western part in Fig. 6), 3- Jefferson and Hamilton (1987) (Fig. 9).

Confidence in this Assessment

Although this is a phase 2 assessment (based on newly acquired knowledge of the region), we are still faced with an extremely sparse data base. The 1:50,000-scale bedrock mapping done for this study could not cover the entire assessment area and has concentrated on specific areas which exemplify what might be found elsewhere in the approximate 27,000 km^2 of proposed park. The surficial geology was mapped mainly by interpretation of air photographs, ground observations being limited to one field season. Directions of Laurentide ice movement are inferred mainly from glacial constructional landforms identified on air photographs. Till samples for geochemistry were taken at widely spaced sites in the area surrounding Wager Bay, and on northern Southampton Island. Very little mineral exploration has been done in the proposed park area, partly because of its extreme remoteness - only one mineral prospect is known within the proposed park boundaries. The assessments given here are therefore subject to probable future revision, depending on the amount of new field data that might be acquired by researchers and explorationists. The requirement for future reconsideration of mineral potential has been addressed in more depth by many writers, such as Barry and Freyman (1970), Padgham (1973), Brobst and Goudarzi (1984) and Scoates et al. (1986).

Few direct indications of mineral potential have been obtained, but the extreme remoteness of Wager Bay and the sparse data limit our resource assessment to very general terms. The low to moderate potential (LM) assigned to zinc, copper and lead in domains 4 and 7 (Table I) reflects uncertainty due to a lack of geochemical indications. The moderate potential (M) assigned to skarn lead-zinc-silver north of Ford Lake reflects greater certainty due to the greater sample density, the number of geochemical anomalies, and the junction of favourable rock types (marbles with granitic plutons). The moderate potential (M) assigned to Domain 1 supracrustal rocks results from the confidence generated by numerous rock and till geochemical results which indicate elevated abundances of lead (60-100 ppm), zinc (290-1200 ppm), copper (140-860 ppm) and barium (2200-7500 ppm).

The assessments ratings assigned in this report to the terrestrial areas east of 92° reflect the greater degree of confidence imparted by reconnaissance surficial geochemical data which was obtained for those areas. The MH rating assigned to the area west of Wager Bay reflects the uncertainty which results from a lack of geochemical data and recent field work by GSC in that area. A second MERA is being designed for the marine phase of the proposed Wager Bay national park, and for the terrestrial portion west of 92°. This MERA and those planned are not specifically directed toward any part of Hudson Bay itself (e.g. **not** Roes Welcome Sound), except by way of example and to make clear that any low potentials assigned here do not apply to the offshore.

Acknowledgments

This Phase 2 (field) assessment was funded by three-way contributions from Environment Canada (Parks Branch), Indian and Northern Affairs Canada, and Energy Mines and Resources Canada (Geological Survey of Canada Branch). Most previous resource assessments could not include a Phase 2 field component because of time constraints and because the costs of these were supported entirely by the Geological Survey of Canada. In 1986 helicopter support was obtained for this study from Polar Continental Shelf Project of the Department of Energy, Mines and Resources.

This resource assessment benefited considerably from the collaborative studies of M.N. Henderson, J.R. Henderson, A.N. LeCheminant, K. Coe, J. Broome and P. Copper. J.E.M. Smith's contribution on surficial geology constituted a M.Sc. thesis at Carleton University, supervised by F.A. Michel. S.M. Hamilton's contribution on oil shales constituted a B.Sc. thesis supervised by P. Copper at Laurentian University. Technical assistance by R. Lancaster, N. Kim and the photomechanical staff at GSC is much appreciated. Field assistants who contributed to this study included D. Brent, W.A. Spirito, I. Derome and R. Wyllie. G.R. Morrell reviewed portions of this report regarding hydrocarbons. I. MacNeil and D. Harvey provided reviews from the CPS perspective. W. Wagner provided a review from the Mineral Policy (MPS) perspective of EMR. The entire report was critically reviewed by S.M. Roscoe, R.F.J. Scoates and an anonymous GSC reviewer.

Geological Domains for Resource Assessment

Figure 2 shows the distribution of 8 bedrock domains, based on the above data. The domains and their resource potential ratings are listed in Table I. The geology of each domain and of some structural features are summarized in the following.

Domain 1. Supracrustal Rocks and 2. Foliated Granitic Gneiss

Domain 1 is not a single contiguous area, but refers here to the group of variously shaped areas characterized by the presence of supracrustal gneisses. Domain 2 refers to one main belt dominated by sheets of granite to quartz diorite which are salmon pink to white, well foliated, magnetitic and moderately radioactive (5000 total cpm compared to <1000 total cpm for supracrustal gneiss on an uncalibrated TV1A scintillometer). The foliated granite domain is discussed together with the supracrustal domain because the two appear to be spatially associated. Mapping at 1:50,000 scale has shown that foliated granite sheets pinch out into pink and grey gneisses that do not contain supracrustal rocks.

Domains 1 and 2 were characterized for this study by 1:50,000-scale mapping and geochemical sampling west of Wager Bay and north of the Wager shear zone, in the Paliak belt (Fig. 6; Henderson et al., 1986, 1991). LeCheminant et al. (1987a) (Fig. 8) also documented supracrustal gneisses which trend through the Ford Lake area and which have been intruded there by the Early Proterozoic plutonic suite (Domain 5). Domains 1 and 2 contain varying proportions of six summary map units which are shown in Fig. 6 and keyed to the following description by number in parentheses.

Map-unit (1) comprises supracrustal, mafic and ultramafic gneisses which apparently form the oldest rocks assemblages in the terrane dominated by pink and grey weathering layered orthogneiss. Supracrustal rocks include, in decreasing order of abundance: semipelite (biotite-quartz-feldspar+/-garnet+/-pyrrhotite), amphibolite and ultramafic (retrogressed olivine-pyroxene) rocks, magnetite-quartz iron-formation, sillimanite quartzite and calc-silicate-bearing semipelite.

Map-unit (2) includes pink and grey weathering granitoid orthogneiss of biotite quartz diorite and biotite quartz monzonite compositions, assigned a Late Archean age. This rock type is ubiquitous around Wager Bay and forms Domain 3 where map-units (1) and (3) are minor or absent.

Map-unit (3) includes foliated pink-weathering granite, plagioclase-porphyritic granodiorite, quartz diorite, and biotite-hornblende diorite which commonly form suites of extensive sills interleaved with map-units (1) and (2). Domain 2 is characterized by this map-unit.

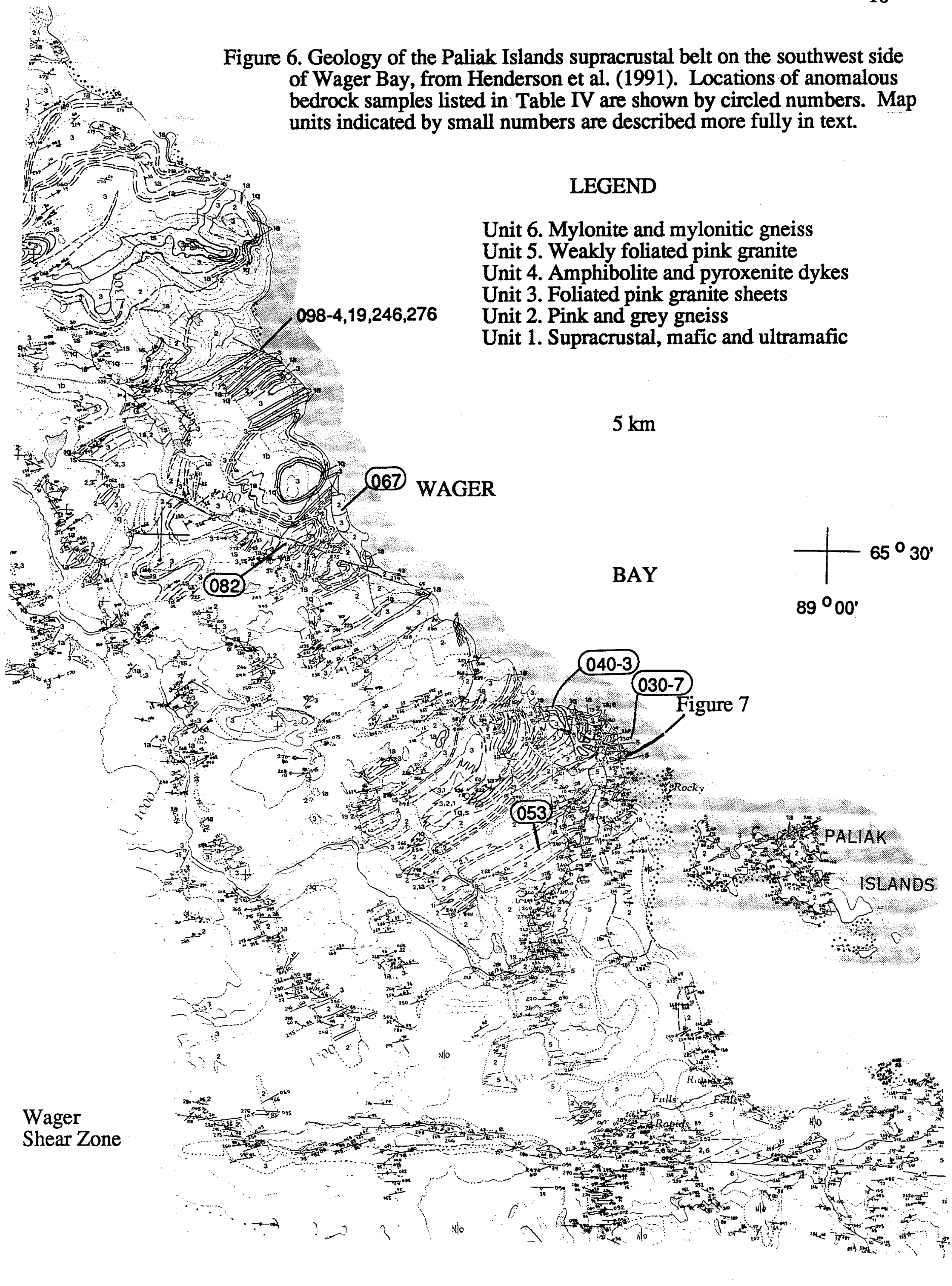
Map-unit (4) is a volumetrically minor suite of thin discontinuous dykes and boudins of amphibolite and pyroxenite which are located throughout the Wager Bay region. Some of these dykes pre-date and others post-date the main deformation of map-units (1) and (2). Typical boudins and dykes are shown in black on Fig. 7.

Map-unit (5) includes pink granite pegmatite dykes, cross-cutting pink aplite dykes and weakly foliated, homogeneous pink granite. These are part of the Early Proterozoic plutonic suite which defines Domain 5.

Map-unit (6) of Fig. 6 is mylonite and mylonitic gneisses which occur within Wager Shear Zone and in discrete mylonitic shear zones in the patchy granulite terrane to the south (Fig. 3). The mylonitic rocks are predominantly quartzofeldspathic equivalents of map-unit 2, but also locally include mylonitized mafic, pelitic and quartzose gneisses derived from unit (1).

The supracrustal rocks (1) throughout the study area are highly metamorphosed, attenuated and disrupted, so that the stratigraphic sequence could not be determined. Even in Domain 1 the supracrustal rocks constitute only 10 to 30 % of the gneisses. The individual supracrustal units are generally 50-200 m in map width, have been traced for distances of a few hundred metres to ten kilometres, and are thinner than the other interlayered map-units: (2) banded pink/grey orthogneiss (50-500 m) and (3) foliated granite sheets (50-2000 m). Where the foliated granite sheets dominate and less than 10% of the exposed rocks are supracrustal, the areas are shown as Domain 2 on Fig. 2.

Figure 6. Geology of the Paliak Islands supracrustal belt on the southwest side of Wager Bay, from Henderson et al. (1991). Locations of anomalous bedrock samples listed in Table IV are shown by circled numbers. Map units indicated by small numbers are described more fully in text.



LEGEND

- Unit 6. Mylonite and mylonitic gneiss
- Unit 5. Weakly foliated pink granite
- Unit 4. Amphibolite and pyroxenite dykes
- Unit 3. Foliated pink granite sheets
- Unit 2. Pink and grey gneiss
- Unit 1. Supracrustal, mafic and ultramafic

Contacts between supracrustal gneisses and pink-and-grey-gneisses are gradational and indistinct; Fig. 7 shows that slivers of supracrustal rocks are interleaved with other gneisses on a very fine scale. The supracrustal and interlayered pink/grey gneisses of Archean or early Proterozoic age were multiply deformed and attenuated on a fine scale, prior to being regionally intruded by the laterally continuous foliated granite sheets. The foliated granite sheets and their fabric are peneconcordant with the fabrics of the enclosing gneisses, but in detail the contacts are discordant and sharp. The foliated granite sheets contain xenoliths of the other gneisses. All of these units were deformed into large open-to-tight folds, some of which are well exposed in cliffs on the southwest side of Wager Bay.

An aeromagnetic pattern associated with supracrustal rocks of Domain 1, such as those in the Paliak belt, is identifiable on the standard magnetic anomaly map, and stands out clearly on enhancements by Broome (1990) (e.g. Fig. 5). The pattern is characterized by a moderately high intensity central band, 20 to 50 km across, bounded on each side by extremely low-intensity bands 1 to 50 km wide. The extreme low intensity bands are associated with mapped semipelites (Domain 1), and contain narrow bands of extremely high intensity associated with iron-formation. Intermediate and moderately low-intensity bands are generally associated with mapped pink-and-grey gneisses. The broad, moderately high-intensity bands are mapped as foliated granite sheets. The presence of linear zones of extremely high magnetic intensity within bands of very low magnetic intensity is characteristic of iron-formation within semipelite.

The banded supracrustal pattern of the Paliak belt originates in the western part of the study area, where it is sub-parallel to and part of the Wager shear zone. Just west of Paliak Islands, the pattern curves northeasterly away from the shear zone. It then trends across Wager Bay, curves north, then hooks southwest through Ford Lake, then hooks northeast again, sub-parallel to the Penhryn belt (3). The overall shape of this belt is a large "S". The tails of the "S" merge into the dextral Wager shear zone on the south and an un-named, more diffuse dextral shear zone north of Repulse Bay. Similar, more open "S" shapes are defined by aeromagnetic lineaments in northern Southampton Island and east of Repulse Bay (Figs. 3, 5).

Correlation of the Paliak supracrustal belt with other supracrustal belts within and outside of the Wager Bay study area is uncertain, however comparisons are attempted here for consideration of whether mineral potential of similar belts outside of the study area could be applied to the Wager Bay area. Although the Paliak belt includes quartzite, iron-formation, semipelite, some dismembered mafic gneiss, amphibolite and ultramafic units, it lacks the extensive komatiites that characterize parts of the 2.9 Ga Prince Albert Group (e.g. Schau, 1982). The Paliak supracrustal rocks are also somewhat similar in lithology and setting to the Archean Malene supracrustals of West Greenland as described by Appel (1985), Chadwick and Coe (1983) and Coe (pers. comm. 1985). North of Ford lake, the Paliak belt is overlain by much better preserved arenites and marbles which appear to correlate with the Aphebian Penhryn Group as described by Henderson (1983) on Melville Peninsula.

The Paliak belt near Ford Lake is separated from the Prince Albert belt in the Walker Lake area (Fig. 3; Schau, 1982) to the northwest by a broad zone of foliated granitic gneiss which has high magnetic intensity, similar to that of the foliated pink granite sheets located within the Paliak belt (Fig. 6). The granitic gneisses in each belt are though to be of the same plutonic suite because of the continuity of the aeromagnetic anomaly patterns, the similarity of bedrock samples taken in the western part of the study area during till sampling, and comparison of these samples with descriptions of the southern Walker Lake gneiss complex by Schau (1982 and pers. comm. 1986). Supracrustal gneisses outcropping on strike and to the north of the Ford Lake supracrustal gneisses have been assigned to the Prince Albert Group by Schau (1982). All of these Archean supracrustal belts are included in Domain 1, because lithologic descriptions are very similar and their mineral potentials appear to be similar, despite the uncertainty of their correlation.

Other separate lenses and irregular map shapes shown as Domain 1 on Fig. 1, south of the Wager shear zone and east of Wager Bay, appear to be of similar lithology to supracrustal rocks in the Paliak belt. These patches were not mapped by the authors, but are included in Domain 1 because of descriptions given by Heywood (1967), because of their aeromagnetic signatures, and because of confirmatory till geochemistry (e.g. high Ni, Cr and Cu values indicating mafic and ultramafic bedrock contributions; high Fe indicating iron-formation; and high Pb and Zn suggesting volcanic or sedimentary exhalative base-metal accumulations).

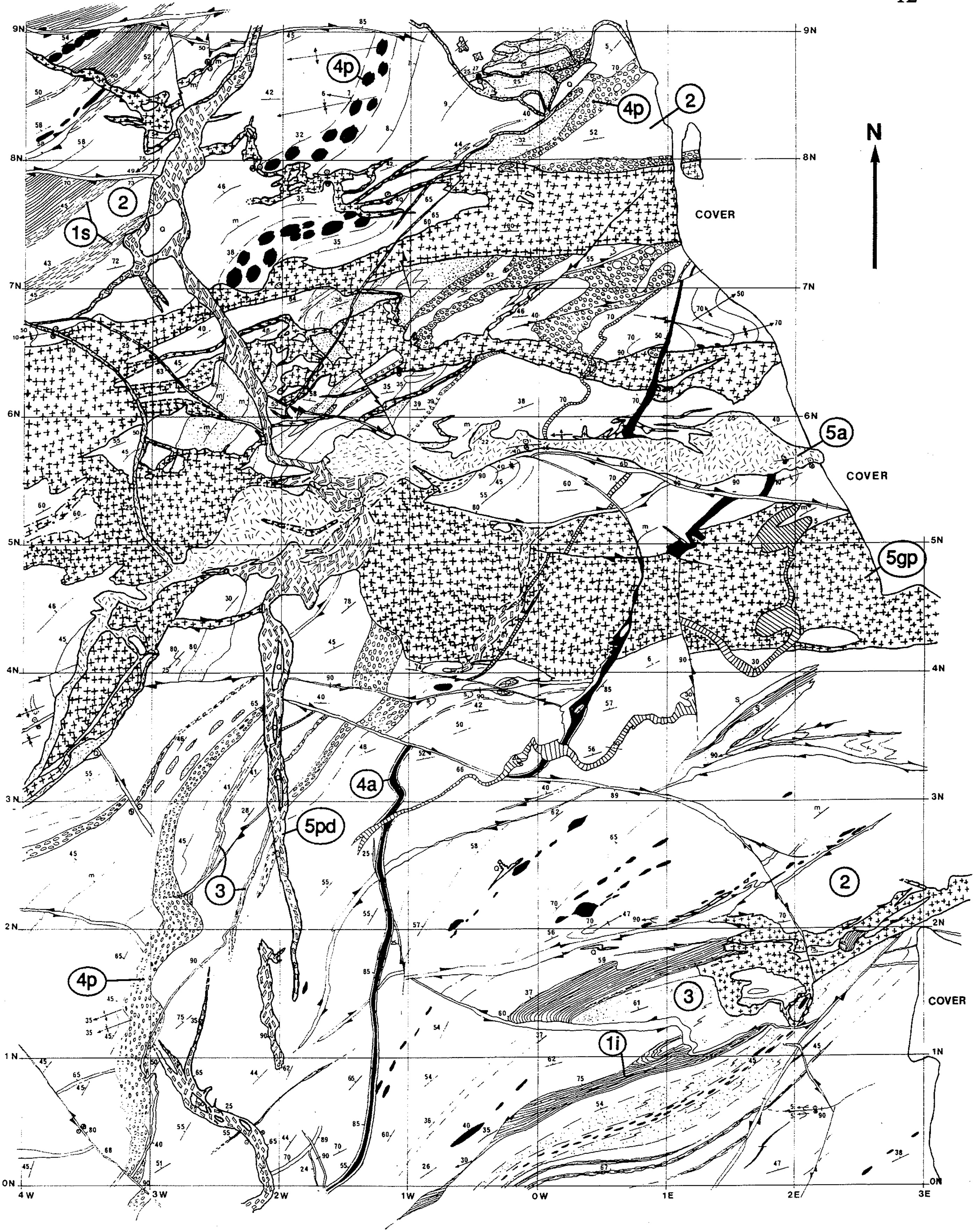


Figure 7. Geology of the pink and grey gneiss on the coast of Wager Bay, 4 km northwest of Paliak Islands (Fig. 6). Grid spacing 10 m. Units as follows: 1s=semipelite, 1i=iron-formation; 2=pink and grey gneiss; 3=foliated granite and granodiorite; 4a=amphibolite dyke with marginal pegmatite; 4p=pyroxenite pods in pegmatite matrix; 5gp=granite pegmatite, 5a=aplite related to microcline porphyritic quartz monzonite, 5pd=pegmatite dyke.

Domain 3. Pink and Grey Gneiss

Domain 3 includes pink and grey weathering, banded, biotite granitic to tonalitic gneiss (map-unit 2 of Domain 1) in a variety of metamorphic grades (mainly amphibolite, but also large areas of granulite grade as shown in Fig. 3), and is typical of orthogneiss from many late Archean terranes. The pink and grey gneiss is injected by minor to major anastamosing sheets mainly of foliated map-unit (2), aplite and pegmatite. The gneiss contains numerous lenses and boudins of supracrustal rocks on scales up to km, and is assumed to post-date the exposed supracrustal suite. The foliated granite (Domain 2) in turn post-dates the gneiss. Numerous later pegmatites cut the supracrustal rocks, gneiss and foliated granite, but form small pods and dykes too small to differentiate on the scale of Fig. 6. The detail of typical deformation structures, inclusions of supracrustal rocks, injections and transecting dykes is illustrated in Fig. 7.

Domain 4. Penrhyn Group

Domain 4 outlines a southwest-tapering wedge which has been arbitrarily drawn to enclose mapped outliers of strata similar to the much wider belt of Penrhyn Group located northeast of the study area, (Henderson, 1983). The southernmost recognized Penrhyn Group outcrops are intruded by Ca 1825 Ma plutons north of Ford Lake (LeCheminant et al., 1987). Here, the Group is represented by trough cross-bedded meta-arenites, marbles and metapelites. Henderson (1983) has summarized the stratigraphy of the complete Penrhyn Group as follows: basal quartz-rich blanket sandstone with locally intercalated mafic volcanic rocks, mixed carbonaceous pelitic, psammitic and carbonate sediments, and upper carbonaceous shale and arkosic wacke. Henderson (1983) noted small amounts of disseminated pyrite, sphalerite and pentlandite in the carbonaceous metapelitic units of Penrhyn Group, referring to extensive, strong and coincident geochemical anomalies in zinc and nickel, and local subordinate anomalies in copper, lead, silver and gold obtained in a National Geochemical Reconnaissance survey which was followed up by Cameron (1979). Maurice (1979) followed up uranium anomalies and concluded that reconnaissance lake sediment results were considerably enriched in uranium compared to most other areas of the Canadian Shield covered by similar surveys. The highest uranium values follow th e Penrhyn Group rocks. Carbonate rocks in this belt north of Repulse Bay were also subject to exploration for lead-zinc (MVT) by Cominco (S.M. Roscoe, pers. comm., 1991) which operates the Marmorilik (Black Angel) lead-zinc mine in carbonates of a similar age in Greenland.

Structurally, the Penrhyn Group in the Melville Peninsula region occurs in the breached core of a synclinal nappe (Henderson, 1983). There, the aeromagnetic expression of the Group is strong, as is that of the Prince Albert Group, and it is clear that the structures there are deeply rooted in the crust. In the area of this study however, the Penrhyn Group outliers have no recognizable aeromagnetic signature, and are inferred to have a shallow, cover (nappe) relationship with the older Precambrian units. Nevertheless, the Group has been affected by the ca 1825 plutonic event in the Ford Lake area.

Domain 5. Early Proterozoic Plutons

Domain 5 is a northeast-trending series of Hudsonian calc-alkaline plutons (1823 +/-3 and 1826 +4/-3 Ma, LeCheminant et al., 1987) that transects Ford Lake and the northwest corner of the study area, north of Wager shear zone. LeCheminant et al., (1987) describe these as I-type, comprising large composite intrusions of coarse-grained megacrystic hornblende-biotite granite/granodiorite enriched in K, Rb, Ba, Th and LREE, and smaller bodies of monzodiorite, diorite and gabbro. They interpret the plutonism as a result of magma production within a continental magmatic arc.

The plutons have distinctive circular aeromagnetic anomaly patterns (e.g. Fig. 5; Geological Survey of Canada 1984a, 1984b) and some are fluorite-bearing. Based on aeromagnetic data, only the plutons in the Ford Lake area are here considered to be part of the suite mapped by LeCheminant et al. (1987a). Similar flourite-bearing granitoid rocks, particularly concentrated in the Nueltin Lake-Ennadai Lake district intrude a variety of older rocks in extensive areas in southern Keewatin District (Eade 1973; LeCheminant et al. 1976, 1977, 1980; Reinhardt and Chandler 1973) and are associated with precious and base metal occurrences (Charbonneau and Swettenham 1986). The plutons in the Ford Lake area underlie or are adjacent to six anomalous lead and zinc

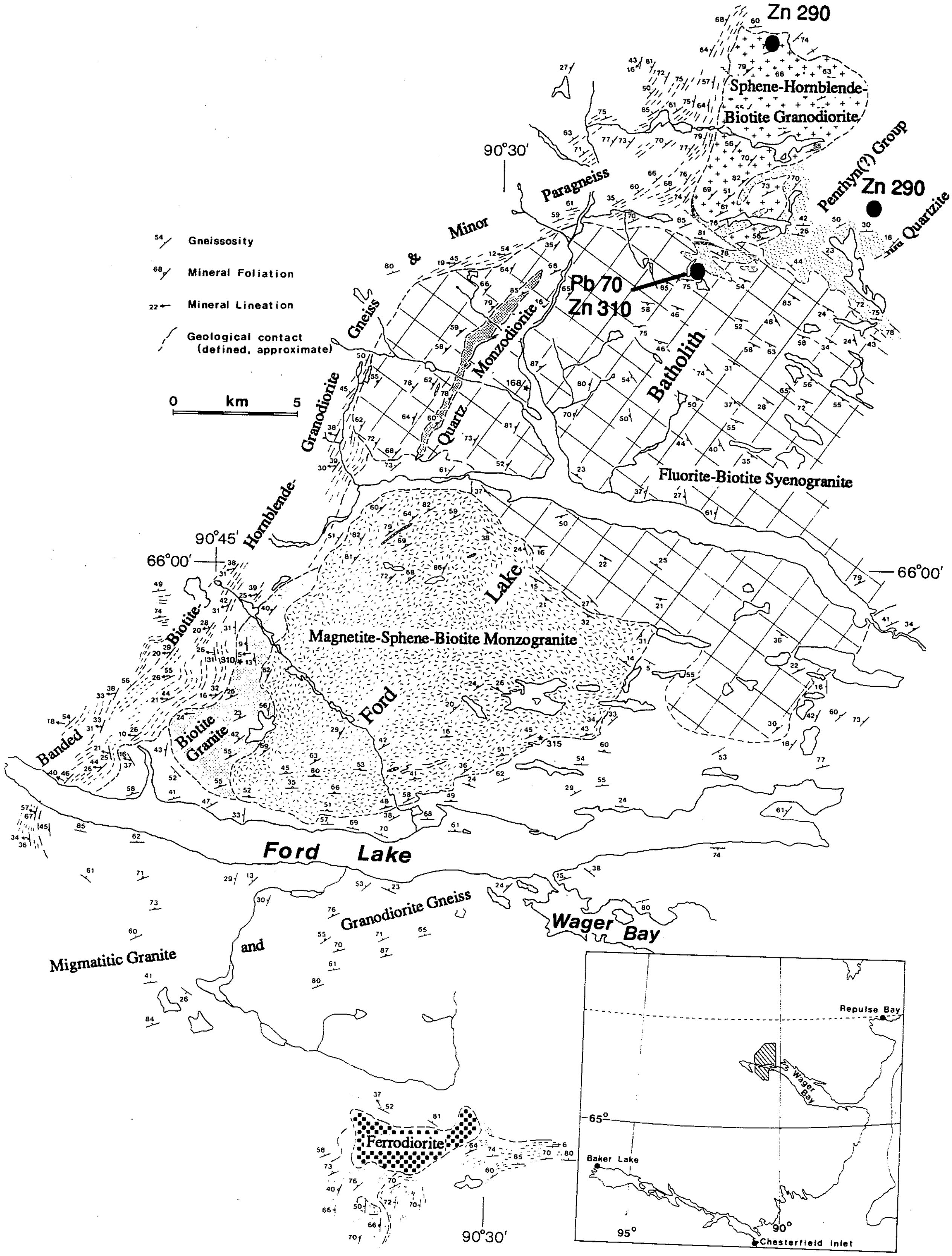


Figure 8. Geological sketch map of the area around Ford Lake from LeCheminant et al. (1987a). The gneisses are Archean (>2.5 billion years); granites are Early Proterozoic (~1.83 billion years). Dots with Zn 290 and Pb 70, Zn 310 indicate anomalous metals in tills (ppm).

concentrations in till (Figs. 2, 8; Table IV). The Ford Lake suite differs from those listed above in that it seems to be exposed now at a deeper crustal level, which means that most granite contacts are very steep and few if any buried plutons or satellite bodies are to be expected.

Other more widely distributed bodies labelled as granites by Broome (1990, Fig. 2; after Patterson and LeCheminant, 1985) are considered here as part of the foliated granite and granodiorite suite of Domain 2, because they lack circular expression, and many have a subdued or indistinguishable aeromagnetic expression. These foliated bodies do not have any associated anomalies in till or lithogeochemical samples.

Domain 6. Daly Bay Structural Metamorphic Complex

This complex was not examined in the field for this assessment, but was included for completeness on the map of the study area (Fig. 1). As described and mapped by Gordon (1988), the complex consists of metasediments of probable Archean age which have been intruded by gabbro and gabbroic anorthosite. At about 2050 Ma these rocks were metamorphosed to granulite facies, and by about 1950 Ma they had been structurally emplaced on top of the surrounding Archean gneisses, from which they are now separated by an inward dipping ductile shear zone.

The supracrustal rocks at Daly Bay include quartzofeldspathic granulite, minor amounts of marble with associated quartzite, sillimanite schist and biotite-garnet paragneiss, and ultramafic rock. These rocks are located within the complex and in the outer shear zone. Gossans and rusty zones are associated with disseminated graphite and minor pyrite or pyrrhotite; a small gossan at 64°12'N and 89° 50'W contains minor chalcopyrite and pyrrhotite.

Domain 7. Paleozoic strata on Southampton and White Islands

The regional stratigraphy of Paleozoic strata on Southampton and White Islands (Table III) has been established by Sanford (in Heywood and Sanford, 1976). Jefferson and Hamilton (1987), Hamilton (1987), Dewing et al. (1987) and Dewing (1988) reported preliminary results of field work on northern Southampton and White islands related to the resource assessment. Paleozoic strata dip very shallowly to the west, with local exceptions (Fig. 9), and rest directly on peneplaned Archean gneisses of Domains 1 to 3.

Circular structures on the north tip of Southampton Island west of White Island are clearly visible on air photographs and have been described as "biohermal structures in unit 3 of Red Head Rapids Formation" by Sanford (in Heywood and Sanford, 1976, Plate 25). Depositional dips are low, less than 5 degrees, and vuggy cores were not observed, therefore the domes may be the result of compactional drape over underlying bioherms of the Red Head Rapids Formation. Sanford (in Heywood and Sanford, 1976, p. 22) has noted that many such bioherms "occur in Middle Silurian terrane where they project upward through the Severn River Formation."

Both depositional and fault contacts have been observed between the Paleozoic and Precambrian rocks on White and Southampton islands. Some of the faults trend at high angles to the strike of the contact, and appear to have dip-slip offset. Other faults trend obliquely or parallel to the contact; the curvature of their traces suggest that they are steeply dipping reverse faults. Because the basement unconformity is tilted in these places, basement deformation appears to have been involved, with Paleozoic cover acting as a passive rider (Jefferson and Hamilton 1987).

Heywood and Sanford (1976) related development of the major northwest-trending faults in the Southampton Island region to a "post-Middle Silurian epeirogeny". Sanford et al., (1985) subsequently related the same faults to continent-wide patterns propagated from more intense deformation on the margins of North America related to plate tectonics. White and Southampton Islands lie on the Bell Arch which is a continuation of the Boothia Arch. Okulitch et al., (1985) specifically related post-Silurian unconformities, westward-directed folds, and thrust faults involving the basement, to compression during plate convergence recorded by the Caledonian Orogeny in Greenland. Such structures could have acted as conduits for base metal mineralization, even though no mineral occurrences have been reported on White and Southampton islands.

Table III. Paleozoic Stratigraphy

Age	Unit and Thickness	Description
	Attawapiskat Formation, 50 m	Massive biostromal limestone and dolostone with bioherm reefs
Middle Silurian (Niagaran)	Ekwan River Formation, 90 m	Thin-bedded basal stromatolitic limestone; biostromal & biohermal limestone; massive thick-bedded dolomitic limestone at top
	Severn River Formation, 150 m	Thin- to thick-bedded mottled limestone and dolostone
Early Silurian (Alexandrian)	Disconformity	
Upper Richmondian	Red Head Rapids Formation, 75 m	Uniformly bedded stromatolitic limestone and dolostone with thick, massive biostromal/biohermal facies in upper part; 16 Mile Brook oil shale in uppermost part
Richmondian (Late Ord.)	Churchill River Group, 50-60 m	Argillaceous limestone with lenses of orange and brown mottled stromatolitic limestone
Mid-Late-Ordovician Disconformity		
Early Late Ordovician	Boas River shale, about 2.8 m	Oil shale: brown to black petroliferous shale to micritic, organic, fossiliferous limestone
Mid Ordovician	Bad Cache Rapids Group 45 m	Highly fossiliferous grey argillaceous micritic limestone
basal Paleozoic	Basal clastic unit 0-4 m	Friable quartz granulestone to arenite, sandy hematitic mud
	Unconformity	Spheroidal weathering granulite gneisses exposed on White Island

The possibility of Paleozoic limestone flooring Wager Bay must be considered for its relevance to mineral and fossil fuel potential. No outcrops of Paleozoic sedimentary rocks have been found in the central Wager Bay area, although limestone cobbles and pebbles are abundant along the shores of Wager Bay, and limestone characterizes the western part of Southampton Island. Mapping on White Island has shown that Paleozoic rocks are locally preserved in minor grabens bounded on each side by basement gneisses. By comparison, Wager Bay appears to be a significant and complicated graben structure, outlined by late linear features as discussed below.

It is very unlikely that limestone could have been transported into Wager Bay by Laurentide ice, because ice-directional indicators show that ice was centred on, and flowed outward from Wager Bay. The limestone could have been transported into Wager Bay by modern sea ice. Sea ice was observed to enter Wager Bay from Roes Welcome Sound and move anti clockwise around Wager Bay, driven by strong tidal currents and the Coriolis effect. One method of ascertaining the presence and thickness of Paleozoic strata beneath the waters of Wager Bay would be by analyzing the sharpness and intensity of magnetic patterns (e.g. Fig. 5) which transect Wager Bay. For comparison, the basement aeromagnetic patterns continue across northern Southampton Island beneath Paleozoic cover, and are relatively subdued and more diffuse here than in areas of exposed basement. Similar subdued aeromagnetic patterns cross Wager Bay, suggesting the presence of Paleozoic cover rocks under the Bay. It may be possible to calculate the different amplitudes and frequencies of the patterns, and relate these parameters to depth of sedimentary cover and/or water depth.

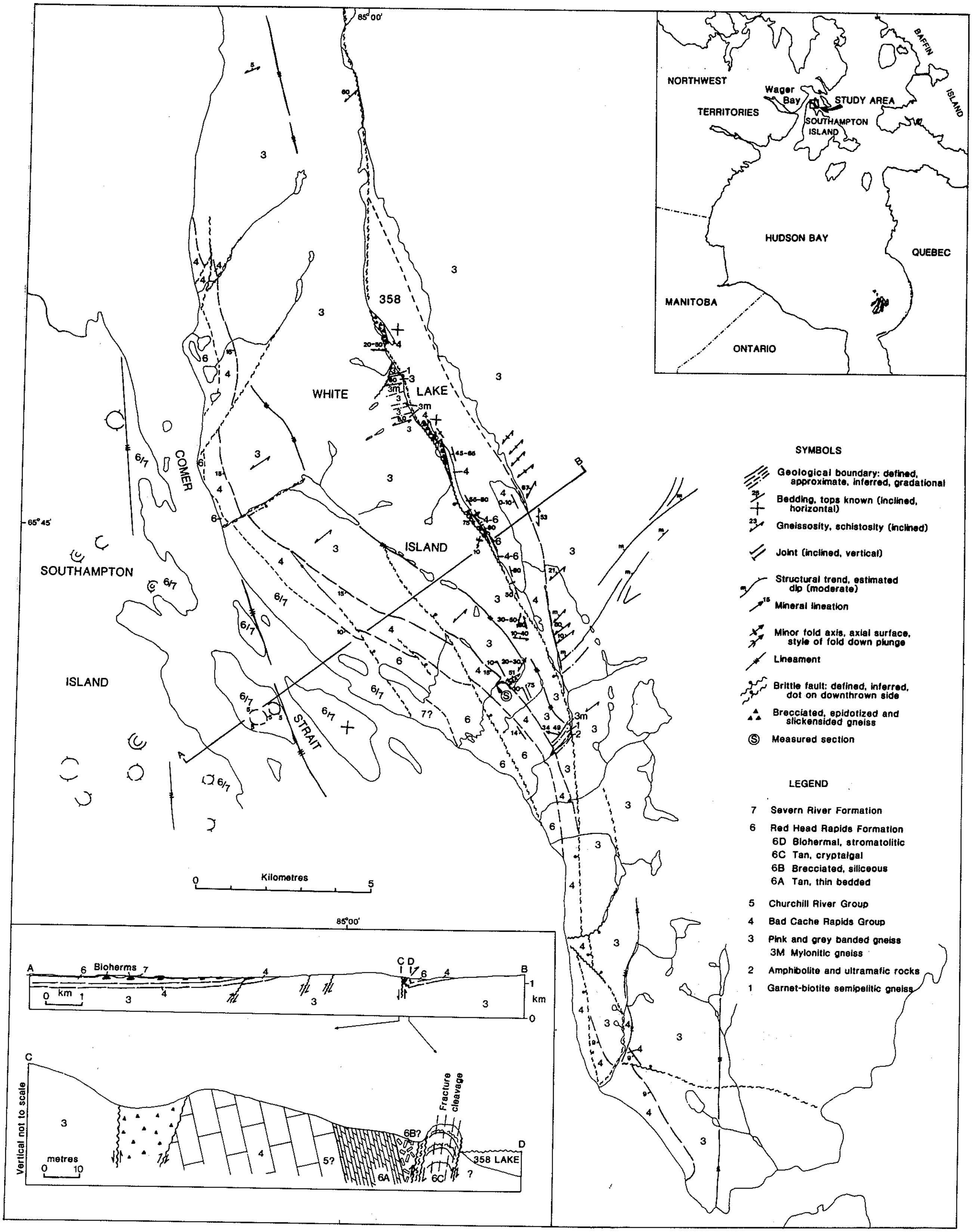


Figure 9. Geological sketch map of western White Island area. Cross-section A-B and map are at the same scale; C-D shows detail on west side of 358 Lake with vertical exaggeration not to scale. From Jefferson and Hamilton (1987).

Domain 8, Wager Shear Zone

The Wager shear zone (Henderson and Broome 1990) is a linear feature separating and cross-cutting some domains. This prominent east-west shear zone delimits the southern margin of Wager Bay and extends across the entire study area (Fig. 2). It is at least 25 km wide, and is developed in supracrustal rocks as well as pink-and-grey gneisses and foliated granite. The Base Camp granite (Henderson and Broome, 1990), the I-type pluton south of Paliak Islands (Domain 5), is intercalated with the gneisses of domains 1 and 2 on its margins, and is structurally isotropic except along its southern margin where it is cut by the Wager Shear Zone. Zircons from the granite were dated by the U-Pb method at 1808 +/- 2 Ma by Henderson and Roddick (1990). This age is considered a maximum for the Wager Shear Zone, because the granite is mylonitized and drawn out into a central straight part of the shear zone. Parts of this granite also intrude as massive-textured concordant wedges into sheared gneiss in the outer, northern side of the shear zone, suggesting that the intrusion of the granite took place during shearing.

Henderson and Broome (1990) have documented the right-lateral ductile strain recorded by this shear zone. Such ductile-strained rocks were formed under deep crustal transpressive conditions that are unfavourable for the development of significant quartz veins containing gold or uranium. On the other hand, the Wager shear zone includes some very straight linear segments which are recessive weathering like the northwesterly lineaments. The east-west-trending south shore of Wager Bay is parallel to the Wager Shear Zone, but also corresponds to an extreme contrast in aeromagnetic anomalies which is not present west of Paliak Islands. Furthermore, northwesterly lineaments appear to terminate against the Wager shear zone. This combination of features suggests that late (Paleozoic and later?) north-side-down brittle movement took place along the same approximate zone as the dextral Proterozoic ductile shear, particularly east of Paliak Islands. The brittle fault component, similar to those described below, is interpreted to have contributed to the subsidence of Wager Bay, and might have potential for vein-hosted uranium or gold in dilatant zones.

Late Linear Features in the study area

The shores of Wager Bay and associated water bodies coincide with several orientations of structures which originated in Precambrian time. The steep local relief and lack of deformation of these linear structures suggests that they were also reactivated in Paleozoic to Recent times. The northwest-trending shorelines of Wager Bay and Ford Lake are approximately parallel to indistinct offsets of magnetic lineaments visible on the aeromagnetic maps of the area (Fig. 1; GSC, 1984a; Broome, 1990). Some of the northwesterly offsets correspond to faults mapped in bedrock by Henderson et al., (1986), LeCheminant et al., (1987) and Schau, (1982), which and also trend parallel to and beneath the main part of Wager Bay. Other northwesterly lineaments are straight and correspond to diabase dykes presumed to be part of the Mackenzie suite (1267 +/- 2 Ma; LeCheminant et al., 1989). Both straight and curved, northwest and east-west lineaments are highlighted by differences in magnetic intensity. The south and southwest sides of lineaments have much higher magnetic intensities than the north sides. The spectacular cliffs on the southwest side of Wager Bay coincide with one such offset of magnetic intensity. These observations suggest that these faults have significant vertical offsets, north and northeast sides down.

The fresh appearance and steep sides of some northwesterly and easterly trending gullies are interpreted to represent minor Quaternary movement on brittle faults, and/or excavation of these faults zones by ice flowing parallel to them, toward the southeast (Smith, 1990). Based on the above observations, the shape of Wager Bay is here interpreted to be fundamentally influenced by Precambrian structures which were reactivated one or more times in the Phanerozoic to create a compound half graben whose northeast-side-down master fault is elbow-shaped. The development of such faults is very clear on Southampton Island (Sanford and Heywood, 1976; Jefferson and Hamilton, 1987) where Paleozoic rocks are preserved on land.

Bedrock Mineral Occurrences and Geochemical Analyses

Samples were collected of every representative rock type encountered during the field work, including every gossan. No major metal anomalies were noted in any of the 139 rock samples submitted for geochemical analysis. Table IV lists some moderately anomalous samples that were analyzed by ICP-ES at GSC. All of the anomalous samples were collected from the 1c supracrustal belt immediately west of Paliak Islands (Figs. 2, 6). The individual map-units from which these were taken are in the order of 50 to 100 m wide, and are bounded by pink and grey gneiss and foliated granite.

Table IV. Samples of bedrock and gossans located in the Paliak Islands supracrustal gneiss belt (Fig. 6) which provided moderate geochemical anomalies. Analyses were determined by ICP-ES at GSC; full results are available on request.

Sample No.	UTM coordinates	Rock type[1]	ppm
85JP-030-7	7258550N 399700E	po-bi-qz-fp pgns	600 Cu / 110 Ni / 110 Zn
85JP-040-3	7258950N 397400	di-clcl pgns	1200 Zn / 210 Ni
85JP-053	7254950N 396800E	po-bi-di pgns	560 Cu / 250 Ni
85JP-067-3	7266850N 390770E	cp-py-po-ga-bi pgns	1100 Cu / 120 Zn
85JP-082	7265600N 388400E	po-ga pgns	860 ppm Cu
85JP-098-4	7272546N 388000E	ga-bi-qz-fp pgns	2200 Ba / 730 Zn
85JP-098-19	7272503N 388000E	po-clcl pgns	140 Cu / 520 Zn
85JP-098-24b	7272495N 388000E	rusty bi scst	180 Cu / 300 Zn
85JP-098-27b	7272486N 388000E	bi scst	7500 Ba /170 Cu / 390 Zn

[1] Mineral and element abbreviations:

bi = biotite
clcl = calc-silicates, e.g. tremolite
cp = chalcopyrite
di = diopside
fp = feldspar
po = pyrrhotite
py = pyrite
ga = garnet
qz = quartz
Ba = barite
Cu = copper
Ni = nickel
Zn = zinc

Only one mineral showing was previously documented within the study area of the Wager Bay MERA (* on Fig. 3). This was one of a number covered by mineral claims and prospecting permits by King Resources Company in their 1970 Project Wager. Typical base metal values in this and other mineral showings in the Prince Albert Group range from 0.02 to 0.1 % Cu and 0.01 to 0.51 % Ni (Laporte, 1974, p. 119-122).

Surficial Geology and Regional Geochemical Surveys

Glacial History of the Wager Bay Area

The history of late glacial ice-flow directions and ice sheet disintegration of the Keewatin Sector of the Laurentide Ice Sheet in the Wager Bay area has been determined from glacial geomorphological interpretations (Smith, 1990) which provide more detail on the general history of the Ice Sheet as documented by Shilts (1985). The Laurentide ice divide trended on average northeasterly across the Wager Bay study area and had a multi-stage growth and decay history recorded by locally abundant and locally opposing paleo-ice flow indicators such as striae on bedrock and sculpted landforms (e.g. drumlins, crag-and-tail structure) (Figs. 10, 11).

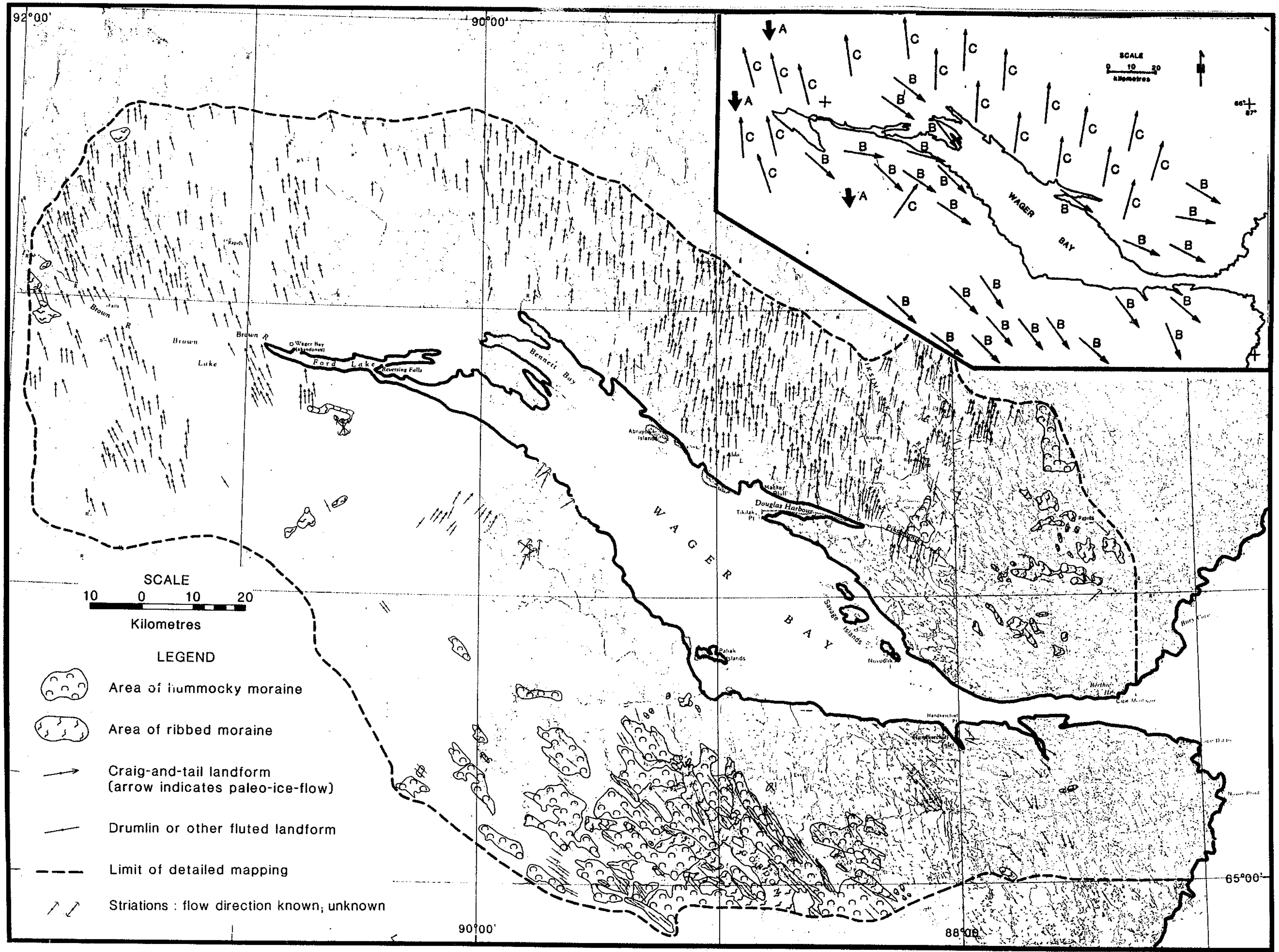


Figure 10. Surficial geology around Wager Bay: glacial constructional landforms. The paleo-ice-flow directions indicated by crag and tail flutings differ from directions indicated by ribbed moraines in the western part of the study area, but directions suggested by flutings are similar to those of ribbed moraines in the east and southeast parts of the study area. Inset shows interpreted temporal sequence of ice-flow directions across Wager Bay, starting with A, keyed to text descriptions. From Smith (1990).

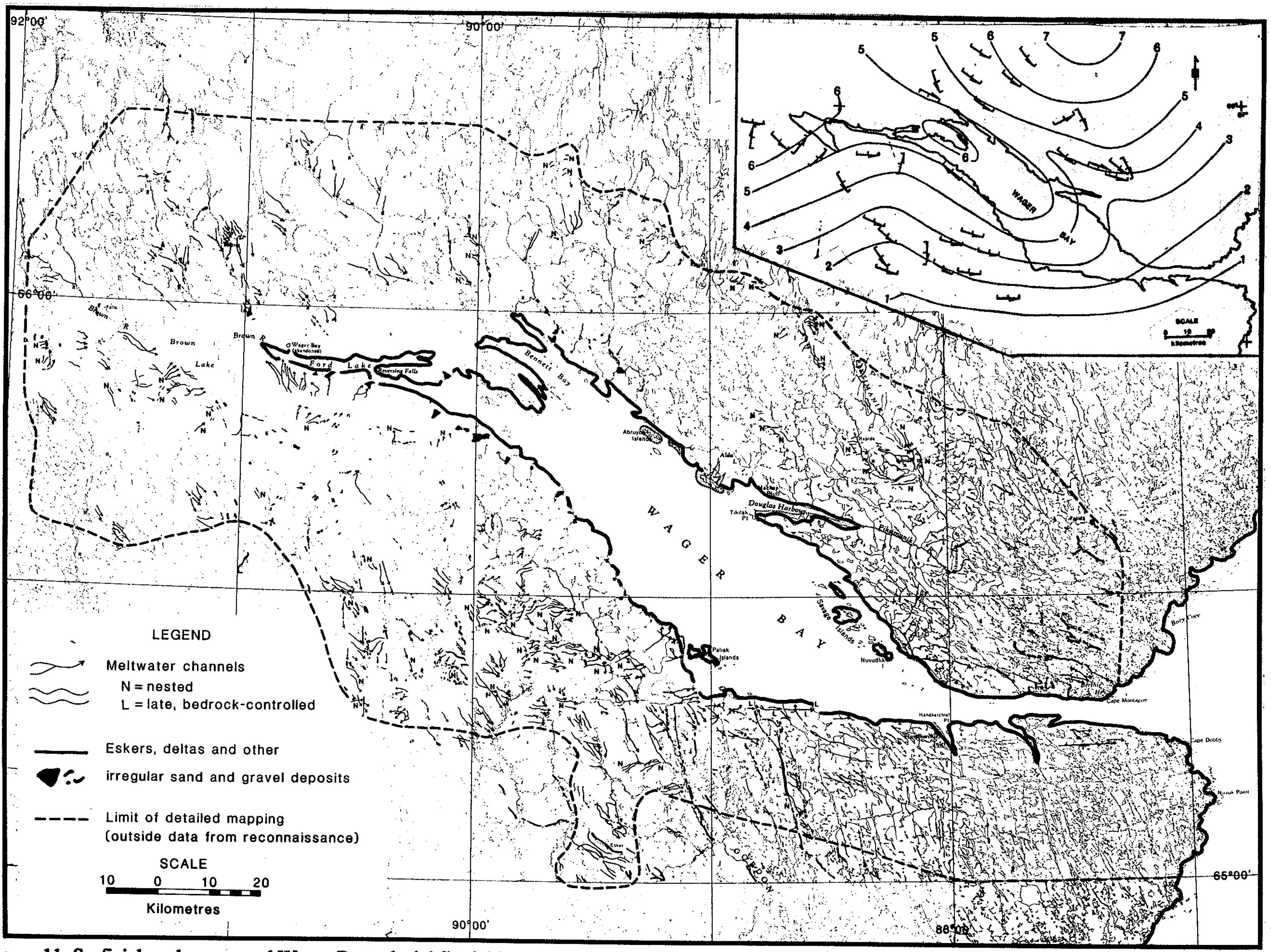


Figure 11. Surficial geology around Wager Bay: glacial fluvial landforms. Inset shows pattern of ice sheet retreat interpreted from landforms. Half arrows represent location and paleo-flow direction of nested meltwater channels; hatch lines on paleo-ice side. Numbered lines indicate successive ice margin locations, from earlier (1) to later (7). From Smith (1990).

Glacial features indicate the following sequence of constructional glacial events in the Wager Bay area keyed to Fig. 10: A) ribbed moraines (now preserved in patches) were created by a large ice sheet flowing toward the south from an area north or NNW of the study area; B) glacial flutings, ribbed moraine and ice-scoured bedrock indicate that the ice sheet subsequently flowed toward the southeast from an origin located northwest of Wager Bay; C) ice flowing toward the north, from the southern part of the study area, then shaped the subglacial sediments into hundreds of crag and tail flutings but did not obliterate the parts of the ribbed moraine that were preserved as scattered patches in frozen valley floors.

Glaciofluvial landforms indicate a complicated melting pattern of the final, stagnant ice mass (Fig. 11). Nested meltwater channels indicate that as the edge of the stagnant ice sheet melted northward for the final time, the ice sheet was dissected into remnant ice masses left in depressions.

Geochemistry of Tills in the Wager Bay - Southampton Island Region

The 1985-1986 field work included a reconnaissance surficial geological and geochemical survey which covered a 50 km-wide zone surrounding Wager Bay, as well as the northern part of Southampton Island. This study used methods described by Shilts (1977) for a more detailed study in a similar Keewatin setting. The overburden was sampled from 132 sorted circles (frost boils) and 2 deltas in the Wager Bay and northern Southampton area (Fig. 12). The clay size fraction (< 2 um) was separated from all of the samples and geochemically analyzed for 33 elements by Bondar-Clegg & Company Ltd. Based on these data, a few samples were analyzed for platinum group elements (PGE's) and carbon content. Selected samples were also chosen for analysis of grain size, heavy minerals and pebble lithology.

Table V lists surficial samples with elevated geochemical abundances of a variety of elements. Some of these abundances are interpreted as evidence of mineralization, but more are used to diagnose particular rock types that contributed to the till. High nickel (>500 ppm), vanadium and chromium values help to indicate the presence of mafic and ultramafic rocks. High iron and silica in till suggest iron-formation. High zinc (300 ppm) and lead (60-110 ppm) suggest metalliferous metapelites, although 300 ppm zinc in mafic rocks is considered to be background for mafic rocks.. There is also good correspondence of mapped granitic/pegmatitic rocks with tills which contain elevated rubidium, uranium/thorium, rare earth elements and zirconium.

There is no clear evidence in the surficial media of dispersal trains from mineral occurrences. No metal anomalies were noted in any of the tills taken from Southampton and White islands. Aside from the lack of known occurrences, the lack of dispersal trains may also be a function of the low sample density, the complex and mixed bedrock units and the complex ice-flow patterns. The correspondence among till geochemistry, the local detailed bedrock maps and aeromagnetic patterns is good enough that till geochemistry combined with aeromagnetic patterns in relatively unmapped areas is here considered to provide a useful indication of general bedrock composition.

Seven tills sampled near the margins of mapped plutons contain 60-70 ppm lead and 290-360 ppm zinc (Table V, Fig. 2). Lithogeochemical analyses of grab samples from the plutons are low in sulphur and base metals. Combined with rare observations of molybdenite and copper minerals (LeCheminant et al., 1987), and the high fluorine content of the plutons, these data suggest that minor amounts of base metals were mobilized in or near the plutons, and the plutons are not themselves sources of metals. This implies limited potential for skarns (where carbonates are present) and contact metasomatic deposits. Alternatively, the base metals could come from base-metal-rich xenoliths within the granites. A lead anomaly in till, with similar possible pluton association, is present over a ring-shaped aeromagnetic anomaly at Fish Lake, north of the mouth of Wager Bay (Fig. 2).

The data base for the above geochemical summary is provided in Appendix 2, Tables VI, VII and VIII.

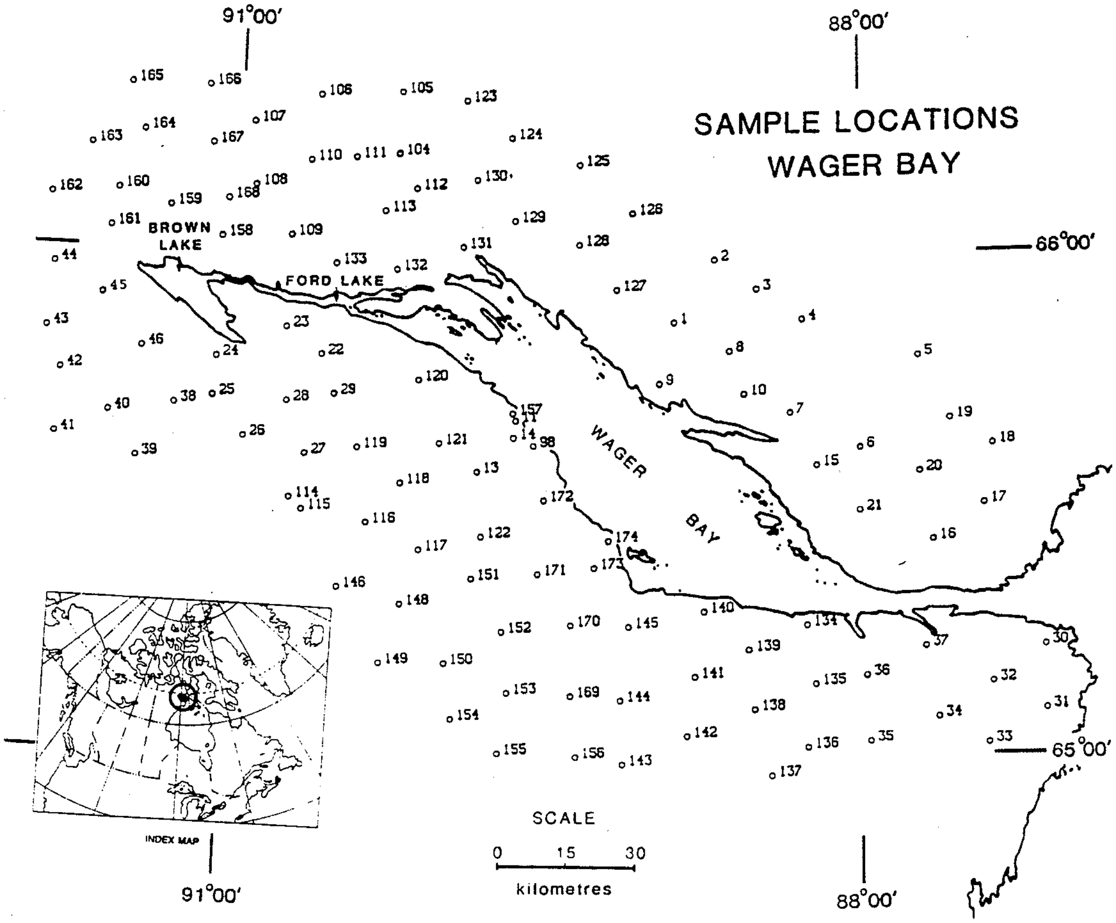


Figure 12. Locations of till samples collected around Wager Bay. Anomalous samples are circled and their geochemical results summarized in Table V. Geochemical and other analyses of these samples are given in Appendix 1. and summarized in text.

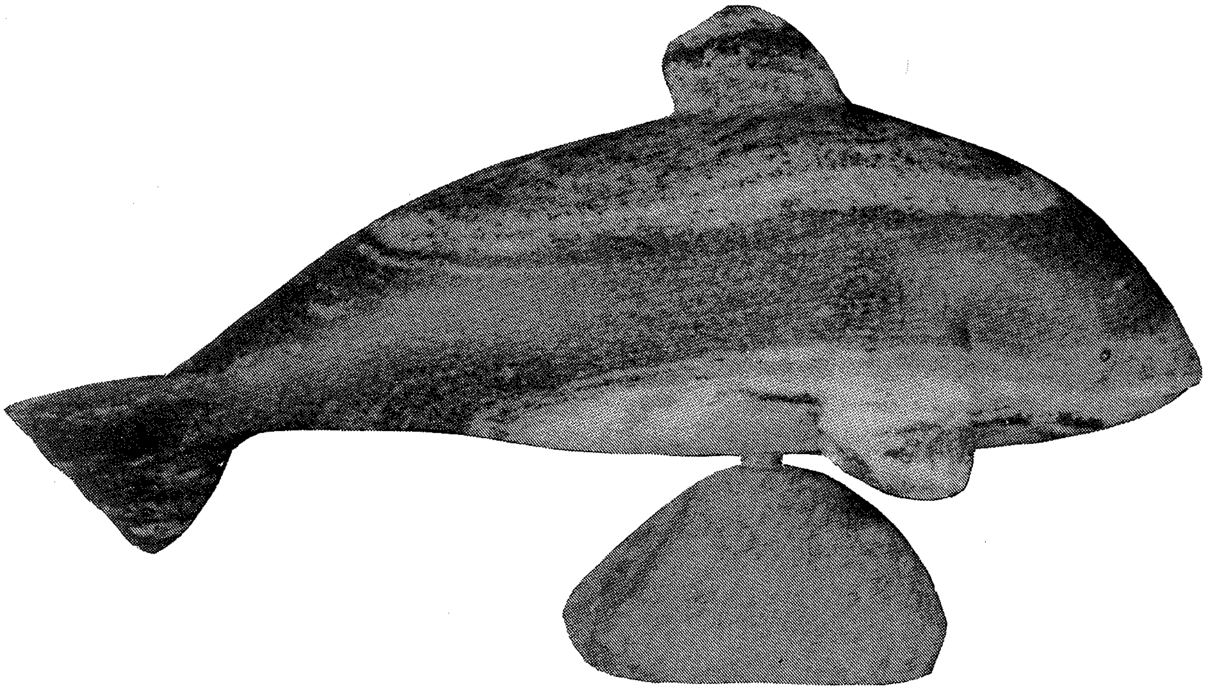


Figure 13. Whale, 32 cm long, carved from banded gneiss by Philip Pitseoluk, Pond Inlet. Banded gneiss is the principal rock type in the Wager Bay region. Virtually any competent rock type can be carved with the appropriate power tools.

Table V. Surficial samples with elevated geochemical results, Wager Bay region, N.W.T.

SAMPLE NO.	[ELEMENT$_{NA}$] ≥ 95 %TILE	[ELEMENT$_{OTHER}$] ≥ 95 %TILE	BEDROCK LITHOLOGY		LOCATION BY MAP SHEET NAME
			SUSPECTED ORIGIN	OUTCROP LITHOLOGY	
86-JPJ-0005	-	Sn	-	GRF	NW CAPE DOBBS
86-JPJ-0006	Rb	-	PEGM	GRF & GNSS	NW DOUGLAS HARBOUR
86-JPJ-0013	Au, Eu, Tb, Yb	-	VEIN	GRF & GNSS	WC DOUGLAS HARBOUR
86-JPJ-0014	U, Cs	Sn	PEGM	GRF	NW DOUGLAS HARBOUR
86-JPJ-0017	U		PEGM	GRF	WC CAPE DOBBS
86-JPJ-0018B	Au, Th	Mn, Pb	VEIN, PGNS	GRF	WC CAPE DOBBS
86-JPJ-0020	Rb		-	GRF	WC CAPE DOBBS
86-JPJ-0022A	Hf		-	E. PROT. PLUTON	NE WAGER BAY
86-JPJ-0024	Hf, U, Yb, Ta, Th	F, Pb	PEGM, S-PGNS-X	E. PROT. PLUTON	NC WAGER BAY
86-JPJ-0025A	Yb, La, Rb, Th	F, Zn	PEGM, S-PGNS-X	E. PROT. PLUTON	NC WAGER BAY
86-JPJ-0025B	-	Mo	-	GRF & GNSS	NW WAGER BAY*
86-JPJ-0026	-	Pb	S-PGNS-X	E. PROT. PLUTON	C WAGER BAY
86-JPJ-0027	Au		VEIN	GNSS	EC WAGER BAY
86-JPJ-0028	Hf		-	E. PROT. PLUTON	NC WAGER BAY
86-JPJ-0030		Sn	-	GNSS	SC CAPE DOBBS
86-JPJ-0031	Au, Co, Sb	Pb	VEIN, S-PGNS	GNSS	SC CAPE DOBBS
86-JPJ-0038	Ba, Rb	F, Zn, Mn	S-PGNS-X	E. PROT. PLUTON	NW WAGER BAY
86-JPJ-0039	Rb	Mn	-	GNSS	WC WAGER BAY
86-JPJ-0040	Ni, Cr, Co, Cs	F, Ni, Cr, Co	UMFC	GNSS	NW WAGER BAY
86-JPJ-0043	Ba		PGNS-X	E. PROT. PLUTON	NW WAGER BAY
86-JPJ-0044	Yb, Cs, Hf, U		PGNS	GRF	NW WAGER BAY
86-JPJ-0045	Ta	Mo	-	GRF & GNSS	NW WAGER BAY
86-JPJ-0046	Au		VEIN	GRF	NW WAGER BAY
86-JPJ-0047	Sc		-	GNSS	SW VANSITTART ISLAND
86-JPJ-0048	Cr, Fe, Co, Ni, Sc	Cr, Co, Ni	UMFC	GNSS	SW VANSITTART ISLAND
86-JPJ-0050	Co, Au	Co, Mn	UMFC?	GNSS	NW CORAL HARBOUR

SAMPLE NO.	[ELEMENT$_{NA}$] ≥ 95 %TILE	[ELEMENT$_{OTHER}$] ≥ 95 %TILE	BEDROCK LITHOLOGY		LOCATION BY MAP SHEET NAME
			SUSPECTED ORIGIN	OUTCROP LITHOLOGY	
86-JPJ-0051	Sc, Co, Fe, Ni	Fe, Co, Cu	UMFC	GNSS	SW VANSITTART ISLAND
86-JPJ-0052	Sc, Fe	Fe, V	UMFC	GNSS	NW CORAL HARBOUR
86-JPJ-0053	Co, Fe, Ni, Sc	Cu, Mn, Co, Fe, Ni	UMFC	GNSS	SE WHITE ISLAND
86-JPJ-0054	-	Cu	UMFC?	GNSS	SE WHITE ISLAND
86-JPJ-0069	As	Hg	-	LMST	NC WHITE ISLAND
86-JPJ-0071	As	-	-	LMST	NC WHITE ISLAND
86-JPJ-0073	As	-	-	LMST	NC WHITE ISLAND
86-JPJ-0075	As	-	-	GNSS	NC WHITE ISLAND
86-JPJ-0078	Ta, As, Mo, Zn	Mo	S-PGNS	GRF & GNSS	NW WAGER BAY*
86-JPJ-0080	Mo, Ta	-	-	GRF & GNSS	NW WAGER BAY*
86-JPJ-0084	Mo	Mo	-	GRF & GNSS	NW WAGER BAY*
86-JPJ-0085	Zn	Sn	S-PGNS	GRF & GNSS	NW WAGER BAY*
86-JPJ-0097	Mo	-	-	GRF & GNSS	NW WAGER BAY*
86-JPJ-0101	Mo	Sn	-	GRF & GNSS	NW WAGER BAY*
86-JPJ-0104	Au, La, Rb, Sc	F, Zn	VEIN, S-PGNS-X	E. PROT. PLUTON	SE WALKER LAKE
86-JPJ-0105	Fe, Cr	Cu, Fe, Cr	UMFC	UMFC & AMPB	SE WALKER LAKE
86-JPJ-0106	Co, Mo, Ni, Sb, Cr, Cs	Co, Mo, Cu, Ni, Cr	UMFC	GOSSAN & AMPB & GBRO	SE WALKER LAKE
86-JPJ-0107	Au, Eu	-	VEIN	GNSS	SE WALKER LAKE
86-JPJ-0110	Cs, Cr, Ni, Rb	Cr, Ni, Zn	UMFC	GNSS	SE WALKER LAKE
86-JPJ-0111	Zn, La	-	S-PGNS	GNSS	SE WALKER LAKE
86-JPJ-0112	Ba, La, Rb, Eu, Th, Tb	F, Zn	PLUTON, S-PGNS-X	CLCL & GRNT	SE WALKER LAKE
86-JPJ-0113	Th, La, Rb, Tb, Eu, Yb	F, Sn, Zn	PLUTON, S-PGNS-X	E. PROT. PLUTON	SE WALKER LAKE
86-JPJ-0113B	-	Pb	S-PGNS	E. PROT. PLUTON	SE WALKER LAKE
86-JPJ-0114	-	Hg	-	GNSS & AMPB	WC WAGER BAY
86-JPJ-0115	Eu	Sn	-	GNSS	WC WAGER BAY
86-JPJ-0116	-	Hg	-	GNSS	WC WAGER BAY
86-JPJ-0117	-	Hg	-	-	SW WAGER BAY

SAMPLE NO.	[ELEMENT$_{NA}$] ≥ 95 %TILE	[ELEMENT$_{OTHER}$] ≥ 95 %TILE	BEDROCK LITHOLOGY		LOCATION BY MAP SHEET NAME
			SUSPECTED ORIGIN	OUTCROP LITHOLOGY	
86-JPJ-0118B	Au	-	VEIN	GRF & PGNS	WC WAGER BAY
86-JPJ-0122	Zn	-	S-PGNS	-	WC DOUGLAS HARBOUR
86-JPJ-0123	-	Hg	-	GNSS	SW CURTIS LAKE
86-JPJ-0124	Th	-	PEGM	GNSS & GOSSAN	SW CURTIS LAKE
86-JPJ-0129A	Zn	-	S-PGNS	GOSSAN & AM-TA SCST & QZTE	SW CURTIS LAKE
86-JPJ-0129B	-	Pb	S-PGNS	GOSSAN & AM-TA SCST & QZTE	SW CURTIS LAKE
86-JPJ-0130	Sb, Ba	-	PGNS?	GNSS & GRNT	SW CURTIS LAKE
86-JPJ-0131	Eu	-	-	E. PROT. PLUTON	SW CURTIS LAKE
86-JPJ-0133	Eu, Ta, La, Sb, Tb, Th, Yb	-	PLUTON	E. PROT. PLUTON	NE WAGER BAY
86-JPJ-0136	Ba, Fe	Fe, V, Cu	UMFC	GNSS & PGNS & AMPB	SE DOUGLAS HARBOUR
86-JPJ-0138	-	Cr	UMFC	GNSS	SE DOUGLAS HARBOUR
86-JPJ-0141	Fe	V, Fe	UMFC	GNSS	SC DOUGLAS HARBOUR
86-JPJ-0142	-	Hg	-	GNSS	SC DOUGLAS HARBOUR
86-JPJ-0145	Zn	Zn	S-PGNS	GNSS	SC DOUGLAS HARBOUR
86-JPJ-0148	Ba	-	PGNS	-	SE WAGER BAY
86-JPJ-0149B	Cr	Fe, V, Cr	UMFC	-	SE WAGER BAY
86-JPJ-0150	As, Sb	-	-	GNSS	SW DOUGLAS HARBOUR
86-JPJ-0151	Zn	Zn, Hg	S-PGNS	GNSS	SW DOUGLAS HARBOUR
86-JPJ-0152	Cr, Ni	Ni	UMFC	-	SW DOUGLAS HARBOUR
86-JPJ-0155	Ni	Fe, Ni, V	UMFC	-	SW DOUGLAS HARBOUR
86-JPJ-0156	Ba	-	PGNS	-	SW DOUGLAS HARBOUR
86-JPJ-0159	Tb, U, Eu, Hf	-	PEGM	GRNT	SW WALKER LAKE
86-JPJ-0160	Hf	-	-	GRNT	SW WALKER LAKE
86-JPJ-0161	Yb, La, Ta, Tb, U	V	PEGM	-	SW WALKER LAKE
86-JPJ-0163	Hf, Mo, Sb, Tb, U	-	PEGM	GNSS	SW WALKER LAKE
86-JPJ-0168	Cs	Cu	UMFC	UMFC & AMPB & PGNS	SC WALKER LAKE
86-JPJ-0171	Fe	Co, V	UMFC	-	SW DOUGLAS HARBOUR

SAMPLE NO.	[ELEMENT$_{NA}$] ≥ 95 %TILE	[ELEMENT$_{OTHER}$] ≥ 95 %TILE	BEDROCK LITHOLOGY		LOCATION BY MAP SHEET NAME
			SUSPECTED ORIGIN	OUTCROP LITHOLOGY	
86-JPJ-0172	-	Co	UMFC	-	WC DOUGLAS HARBOUR
86-JP-0061T	As	-	-	LMST	NC WHITE ISLAND
86-JP-0098T	**Cs**, Hf, Sb, Sc	**Mn**	-	GRF & GNSS	NW DOUGLAS HARBOUR

NOTES: THESE RESULTS ARE SUMMARIZED ON THE SUMMARY MAP OF HIGH GEOCHEMICAL VALUES (≥ 95 %TILE). Ag(aa), Ag(na), Cd(aa), Cd(na), Ir(na), Se(na), W(na) ARE NOT INCLUDED IN THIS LIST BECAUSE THEIR RESULTS WERE NOT SIGNIFICANT.

LEGEND FOR TABLE 14

[ELEMENT$_{NA}$] - THE CONCENTRATION OF AN ELEMENT THAT WAS ANALYZED BY NEUTRON ACTIVATION.

[ELEMENT$_{OTHER}$] - THE CONCENTRATION OF AN ELEMENT THAT WAS ANALYZED BY ATOMIC ABSORPTION, COLD VAPOUR ATOMIC ABSORPTION, SPECIFIC ION, OR X-RAY FLUORECENCE.

ELEMENT - THE CONCENTRATION OF THIS ELEMENT IS ≥ THE 99 %TILE.

ELEMENT - THE CONCENTRATION OF THIS ELEMENT IS ≥ THE 98 %TILE.

ELEMENT - THE CONCENTRATION OF THIS ELEMENT IS ≥ THE 95 %TILE.

BEDROCK LITHOLOGY
- AM-TA SCST - amphibole-talc schist
- AMPB - amphibolite
- CLCL - calc-silicate
- E. PROT. PLUTON - early Proterozoic pluton
  - megacrystalline granite
  - monzodiorite
  - gabbro
  - granodiorite
  - diorite
- GBRO - gabbro
- GNSS - gneiss
- GRF - foliated granite
- GRNT - granite
- LMST - limestone
- PEGM - pegmatite
- PGNS - paragneiss
- PGNS-X - paragneiss xenolith
- QZTE - quartzite
- S-PGNS - sulphidic paragneiss
- S-PGNS-X - sulphidic paragneiss xenolith
- UMFC - ultramafic

LOCATION BY MAP SHEET
- C - CENTRAL
- E - EAST
- S - SOUTH
- N - NORTH
- W - WEST
- * - CONTROL SAMPLE ALL FROM 86-JPJ-0045

CAPE DOBBS - 1:250,000 SCALE, NTS MAP SHEET 46E
CORAL HARBOUR - 1:250,000 SCALE, NTS MAP SHEET 46B
CURTIS LAKE - 1:250,000 SCALE, NTS MAP SHEET 56I
DOUGLAS HARBOUR - 1:250,000 SCALE, NTS MAP SHEET 56H
VANSITTART ISLAND - 1:250,000 SCALE, NTS MAP SHEET 46G
WAGER BAY - 1:250,000 SCALE, NTS MAP SHEET 56G
WALKER LAKE - 1:250,000 SCALE, NTS MAP SHEET 56J
WHITE ISLAND - 1:250,000 SCALE, NTS MAP SHEET 46F

Mineral and Hydrocarbon Resource Assessments

Geologic domains for this resource assessment are outlined above on the same scale as that of the Banks-Victoria Island area (Jefferson et al. 1986) in Figure 1. The domains and their mineral potential are summarized in Table 1. The following is organized by deposit type, with reference to specific domains where appropriate.

Deformation Versus Preservation of Mineral Deposits

A key factor in much of the following is the deformed nature of supracrustal rocks - these units are thin, severely attenuated to dismembered. This suggests that any deposits which might originally have been present, may have been dismembered. On the other hand, Vivallo and Rickard (1990) have described a zinc-rich massive sulphide deposit in similar high grade metamorphic terrain which suffered little if any loss of cohesiveness during deformation and preserved geochemical zoning. Similarly, the 20 million tonne polymetallic massive sulphide deposit at Hongtoushan in northeastern China is well preserved in upper amphibolite-grade gneisses (C.W. Jefferson, personal observations, 1990). From this we can conclude that deformation is not necessarily a strong negative factor in resource assessment of massive sulphide deposits. In the case of Wager Bay, however, the thin (25-100 m) nature of most of the supracrustal bands is considered a negative factor.

Skarn Tungsten, Skarn and Replacement Silver-Lead-Zinc

The presence of the base-metal skarn deposit type is considered possible in and around Domain 5 because of the following attributes considered prospective by Dawson and Sangster:

Geologic Setting:	calc-alkaline plutons
Potential Host rocks:	Penrhyn Group marbles
Associated rocks:	felsic to intermediate plutonic suite
Minerals Present:	sphalerite > galena indicated by till geochemistry, up to 360 ppm Zn; 70 ppm Pb.

Negative factors constraining this deposit type include the deep crustal levels exposed in the Ford Lake area which limits the potential for the cupola environment above a buried pluton, and the limited evidence of mineralization in outcrop. In summary, low to moderate potential (LM) is assigned to the margins of plutons in Domain 5 where it intersects supracrustal rocks of domains 1 and 4.

Granitoid-Related Uranium, Tin, Copper, Molybdenum, Gold and Silver

These deposit types are considered together to avoid repetition. Uranium potential is considered only in regard to granitoid rocks, as settings for other types are apparently absent. The predictive value of resource assessments is exemplified by the prediction that some of the Ford Lake plutons would bear fluorite (Economic Geology Division, 1980, p.219). This prediction was borne out by LeCheminant et al (1987a). One syenogranite is distinguished by a strong K-Th-U radiometric anomaly, which is consistent with the pluton's high fluorite, zircon and allanite contents. Investigation by LeCheminant et al., (1987) and Henderson et al., (1986) revealed little evidence of uranium, molybdenum, tungsten, tin or gold being present in anomalous amounts although such elements are concentrated in some bodies of this type in younger geologic terranes. A few disseminated molybdenite crystals were noted in batholithic rocks. Minor chalcopyrite and malachite were found in migmatitic gneiss at one locality on the north shore of Ford Lake. Molybdenite rosettes (up to 4 cm) and chalcopyrite are also present in granite and pegmatite dykes that cross-cut the granites. Numerous small pegmatites, cutting the gneisses but older than the plutons, are also anomalously radioactive. Occurrences noted to date are very small and are explained by concentrations of allanite and possible uranothorite.

Other types of gold and silver potential are rated as low (L) for much of this region because of the limited thickness, high metamorphic grade, and dismemberment of supracrustal rocks. Even the "supracrustal" belt contains at most 30% metasedimentary units no greater than 300 metres in map width and with a minor mafic component (undetermined metavolcanic or intrusive).

Magmatic Copper, Nickel, Chrome and Platinum

Potential for this deposit type is negatively affected by the rarity and dismemberment of mafic rocks in most of the study area. The Prince Albert Group to the north (Henderson 1983; Economic Geology Division 1980) contains abundant mafic and ultramafic rocks with some potential for these commodities, but supracrustal rocks in the Wager Bay area are too different to warrant metallogenic comparisons. Minor mafic, ultramafic and anorthosite bodies with associated traces of pyrrhotite and chalcopyrite are present in the Wager Bay "supracrustal belt" but these are also severely dismembered. Layered anorthosite bodies were noted by Heywood and Sanford (1976) on and between Coats and Southampton Island but do not appear to extend to the proposed park areas. The Daly Bay complex (Gordon 1988) offers low to moderate (LM) potential for magmatic deposits related to layered igneous rocks. This complex is located on the fringe of the study area and would have little impact on the proposed park areas.

Carving Stone (Soapstone and Other Types)

Carving stone could be found in exploitable quantities despite the small proportion and dismemberment of mafic and ultramafic rocks. Several enclaves of mafic and ultramafic rock were found in the course of 1985 mapping and these range up to 650 metres long and 150 metres wide. Asbestos (chrysotile) potential is, however, much more limited by these parameters. Heywood and Sanford (1967) illustrated carvings made of Paleozoic limestone, of which abundant resources are available away from Wager Bay. Overall, potential for soft carving stone is rated low to moderate (LM) in Wager Bay area, and moderate (M) in Domain 7 (Paleozoic). The gneisses that dominate the Wager Bay bedrock are attractive because of their banding and many of these should be suitable for carving with power tools (Fig. 13)

Iron-Formation and Gold

Magnetite-quartz iron-formation is a common, but minor and dismembered constituent of supracrustal enclaves around Wager Bay. It is mainly oxide facies with little potential for stratiform disseminated-type gold deposits (Kerswill, 1987), and would certainly not be considered as a source for iron ore. Potential for any age of non-stratiform, vein-type gold associated with sulphidation of the oxide iron-formations (Kerswill, 1987) is also low because no evidence has been seen of late brittle shearing with attendant sulphidation, and because the iron-formations are too attenuated to provide tonnage potential. Iron-formations in the hinterland Prince Albert Group are, however, much more extensive and do have gold potential (Armitage, 1990).

Stratabound Molybdenite

Minor molybdenite was noted in several places associated with supracrustal enclaves in tonalitic gneisses (C.W. Jefferson in Henderson et al., 1986). Kirkham (1980) noted that the Knaben deposits in Norway produced molybdenum from more or less concordant zones in high grade, crystalline metamorphic rocks. Concentrations noted to date in the Wager Bay area suggest low potential for stratabound molybdenite.

Mississippi Valley Lead-Zinc (MVT)

The potential for MVT lead and zinc is restricted mainly to widespread carbonate strata on Southampton and White islands (Domain 7) and to scattered outcrops of marbles in the Penhryn Group (Henderson, 1983) which extend southwesterly into the Ford Lake area. Well-developed reef tracts and the Paleozoic-Precambrian contact zone as outlined by Heywood and Sanford (1976) are settings with moderate potential that were examined in 1986 field studies. Biohermal mounds and the Paleozoic-Precambrian contact on the west side of White Island were examined because of their potential for base-metal mineralization near faults that were active before, during and after deposition of the limestones (Jefferson and Hamilton, 1987).

Karst features, coarse vuggy secondary dolomite, unconformities, conglomerates, facies changes, and base metal sulphides were specifically searched for in the Paleozoic strata. No direct lithologic evidence of pre- or syn-Paleozoic movement on the faults was found, for example the limestones preserved around the small lake on White Island are similar in lithology to those along the coast of White Island. Field tests for zinc were negative, and lithogeochemical and till samples yielded no anomalies. Unconformities have been inferred from the lack of recognition of the Churchill River Group. The reefs might be restricted to specific fault-controlled zones such as Sanford et al. (1985) recognized in southern Ontario. These suppositions could not be confirmed on the scale of this survey.

The regional geological and tectonic setting is similar to that of platformal carbonate strata in the Cornwallis mineral belt (Jefferson and Hamilton, 1987, Sanford et al. 1985). Based on these similarities and the presence of variable dolomite alteration, these rocks have been considered to be favourable for carbonate-hosted zinc and lead (Sangster, 1970). However, the lack of specific favourable metallotects suggest the rating cannot be better than low to moderate (LM) at this time.

Volcanogenic and Sedimentary Exhalative (SEDEX) Barium, Copper, Lead, Nickel, Zinc Sulphides

The potential for volcanogenic massive sulphide deposits and/or sedimentary exhalative base metal deposits (Carne and Cathro, 1982) is limited to the Penhryn Group and the thin, attenuated, high-grade supracrustal belts. The northernmost and thickest supracrustal belt mapped by Jefferson (in Henderson et al. 1986) contains extensive gossans which were sampled and examined in more detail in the summer of 1986. Rock geochemical analyses did not indicate any strongly elevated metal concentrations in the supracrustal units, although a number of moderately elevated copper, zinc and barium anomalies in metapelites are supportive of some base-metal mineralization having taken place. Furthermore the knowledge that massive sulphide deposits can survive high grade metamorphism and deformation suggests a rating of moderate (M) for Domain 1 in this category.

This study also determined a number of anomalous till samples characterized by elevated copper, nickel and zinc. These were initially discounted as lithogeochemical indicators of simply ultramafic rocks. Alternatively, such anomalies may be indicators of a newly discovered barium-nickel-PGE (platinum group elements)-zinc deposit type in the Sedimentary Exhalative (SEDEX category (Hulbert et al., 1990). One particularly exploration target might be pelitic units of the Penhryn Group. The coincident nickel + zinc anomalies noted by Cameron (1979) provide further geochemical evidence to support the presence of such deposits, particularly within the Penhryn Group.

Hydrocarbon Potential

Ordovician oil shales on Southampton Island have been described by Macauley et al. (1990), Macauley (1986), Hamilton (1987), Sanford (in Heywood and Sanford, 1976), and Nelson and Johnson (1966). Two stratigraphically distinct oil shale units have been dated by McCracken and Nowlan (1989): the Maysvillian Boas River shale and the Late Richmondian 16 Mile Brook shale. The map distribution of these and a possible third oil shale are described by Hamilton (1987). Proposed regional correlations of these shales are shown in Fig. 14 and their general distribution on Southampton Island is shown on Fig. 2.

The lower, Boas River Shale is at the boundary between the Bad Cache Rapids and Churchill River Groups. The single outcrop on the Boas River has a stratigraphic thickness of at least 3.6 m of petroliferous shale (Hamilton, 1987). Macauley et al. (1990, p. 41) have determined that the Boas oil shales on Southampton Island are immature. They previously indicated that such oil shales are generally considered as good potential source beds for oil accumulations. Rock-eval analysis of one of the offshore Hudson Bay well sections (not specified by Macauley et al., 1990) did not locate organic-rich intervals and also indicated that minor organic matter is of insufficient maturity to have generated hydrocarbons. They considered that hydrocarbon prospects in Hudson Bay seem limited to the deepest part of the basin.

In marked contrast, Sanford and Grant (1990) show that the Boas oil shale unit appears to be extensively distributed across the Hudson Bay Basin and has been correlated in offshore wells. This is a radically different opinion to that in Macauley et al., 1990, p. 41. This difference of interpretation may result from thinning of the Boas River oil shale onto horst blocks within the basin (pers. comm., B. Sanford, 1990; G. Morrell, 1991). Therefore the absence of this oil shale from a particular borehole does not confirm its general absence. No maturity calculations have been published for the Boas River interval in off-structure locations where it has the potential to be considerably thicker. Close to Southampton Island, there is the possibility that depths sufficient for petroleum generation have been attained in Evans Strait.

The upper, 16 Mile Brook Shale is at the boundary between Units 1 and 2 of the Red Head Rapids Formation. About 25 cm of thinly laminated oil shale is present within a continuous 9.75 m measured section of microbial laminated limestone (Hamilton, 1987). The existence of a third oil shale at the boundary between the Churchill River Group and the Red Head Rapids Formation is also postulated (ibid.). Furthermore, considerably greater thicknesses of organic-rich limestones may be present (e.g. Nelson and Johnson, 1966; Macauley, 1990, p. 10).

These oil shales are very rich and retain all of their original hydrocarbons. Published yields by Nelson and Johnson (1976) and Macauley (1986) are in the order of 30 kg per tonne for the Boas River oil shale, and 20 to 134 kg per tonne for the Siixteen Mile Brook shale. There are three very different types of hydrocarbon potential related to these oil shales:
(1) The potential for large reservoirs of fluid hydrocarbons on Southampton Island is rated as low, because of the immaturity of the oil shale source beds.
(2) The potential for large reservoirs of fluid hydrocarbons in parts of Hudson Bay close to (e.g. Evans Strait) and distant from Southampton Island is rated as moderate because of the extensive distribution of oil shales in the offshore. The rating reflects uncertainty due to inadequate data on maturity of the oil shale source beds in off-shore sections. However, there is a cline of increasing potential to the south and southeast into offshore areas. Furthermore, past interest in the immediate offshore of Southampton Island is indicated by the exploratory permits that are still held by SOGPET around Cape Kendall and in eastern Evans Strait (southeast of the study area). Inadequate information is available on Roes Welcome Sound and Wager Bay to assign any potential ratings at this time.
(3) The potential for direct development of the oil shales for local energy needs is high, because they are extensively exposed near communities such as Coral Harbour, and they are quite rich in hydrocarbons (F. Goodarzi, Institute of Sedimentary and Petroleum Geology, pers. comm.,1991). They could provide a source of local employment, and may be a less expensive source of energy than drummed fuel.

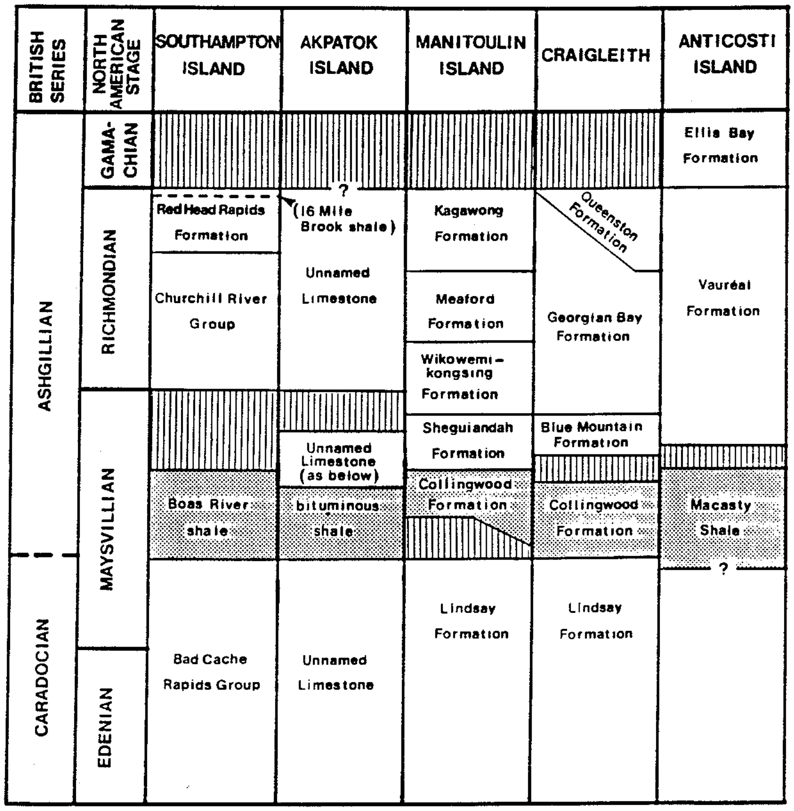


Figure 14. Approximate correlation among the Boas River Shale and a number of other Late Ordovician bituminous shales in eastern North America and the eastern Arctic. From Hamilton (1987).

Access from the Hinterland to Wager Bay Tide Water

Transportation has long been one of the largest factors to consider for mineral developments in the Canadian Arctic (Padgham, 1973), and continues to be so. An option for access to the hinterland increases the potential for future economic development. This option requires marine and land transfer facilities. Wager Bay is the logical access route to eastern Canadian shipping lanes via Hudson Strait, rather than via Lancaster Sound or Fury and Hecla Strait which require ice breakers. The south shore of Wager Bay also offers one of the few areas on the west side of Hudson Bay where a port could be easily constructed (Canadian Coastguard, Ian Marr, pers. comm., 1991).

The current park proposal has provision for access via an east-west corridor which extends inland from a possible wharf site south of Paliak Islands. Provision is also being made for an unspecified access corridor through the northern part of the park. Establishment and construction on such corridors will be subject to the normal environmental review process for the District of Keewatin.

Geological Attributes of Park Value

Superb ice-polished outcrops and cliffs of banded gneiss along the south and southwest shores of Wager Bay are visually attractive. Fig. 7, for example, shows bedrock structures in the pink and grey gneiss (Domain 3) which are completely exposed just above high tide on the mainland west of Paliak Islands. The beauty of such gneissic banding has been recognized by Inuit craftsmen, as shown in Fig. 13. Very large structures were created by plastic deformation as the part of the earth's crust north of Wager Bay moved easterly relative to the area south of Wager Bay (Fig. 5; Henderson et al., 1986; Henderson and Broome, 1990). This deformation is concentrated along the Wager Shear Zone (Fig. 2) which is continuously exposed along the straight southern coast of Wager Bay.

The cliffs along the southwestern and southern shores of Wager Bay and Brown Lake are interpreted to be the result of normal faults, along which the south and southwest sides were uplifted relative to the north and northeastern sides (Fig. 2). The scarps and valleys created by these faults were partly accentuated, and partly smoothed off by overriding ice as described below.

The glacially sculpted bedrock, well developed glacial flutings in till, and eskers formed by meltwater are typical of the District of Keewatin (Smith, 1990). These features indicate that the crest of the Laurentide Ice sheet trended across Wager Bay. This ice sheet, which extended south to the Great Lakes and north to the Arctic Islands, melted back to the Wager Bay area. The various raised beaches, raised deltas and wave-washed bands that are now located up to 120 m above sea level are testimony to the weight of the kilometres of ice that depressed the crust of the earth in this region. The land is still slowly rising here. Large torrents once drained the margins of the melting ice masses, and left behind very large channels indicated by boulder beds and sinuous benches located inland from the coast. Today, ice movements within Wager Bay and the large lakes continue to move gravel to large boulders around the coast. Spectacular shoreline boulder ridges in Brown Lake, and the polished shoreline rock outcrops on Wager Bay, are the result of ice pushing up and over the shores, driven by winds during spring break-up. This report summarizes some of these findings in Figs. 10-12, but the reader is referred to Smith (1990) for more details.

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Appendix; Table VI. Field observations, surficial sampling project, Wager Bay, N.W.T.

SAMPLE #	DEPTH (CM)	TEXTURE	SORTED CIRCLE		BEDROCK	LANDFORM	SURFICIAL DEPOSIT	COMMENTS
			DC	AI				
86JPJ0001A	30	S	D	A	GRF	CRAG AND TAIL	TILL	C(GB)
86JPJ0001B	30	S	D	A	GRF	CRAG AND TAIL	TILL	C(GB), 1 M FROM 1A
86JPJ0002	35	S	D	A	GNSS	CRAG AND TAIL	TILL	C(G), FROZEN GROUND @ 40 CM (HAMILTON)
86JPJ0003	40	S	C	A	GRF	CRAG AND TAIL	TILL	C(RG), (JEFFERSON)
86JPJ0004	30	S	D	A	GRF	CRAG AND TAIL	TILL	C(G)
86JPJ0005	25	S	D	A	GRF	CRAG AND TAIL	TILL	C(GNB), O(TOP 3 CM), FROZEN GROUND @ 30 CM (HAMILTON)
86JPJ0006	35	SC	D	A	GRF & GNSS	CRAG AND TAIL	TILL	C(DGNG), D(000°), FROZEN GROUND @ 35 CM (JEFFERSON)
86JPJ0007	35	S	D	A	GRF	CRAG AND TAIL	TILL	C(BG)
86JPJ0008	40	STS	D	A	GRF & GNSS & PGNS	CRAG AND TAIL	TILL	C(GNG), FROZEN GROUND @ 40 CM (JEFFERSON)
86JPJ0009	24-30	CSTS	D	A	GRF & GNSS	CRAG AND TAIL	TILL	C(GNG), FROZEN GROUND @ 30 CM (JEFFERSON)
86JPJ0010	35	S	D	I	GNSS	CRAG AND TAIL	TILL	C(B)
86JPJ0011	3-4	?			GNSS		TILL?	D(059°?) (LECHEMINANT)
86JPJ0013	24	SSTC	D	I	GRF & GNSS		TILL?	C(GNBG), D(021°, 007°) (JEFFERSON)
86JPJ0014	45-54	S	C	I	GRF		TILL	C(RB), R O, FROZEN GROUND @ 54 CM (JEFFERSON)
86JPJ0015	45	S	D	A	GRF	CRAG AND TAIL	TILL	C(GNG), R
86JPJ0016	40	S	C	I	GRF & GNSS	RIBBED MORAINE (ON RIB)	TILL	C(GB), R O
86JPJ0017	50	CS	D	I	GRF			C(GNG), O D(056°)
86JPJ0018A	40	S	D	I	GRF		TILL	C(GGN), R D(134°?)
86JPJ0018B	40	S(CRS)	C	I	GRF		TILL	C(RB), R D(134°?)
86JPJ0019	35	S	D	A	GRNT & GNSS	RIBBED MORAINE (INBTW RIBS)	TILL	C(GNBG)
86JPJ0020	20	S	DC	A	GRF			C(GGN & LB), R
86JPJ0021	57	S	D	A	GRF	SCULPTED BEDROCK	TILL	C(BG), R
86JPJ0022A	42	C	D	I	E. PROT. PLUTON (86-LAAT-029-1)		REGOLITH?	C(LG), D(026°, 034°, 130°, 135°, 165°)
86JPJ0022B	42	S(MED)	C	I	E. PROT. PLUTON		REGOLITH?	C(DB), O D(SAME AS 22A)
86JPJ0023	38	S	C	A	GRNT (86-LAAT-030-1,2)	CRAG AND TAIL	TILL	C(B & G), R
86JPJ0024	?	S	C	A	E. PROT. PLUTON (86-LAAT-031)			C(GB), O
86JPJ0025A	?	?	C	I	E. PROT. PLUTON (86-LAAT-032)	SCULPTED BEDROCK	TILL?	C(B)
86JPJ0026	25	S	C	A	E. PROT. PLUTON (86-LAAT-033)		TILL?	C(MB), R O
86JPJ0027	35	S	C	A	GNSS (86-LAAT-034)			C(B), R
86JPJ0028	50	S	C	A	E. PROT. PLUTON (86-LAAT-035-1)		GLACIOFLUVIAL	C(B), R
86JPJ0029	25	CST	D	A	E. PROT. PLUTON (86-LAAT-036)			C(GNG), R
86JPJ0030	30	S	C	I	GNSS (86-HSA-013)	RAISED BEACH	BEACH	C(LB), R O, SHELL FRAGMENTS

Appendix; Table VI. Field observations, surficial sampling project, Wager Bay, N.W.T., cont'd.

SAMPLE #	DEPTH (CM)	TEXTURE	SORTED CIRCLE		BEDROCK	LANDFORM	SURFICIAL DEPOSIT	COMMENTS
			DC	AI				
86JPJ0031	35	S(CRS)	C	I	GNSS (86-HSA-014)	RAISED BEACH	BEACH	C(RB), R O
86JPJ0032	20	SC	D	A	GNSS (86-HSA-015)			C(MG)
86JPJ0033	35	SC	D	A	GNSS (86-HSA-016)			C(BG), R
86JPJ0034	40	SC	D	A	GNSS (86-HSA-017)	DRUMLIN	TILL	C(BG)
86JPJ0035	40	SSTC	C	A	GNSS (86-HSA-018)			C(GB), R
86JPJ0036	30	SC	DC	A	GNSS (86-HSA-019)	DRUMLIN	TILL	C(DG), R
86JPJ0037	40	C(SL)	D	A	(86-HSA-020)	DRUMLIN	TILL	R
86JPJ0038	60	CSTS	DC	A	E. PROT. PLUTON	DRUMLIN	TILL	C(DI-DG, CA-B), O(CARAPACE)
86JPJ0039	50	STS	C	A	GNSS	AMONGST DRUMLINS	TILL	C(LB), FROZEN GROUND @ 60 CM
86JPJ0040	20-25	STC	C	A	GNSS		REGOLITH	FROZEN GROUND @ 25 CM MICA IN SAMPLE
86JPJ0041	20	S	DC	A	E. PROT. PLUTON			C(MB)
86JPJ0042	?	S	D	A	GNSS		TILL	C(G), O(CARAPACE)
86JPJ0043	30-40	S	D	A	E. PROT. PLUTON?	CRAG AND TAIL	TILL	C(MG), R
86JPJ0044	20	S	C	A	GRF	RIBBED MORAINE	TILL	C(RB)
86JPJ0045	15-25	STS	D	A	GRF & GNSS	CRAG AND TAIL	TILL	C(RBG), R, CONTROL SAMPLE
86JPJ0046	0-20		DC	A	GRF	CRAG AND TAIL	TILL	FROZEN GROUND @ 20 CM
86JPJ0047	30	CSTS	D	A	GNSS			C(MB), R
86JPJ0048	15-20	CS	D	A	GNSS			C(DG), R
86JPJ0049	35	S	D	I	PGNS			C(LBG), R FROZEN GROUND @ 35 CM
86JPJ0050	15-20	STC(SL)	D?	I	GNSS			C(DB), R FROZEN GROUND @ 20 CM
86JPJ0051	20-30	STS	D	A	GNSS			C(B), R FROZEN GROUND @ 33 CM
86JPJ0052	5-10	STS	D?	A	GNSS			C(RB), R O FROZEN GROUND @ 10 CM
86JPJ0053	20	CS	D	A	GNSS			C(DG), R
86JPJ0054	20	C	D	A	GNSS			C(BG), R
86JP 0061T	0-10	SC	D?	A	LMST	INBTW RAISED BEACHES		
86JPJ0067	250	C	NA	NA	LMST	INBTW RAISED BEACHES		C(G), NOT A SORTED CIRCLE STREAM BANK SAMPLE
86JPJ0068	16	SC	D	A	GNSS			C(BG), (FINDLAY)
86JPJ0069	10	C	D	A	LMST	INBTW RAISED BEACHES		C(G), R
86JPJ0070	10	C	D	A	LMST	INBTW RAISED BEACHES		C(G), R WITH SHELL FRAGMENTS
86JPJ0071	22	C(SL)	DC	A	LMST	INBTW RAISED BEACHES		C(LB), R O
86JPJ0072	24	SC	D	A	GNSS			C(LB), R
86JPJ0073	0-10	C	D	A	LMST	INBTW RAISED BEACHES		C(G), R
86JPJ0074	5-10	C	D	A	LMST	INBTW RAISED BEACHES		C(BG), R
86JPJ0075	10	CS	D	A	GNSS			C(BGGN), R
86JP 0098T	10-20	S	D	I	GRF & PGNS		TILL	C(GB), (JEFFERSON)

Appendix; Table VI. Field observations, surficial sampling project, Wager Bay, N.W.T., cont'd.

SAMPLE #	DEPTH (CM)	TEXTURE	SORTED CIRCLE DC	AI	BEDROCK	LANDFORM	SURFICIAL DEPOSIT	COMMENTS
86JPJ0104	20	SC	D	A	E. PROT. PLUTON (86-LAAT-177) (GRF BOULDERS)		TILL	C(G), R
86JPJ0105	30	CS	D	A	UMFC & AMPB (86-LAAT-178)			C(BG), O
86JPJ0106	38	S	C	I	GOSSAN & AMPB, GBRO DYKES (86-LAAT-179)	MELTWATER CHANNEL?	GLACIOFLUVIAL?	C(DB)
86JPJ0107	40	CS	D	I	GNSS (86-LAAT-180)		TILL?	C(G), R
86JPJ0108	10	SC	DC	I	GNSS (86-LAAT-181)		TILL	C(G), R
86JPJ0109	40	CS	DC	I	GNSS & AMPB (86-LAAT-182)			C(GNG), R
86JPJ0110	30	SC	D	A	GNSS (86-LAAT-183)			C(GNG), R
86JPJ0111	25	CS	D	A	GNSS (86-LAAT-184)			R
86JPJ0112	25	SC	D	A	CLCL & GRNT DYKES & QZ VEINS (86-LAAT-185)		TILL?	C(DB), R
86JPJ0113	25	CS(CRS)	D	A	E. PROT. PLUTON		TILL?	C(GGN), R
86JPJ0113B	?	?	?	?	E. PROT. PLUTON		TILL?	(LECHEMINANT)
86JPJ0114	30	S	D	A	GNSS & AMPB		SOIL?	C(RDB), R O
86JPJ0115	15	CS	DC	A	GNSS (RESISTANT)			C(DI-BGN, CA-B)
86JPJ0116	60	STS	DC	A	GNSS			C(DI-BG, CA-B), R
86JPJ0117	25	SSTC	DC	I	NO OUTCROP			C(GNG & B), R
86JPJ0118A	25-30	SST	DC	A	GRF & PGNS			C(GB), R
86JPJ0118B	20	SST	D	A	GRF & PGNS			C(GNG), R, 10 M FROM 118A
86JPJ0119	25-30	SSTC	DC	A	GNSS			C(DI-GB, CA-DRB), R
86JPJ0120	20	SC	D	I	NO OUTCROP	DRUMLIN	TILL	C(G), R
86JPJ0121	15	SSTC	D	A	GNSS	AMONGST CRAG AND TAILS	TILL	C(G), R
86JPJ0122	50	S	C	A	NO OUTCROP	AMONGST MELTWATER CHANNELS	TILL?	C(MB), R O(TOP 5 CM)
86JPJ0123	40	STS	D	I	GNSS (86-LAAT-199)	CRAG AND TAIL	TILL	C(G), R
86JPJ0124	10	SC	D	A	GNSS & GOSSAN (86-LAAT-200)	CRAG AND TAIL	TILL	C(G), R O(TOP 25 CM)
86JPJ0125	5-15	STC	D	A	E. PROT. PLUTON (86-LAAT-201)	CRAG AND TAIL	TILL	C(G), R
86JPJ0126	25	SC	D?	A	GNSS & TA SCST (86-LAAT-202)	CRAG AND TAIL	TILL	C(G)
86JPJ0127	15	SC	D	A	GNSS (86-LAAT-203)	CRAG AND TAIL	TILL	C(G), R
86JPJ0128	10	CS	D?	A	GNSS & GRNT (86-LAAT-204)	CRAG AND TAIL	TILL	C(G), R
86JPJ0129A	10	CS	D	I	GOSSAN & AM-TA SCST & QZTE (86-LAAT-205?)		TILL?	C(G), R, BESIDE GOSSAN
86JPJ0129B	0-5	SC	D	A	GOSSAN & AM-TA SCST & QZTE (86-LAAT-205?)		REGOLITH	C(DG), ON TOP OF GOSSAN, 15 M FROM 129A
86JPJ0130	25	SC	D	I	GNSS & GRNT DYKES (86-LAAT-206?)	CRAG AND TAIL	TILL	C(G)
86JPJ0131	30	SC	D	A	E. PROT. PLUTON? (86-LAAT-207?)		TILL?	C(G), R
86JPJ0132	5-10	SC	DC	?	E. PROT. PLUTON (86-LAAT-208?)	SCULPTED BEDROCK	TILL?	C(G & B), R O
86JPJ0133	20	SC	D	A	E. PROT. PLUTON (86-LAAT-209?)		REGOLITH?	C(BG), R

Appendix; Table VI. Field observations, surficial sampling project, Wager Bay, N.W.T., cont'd.

SAMPLE #	DEPTH (CM)	TEXTURE	SORTED CIRCLE		BEDROCK	LANDFORM	SURFICIAL DEPOSIT	COMMENTS
			DC	AI				
86JPJ0134	40	STC	D	A	GNSS & AMPB		TILL?	C(DG), R
86JPJ0135	25	C	D	A	GNSS	CRAG AND TAIL	TILL	C(DG), R
86JPJ0136	60	S	C	I	GNSS & PGNS & AMPB		TILL	C(OB), R O
86JPJ0137	40	CSTS(FN)	D?	A	NO OUTCROP	HUMMOCKY MORAINE	TILL	C(BG)
86JPJ0138	15	S	D	I	GNSS	HUMMOCKY MORAINE	TILL	C(B), R
86JPJ0139	57	CS	D	I	GNSS		TILL?	C(DG & BG) R O, SOIL (1 CM)
86JPJ0140	30	S(FN)ST	D?	A	NO OUTCROP (GNSS BOULDERS)		TILL?	C(BG), R
86JPJ0141	10	S	D	I	GNSS (GNSS, PGNS BOULDERS)		TILL	C(B), R
86JPJ0142	30-38	S(FN)	DC	I	GNSS		TILL	C(BG), R, INCLUDES CLAY BOULDER COATING
86JPJ0143	20	CSTS(FN)	D?	I	GRF	HUMMOCKY MORAINE	TILL	C(G), R
86JPJ0144	20	S(FN)	D?	I	GRF	HUMMOCKY MORAINE	TILL	C(G), R O
86JPJ0145	20	S	D	A	GNSS		TILL	C(G), R
86JPJ0146	10	SST	D	A	GNSS			C(G), R
86JPJ0148	15-20	S(FN)	D	I	NO OUTCROP (GRF BOULDERS)			C(G)
86JPJ0149A	5-10	STS(FN)	D	A	NO OUTCROP (QZTE BOULDERS)		TILL?	C(GB), O
86JPJ0149B	5-10	STS(FN)	D	A	NO OUTCROP (QZTE BOULDERS)		TILL?	C(GB), O, 50 M FROM 149A
86JPJ0150	55	S(MED)	C	I	GNSS		GLACIOFLUVIAL	C(B), R, SOIL (15 CM)
86JPJ0151	30-40		DC	A	GNSS	AMONGST MELTWATER CHANNELS	TILL?	C(DB), R
86JPJ0152	30	S(CRS,MED)	C	I	NO OUTCROP (GNSS, AMPB BOULDERS)	HUMMOCKY MORAINE	GLACIOFLUVIAL?	R
86JPJ0153	30	S(FN)	C	I	GNSS	HUMMOCKY MORAINE	GLACIOFLUVIAL?	C(LG)
86JPJ0154	30	STS	C	I	GRF & GNSS & AMPB	HUMMOCKY MORAINE	TILL	
86JPJ0155	40	C	D	A	NO OUTCROP (GRF BOULDERS)	HUMMOCKY MORAINE	TILL	C(BG), R
86JPJ0156	30	SST	C?	A	NO OUTCROP	DRUMLIN	TILL	C(G & B)
86JPJ0157	300	C	NA	NA	NA	RAISED DELTA	DELTAIC	C(G), NOT A SORTED CIRCLE
86JPJ0158	38	CS(FN)	D?	A	GRNT (86-LAAT-232)	CRAG AND TAIL	TILL	C(B & G)
86JPJ0159	40	STS	DC	I	GRNT (86-LAAT-233)	CRAG AND TAIL	TILL	C(G & B), R
86JPJ0160	15	S	C?	A	GRNT (86-LAAT-234)	CRAG AND TAIL	TILL	C(GB)
86JPJ0161	1-7	CSTS	D	A	(86-LAAT-235)	DRUMLIN	TILL	C(G), R O
86JPJ0162	17-25	S	C?	A	GNSS (86-LAAT-236)	DRUMLIN	TILL	C(GB)
86JPJ0163	5-10	SST	D?	I	GNSS (86-LAAT-237)	DRUMLIN	TILL	C(G), D(347°)
86JPJ0164	60	S	C?	A	GNSS (86-LAAT-238)	RIBBED MORAINE	TILL	C(BG)
86JPJ0165	30	S	D?	I	GNSS (86-LAAT-239)	CRAG AND TAIL	TILL	C(BG)
86JPJ0166	10	S	D?	A	GNSS & GRNT (86-LAAT-240)	CRAG AND TAIL	TILL	C(GB)
86JPJ0167	30	CSST	C?	I	GNSS & BI-SCST (86-LAAT-241)		TILL	C(BG)
86JPJ0168	35	S	C?	A	UMFC & AMPB & PGNS (86-LAAT-242)	MELTWATER CHANNEL?	GLACIOFLUVIAL?	C(BG), LONG LINEAR VALLEY
86JPJ0169	15	CS(FN)	D	I	GNSS	HUMMOCKY MORAINE	TILL	C(BG)
86JPJ0170	20	CS	D	A	GNSS	HUMMOCKY MORAINE	TILL	C(GB)

Appendix; Table VI. Field observations, surficial sampling project, Wager Bay, N.W.T., cont'd.

SAMPLE #	DEPTH (CM)	TEXTURE	SORTED CIRCLE		BEDROCK	LANDFORM	SURFICIAL DEPOSIT	COMMENTS
			DC	AI				
86JPJ0171	30	CS(FN)	C	I	NO OUTCROP (GNSS, GRNT, PGNS BOULDERS)		TILL	C(B), R O, SOIL (1 CM)
86JPJ0172	45	S(CRS)	C	I	NO OUTCROP	DRUMLIN	TILL	R O
86JPJ0173	27-37	S(FN)	C	I	GNSS & PEGM VEINS		TILL	C(B), R O, INCLUDES CLAY BOULDER COATING, SOIL (5 CM)
86JPJ0174	0-5	S(FN)C	D	A		SANDY TERRACE		C(DGB), R

NOTES: THE SAMPLE LOCATIONS ARE ON THE SAMPLE LOCATION MAP AND THEIR UTM COORDINATES ARE INCLUDED WITH THE GEOCHEMICAL DATA PROVIDED BY BONDAR-CLEGG (TABLE 8).
THE FIELD OBSERVATIONS FOR SAMPLES 86-JPJ-0025B, 0078, 0080, 0084, 0085, 0097, 0101 ARE NOT INCLUDED IN THIS LIST BECAUSE THEY ARE SAMPLE SPLITS OF SAMPLE 86-JPJ-0045, THAT SERVED AS CONTROL SAMPLES.
ALL OF THE SAMPLES WERE TAKEN FROM SORTED CIRCLES EXCEPT WHERE INDICATED OTHERWISE.

LEGEND FOR TABLE 1 (FIELD OBSERVATIONS)

TEXTURE
S - sand, (FN) - fine grained
(MED) - medium grained
(CRS) - coarse grained
(SL) - sand lenses
ST - silt
C - clay

SORTED CIRCLE
D - diapir sampled
C - carapace sampled
A - active sorted circle sampled
I - inactive sorted circle sampled

BEDROCK
AM - amphibole
BI - biotite
TA - talc

AMPB - amphibolite
CLCL - calc-silicate
E. PROT. PLUTON - early Proterozoic pluton
- megacrystalline granite
- monzodiorite
- gabbro
- granodiorite
- diorite

GBRO - gabbro
GNSS - gneiss
GRF - foliated granite
GRNT - granite
LMST - limestone
PGNS - paragneiss
QZTE - quartzite
SCST - schist
UMFC - ultramafic
(86-____-___) - rock sample # if different from overburden sample #

COMMENTS
C - colour of sample
(CA) - colour of carapace
(DI) - colour of diapir
(D) - dark
(L) - light
(M) - medium

(B) - brown
(G) - grey
(GN) - green
(O) - orange
(R) - red
R - organic material in sample
O - oxidized material in sample
D - ice directional feature
(000^{o}) - direction of ice flow
(FINDLAY) - sample collected by D.C. Findlay
(HAMILTON) - sample collected by S.M. Hamilton
(JEFFERSON) - sample collected by C.W. Jefferson
(LECHEMINANT) - sample collected by A.N. LeCheminant

Appendix; Table VII. Geochemical analyses of surficial samples, Wager Bay area, N.W.T.

SAMPLE #	EAST	UTM NORTH	ZONE	AGaa PPM	ASna PPM	AUna PPB	BAna PPM	COaa PPM	COna PPM	CRaa PPM	CRna PPM	CSna PPM	CUaa PPM	EUna PPM	Fal PPM	FEaa PCT	FEna PCT	Vaa PPM	Wna PPM	YBna PPM	ZNaa PPM	ZNna PPM	LOIg PCT	WT g
86JP 0061T	592750	7299900	16	<0.1	7.8	<3	560	21	25	80	130	6.0	44	2	2500	4.7	6.8	60	<2	3	152	<100	7.60	6.27
86JP 0098T	382300	7279250	16	0.4	<1.2	<10	300	34	47	156	260	24.0	150	5	3000	5.6	7.6	117	4	5	210	<270	13.85	1.36
86JPJ0001A	413800	7305500	16	<0.1	0.8	5	810	9	8	48	61	3.3	54	<1	1300	3.2	3.4	40	<1	3	102	<100	2.85	4.89
86JPJ0001B	413800	7305500	16	<0.1	1.0	3	800	10	12	48	59	3.6	52	<1	1500	3.4	4.1	40	2	4	108	<100	2.30	6.53
86JPJ0002	423000	7319000	16	<0.1	<0.5	8	810	10	11	44	55	2.9	44	<1	1350	3.2	3.5	40	<1	3	88	<100	2.15	5.73
86JPJ0003	431900	7312200	16	0.3	1.0	10	770	6	7	29	37	2.8	28	<1	1000	2.4	2.7	30	<1	3	64	<100	3.10	4.62
86JPJ0004	441500	7305300	16	0.1	0.8	3	860	11	16	59	78	5.0	28	<1	1400	3.6	4.5	40	<1	3	112	<100	2.40	7.05
86JPJ0005	466500	7296700	16	<0.1	0.7	11	690	16	18	62	62	4.7	38	<1	2400	5.6	6.4	70	<1	4	160	<100	6.10	6.00
86JPJ0006	453800	7276700	16	<0.1	1.7	3	820	16	23	100	100	8.1	44	<1	1850	6.4	7.5	85	<1	3	168	<100	2.75	8.27
86JPJ0007	438600	7284800	16	0.5	1.0	<2	850	14	13	62	79	5.3	40	2	1500	4.4	5.0	50	<1	3	128	<100	3.80	9.78
86JPJ0008	425800	7298800	16	<0.1	<0.5	7	810	13	14	50	55	5.2	34	<1	1700	4.4	4.9	50	<1	4	124	<100	2.40	8.62
86JPJ0009	410200	7292100	16	0.1	0.9	<3	910	14	14	63	96	6.6	36	2	2300	4.7	5.6	55	1	3	144	<100	2.80	7.42
86JPJ0010	428700	7289200	16	<0.1	1.2	<2	710	15	17	58	54	5.7	58	2	1555	4.8	5.8	60	<1	4	136	<100	2.80	6.99
86JPJ0011	378600	7285000	16	<0.1	2.6	16	650	18	19	72	93	7.4	46	<4	IS	5.2	7.0	75	<4	7	186	<200	IS	0.67
86JPJ0013	369800	7274000	16	0.4	1.4	28	730	17	24	50	95	4.1	28	6	1300	4.6	7.3	60	4	9	120	<110	IS	2.51
86JPJ0014	378000	7281200	16	<0.1	1.0	<3	350	13	14	100	120	12.0	40	<1	1650	6.6	7.4	70	<2	3	170	<100	26.20	4.85
86JPJ0015	444250	7273000	16	0.6	1.3	<2	860	9	11	60	73	5.0	30	2	1350	3.9	4.5	45	<1	2	110	<100	2.40	10.05
86JPJ0016	469200	7256000	16	<0.1	1.1	8	580	18	24	76	96	5.2	94	<2	1450	4.7	5.5	65	<2	4	144	<100	11.60	3.99
86JPJ0017	480200	7263800	16	<0.1	2.5	6	690	20	25	116	130	7.1	104	<2	1500	5.1	5.9	70	<2	3	126	<100	IS	2.82
86JPJ0018A	482200	7276900	16	<0.1	1.1	4	660	11	16	88	140	2.6	26	2	700	2.8	3.1	30	<1	4	54	<100	9.30	1.46
86JPJ0018B	482200	7276900	16	<0.1	4.4	76	410	30	49	166	250	2.8	38	<3	IS	5.0	5.8	55	<3	7	112	<170	IS	1.46
86JPJ0019	473200	7282700	16	<0.1	0.5	<2	940	11	13	48	60	3.3	24	<1	1375	3.5	3.8	45	<1	3	82	<100	1.20	6.73
86JPJ0020	466500	7271100	16	<0.1	<0.9	7	780	17	26	74	89	6.2	64	<2	2050	5.6	7.2	70	4	7	152	<100	7.70	3.94
86JPJ0021	453500	7262800	16	<0.1	5.2	<3	720	16	20	68	96	5.8	40	3	1250	5.0	6.0	65	<1	5	112	<100	13.10	6.78
86JPJ0022A	610400	7298500	15	<0.1	<1.3	21	670	11	18	34	47	3.6	20	<3	1050	3.0	3.3	30	<3	4	66	<150	IS	1.14
86JPJ0022B	610400	7298500	15	0.1	1.5	15	560	19	30	52	66	5.2	34	<2	1300	4.8	5.2	50	<2	6	132	<120	28.10	2.86
86JPJ0023	602400	7304000	15	<0.1	1.2	7	700	18	20	44	52	4.6	36	<2	1900	4.9	6.3	55	<2	7	120	<100	13.20	5.48
86JPJ0024	587700	7296700	15	<0.1	1.6	15	570	20	21	166	210	9.2	68	<2	3400	5.4	7.2	70	<2	10	192	<100	6.65	4.18
86JPJ0025A	587500	7288100	15	<0.1	<0.9	8	930	18	23	28	44	6.0	28	3	5000	8.0	10.0	70	3	10	340	<100	6.85	5.43
86JPJ0025B	561800	7309200	15	<0.1	<0.8	20	640	11	15	40	36	4.3	24	<2	2200	3.9	4.7	40	<2	5	132	<100	8.30	3.40
86JPJ0026	594800	7279500	15	<0.1	<0.8	<3	770	12	20	34	34	6.9	18	2	3250	8.4	10.0	80	<2	7	250	<100	20.45	7.58
86JPJ0027	608300	7276400	15	0.3	1.9	23	430	12	16	64	78	5.0	36	3	1650	5.3	7.0	80	3	5	130	<100	16.10	3.89
86JPJ0028	603600	7287800	15	<0.1	1.8	10	680	15	26	40	59	5.0	24	<2	2300	5.2	7.2	60	<2	7	152	<100	13.40	4.60
86JPJ0029	613800	7290000	15	0.1	1.3	15	570	14	22	28	27	3.9	24	3	1350	5.6	6.0	55	<2	3	128	<100	35.90	3.14
86JPJ0030	493000	7232300	16	0.2	4.5	6	620	12	15	88	99	5.5	60	<1	1700	6.0	4.6	60	<2	3	156	<100	7.70	6.41
86JPJ0031	493000	7218300	16	<0.1	5.2	23	360	41	52	72	120	3.7	108	4	1150	5.7	6.8	60	<3	4	150	<150	IS	1.40
86JPJ0032	481400	7224500	16	<0.1	2.7	<2	800	11	12	58	84	4.1	48	1	1350	3.4	4.4	40	2	3	104	<100	2.75	7.66
86JPJ0033	480250	7211000	16	<0.1	2.0	3	830	13	16	57	81	3.5	52	<1	1200	3.5	4.6	45	<1	3	96	<100	11.30	7.93
86JPJ0034	469600	7217000	16	0.1	3.1	6	860	11	12	48	58	3.2	36	1	1100	2.9	3.7	35	1	3	82	<100	3.95	10.77
86JPJ0035	454700	7211900	16	<0.1	1.9	8	880	32	35	92	110	2.5	66	<1	1850	5.0	6.0	70	<1	3	132	<100	9.30	7.69
86JPJ0036	454250	7226500	16	<0.1	2.4	<2	880	12	12	60	77	5.3	36	<1	1750	3.7	4.3	40	2	3	122	<100	3.50	9.24
86JPJ0037	467200	7232600	16	<0.1	2.5	4	900	11	10	56	69	3.6	50	<1	1450	3.5	4.3	40	3	3	108	<100	2.35	6.86
86JPJ0038	579300	7286000	15	<0.1	<0.8	11	1100	19	25	20	<20	6.1	24	3	5000	7.6	9.0	55	5	6	360	<100	10.25	6.53
86JPJ0039	571700	7273800	15	<0.1	<0.8	9	590	29	31	142	150	8.5	92	<2	2300	8.0	10.0	110	<2	6	240	<100	4.65	4.32
86JPJ0040	564900	7283500	15	<0.1	<0.5	7	280	47	54	300	390	13.0	48	<1	17000	6.9	10.0	30	<1	<2	168	<100	8.25	11.24
86JPJ0041	553300	7278000	15	<0.1	1.2	7	680	38	45	168	210	6.7	140	<1	1850	8.4	11.0	100	<2	3	230	<100	13.30	6.05
86JPJ0042	553600	7292200	15	<0.1	<0.7	12	590	25	30	108	140	7.5	56	2	1900	6.2	8.1	70	<2	4	200	<100	10.10	5.46
86JPJ0043	549900	7301200	15	<0.1	<0.6	5	1000	20	23	150	160	7.7	40	2	2900	5.0	6.0	60	<2	2	176	<100	4.00	5.97
86JPJ0044	550700	7315400	15	<0.1	<0.7	13	470	16	18	32	43	17.0	20	5	2700	4.8	8.3	40	<2	10	196	<100	8.65	8.24
86JPJ0045	561800	7309200	15	<0.1	<1.1	<5	590	16	18	48	57	6.3	30	4	2100	4.6	6.2	45	<3	6	164	<100	10.70	2.77
86JPJ0046	571300	7298000	15	0.1	<1.5	25	720	7	11	20	<40	1.1	14	<4	1400	2.9	3.9	30	<4	6	88	<200	IS	1.00
86JPJ0047	364250	7227500	17	0.1	<0.7	6	830	33	41	184	220	2.1	168	1	2900	7.5	11.0	110	<2	4	215	<100	9.00	6.75
86JPJ0048	381300	7224300	17	0.1	<0.7	<3	810	51	64	510	750	1.5	124	<1	2500	8.4	13.0	100	<2	<2	210	<100	11.75	6.90
86JPJ0049	385600	7215100	17	<0.1	<0.5	16	740	20	24	84	130	1.0	58	2	1650	3.5	5.0	55	<1	3	94	<100	3.35	8.49
86JPJ0050	375700	7200800	17	0.1	1.8	23	770	49	60	108	140	2.2	84	<1	2700	7.0	10.0	100	<2	3	196	<100	20.50	5.49
86JPJ0051	371200	7214000	17	<0.1	1.6	16	710	45	51	210	230	1.4	196	<1	3150	9.4	12.0	130	<2	3	250	<100	14.00	8.22
86JPJ0052	365000	7200800	17	<0.1	1.2	4	540	40	45	116	150	2.3	96	<1	2300	9.0	12.0	160	2	<2	250	<100	12.95	6.46
86JPJ0053	639400	7212900	16	<0.1	<0.7	9	700	48	55	210	270	1.8	260	2	2400	9.2	12.0	110	<2	3	280	<100	14.05	7.68
86JPJ0054	631900	7224700	16	<0.1	<0.8	11	640	30	32	168	180	2.0	210	<1	2100	8.8	11.0	125	3	3	240	<100	IS	6.27
86JPJ0067	599000	7286100	16	<0.1	5.1	3	240	6	9	40	62	3.4	24	<1	1175	2.1	2.9	45	<1	<2	62	<100	5.50	7.90
86JPJ0068	600250	7285500	16	<0.1	5.0	2	290	10	12	44	77	3.0	24	<1	1150	2.5	3.7	40	<1	<2	72	<100	5.45	10.40
86JPJ0069	597900	7287250	16	<0.1	8.1	<2	340	10	12	57	130	8.3	20	<1		4.5	6.7	45	<1	3	94	<100	13.20	10.21
86JPJ0070	588100	7293900	16	<0.1	3.0	2	220	7	8	36	53	3.6	16	<1	865	1.5	2.4	41	2	<2	60	150	4.20	7.20
86JPJ0071	588900	7293000	16	<0.1	12.0	3	340	15	16	88	150	9.4	49	<2	2200	5.5	7.1	77	1	4	128	<100	14.20	9.96
86JPJ0072	590650	7293250	16	<0.1	4.6	8	480	23	21	128	160	5.2	59	<2	1400	4.8	6.1	79	<1	3	120	210	6.55	7.74
86JPJ0073	592250	7290300	16	<0.1	9.0	<2	370	17	18	58	160	8.8	13	<2	1200	3.0	4.4	33	3	4	80	<100	7.30	7.01
86JPJ0074	595200	7289750	16	<0.1	3.0	<2	200	8	11	48	90	4.4	18	<1	1350	2.0	3.3	47	<1	<2	84	<100	11.35	7.74
86JPJ0075	597100	7289400	16	<0.1	6.8	4	510	19	19	104	140	4.1	53	<2	1550	4.6	5.8	83	<1	<2	128	160	9.50	6.57
86JPJ0078	561800	7309200	15	<0.1	7.8	<2	590	24	24	116	130	4.6	55	<1	1900	5.4	6.4	86	<1	3	148	150	9.25	8.67
86JPJ0078*	561800	7309200	15	0.4	1.0	<7	730	22	13	54	110	5.0	36	<4	1900	4.4	4.5	48	<2	6	154	400	6.20	1.00
86JPJ0080	561800	7309200	15	<0.1	0.9	<4	870	20	18	52	50	6.0	30	4	2200	4.8	5.3	57	<1	6	152	250	8.10	4.67
86JPJ0084	561800	7309200	15	0.1	<0.9	7	760	13	15	41	67	6.3	27	<4	2350	4.0	5.1	43	<2	7	146	<200	9.00	2.71
86JPJ0085	561800	7309200	15	0.2	<1.1	<7	970	13	15	9	78	6.6	23	<5	2350	4.0	5.1	40	<3	6	137	420	6.90	1.40
86JPJ0097	561800	7309200	15	<0.1	0.9	<4	790	14	10	42	71	5.4	26	<3	2200	4.4	4.9	48	4	6	122	<150	7.65	4.09
86JPJ0101	561800	7309200	15	<0.1	<0.5	<2	970	6	7	22	42	2.2	7	<2	1350	2.0	2.4	22	<1	3	58	<120	1.65	6.59

Appendix; Table VII. Geochemical analyses of surficial samples, Wager Bay area, N.W.T., cont'd

SAMPLE #	EAST	UTM NORTH	ZONE	AGaa PPM	ASna PPM	AUna PPB	BAna PPM	COaa PPM	COna PPM	CRaa PPM	CRna PPM	CSna PPM	CUaa PPM	EUna PPM	Fel PPM	FEaa PCT	FEna PCT	Vaa PPM	Wna PPM	YBna PPM	ZNaa PPM	ZNna PPM	LOIg PCT	WT g
86JPJ0101*	561800	7309200	15	<0.2	<1.0	<6	780	20	<10	48	<50	5.0	34	<3	2150	4.2	4.6	46	<2	5	184	<230	4.40	1.00
86JPJ0104	624300	7343700	15	<0.1	1.0	29	800	22	30	52	77	8.9	47	<3	3800	7.5	8.7	85	<2	4	290	220	5.85	6.59
86JPJ0105	624000	7357250	15	0.7	1.7	<3	710	28	25	290	370	9.3	809	<2	1550	14.4	13.0	120	2	<2	172	160	18.10	8.01
86JPJ0106	606300	7355500	15	0.1	3.2	<8	340	64	74	265	350	13.0	270	<4	620	6.4	8.5	92	9	<2	205	<290	17.30	1.24
86JPJ0107	592400	7348800	15	0.3	1.6	25	750	19	19	53	89	4.3	89	6	830	4.0	5.5	59	<2	<2	117	<160	8.70	2.91
86JPJ0108	593700	7334900	15	0.1				14		56			61		700	3.8		69			106		IS	
86JPJ0109	602100	7324300	15	<0.1				18		56			80		570	3.4		58			96		5.60	
86JPJ0110	605100	7341100	15	<0.1	<0.5	<3	780	33	26	250	310	15.0	110	<2	1800	7.4	8.8	104	3	2	310	250	4.60	7.33
86JPJ0111	615050	7342350	15	<0.1	<1.4	10	660	18	16	56	84	6.8	52	<7	2300	5.4	8.6	67	4	<2	245	520	6.65	1.44
86JPJ0112	628700	7336200	15	<0.1	<0.9	<7	1100	18	13	20	55	6.4	26	7	3700	6.8	10.8	53	3	7	290	<180	3.60	8.08
86JPJ0113	622200	7330900	15	<0.1	<0.9	<6	880	13	17	20	69	4.6	30	7	4300	7.0	9.4	43	<2	8	310	260	4.35	5.75
86JPJ0113B	622200	7330900	15	0.1				11		25			17		1900	4.8		31			216		6.80	
86JPJ0114	605650	7266600	15	<0.1	4.3	<6	320	7	8	72	87	4.3	22	<3	460	3.6	5.1	61	3	4	68	<130	51.75	4.34
86JPJ0115	608500	7264100	15	<0.1	1.3	10	780	22	24	66	82	4.4	42	6	1400	5.7	8.3	102	<2	4	156	<190	6.15	6.16
86JPJ0116	622900	7262100	15	0.2	1.6	<4	690	29	29	68	87	3.6	134	3	1050	4.2	5.5	80	<1	5	144	<100	14.35	6.60
86JPJ0117	634900	7256800	15	<0.1	1.8	<3	620	24	24	100	130	7.9	52	<2	1550	5.5	9.1	120	<1	5	164	180	18.25	8.08
86JPJ0118A	629700	7271250	15	<0.1	2.8	<6	710	24	23	64	100	5.9	42	<4	1650	5.6	7.3	94	<2	5	160	290	15.10	2.09
86JPJ0118B	629700	7271250	15	0.1	3.0	23	560	17	22	58	96	6.6	36	<3	1600	5.3	7.5	85	2	3	235	<120	17.05	3.90
86JPJ0119	619750	7278500	15	<0.1	2.8	<3	730	13	15	40	70	4.5	29	<2	1150	3.6	4.7	55	2	2	108	180	17.00	7.90
86JPJ0120	632200	7294250	15	<0.1	<0.6	12	870	19	22	50	80	8.1	45	<3	2800	5.6	8.3	87	3	4	196	200	5.35	5.97
86JPJ0121	637800	7280500	15	<0.1				28		80			90		2000	7.2		132			168		8.25	
86JPJ0122	370400	7259600	16	<0.1	2.3	8	700	23	31	125	180	6.5	74	<4	1800	6.4	9.5	126	<2	3	187	470	15.15	1.67
86JPJ0123	369400	7355900	16	IS				IS		IS			IS		800	IS		IS			IS		11.70	
86JPJ0124	379250	7347300	16	0.3	0.6	<4	730	20	23	91	120	5.5	82	<3	2200	6.6	8.8	116	2	5	158	190	8.15	6.69
86JPJ0125	394000	7340900	16	0.2	1.2	<3	890	18	17	58	59	5.8	48	<2	3200	4.4	5.8	68	<1	4	136	160	5.40	7.49
86JPJ0126	405300	7329800	16	<0.1	0.9	5	760	13	17	55	110	2.3	52	<2	1250	3.7	4.8	54	<1	4	85	<150	8.60	3.36
86JPJ0127	401500	7313050	16	0.1	0.9	8	900	9	8	40	82	<0.8	18	<3	1150	2.4	3.9	38	<2	4	60	<150	2.80	3.89
86JPJ0128	393500	7323300	16	<0.1	<0.6	7	780	13	15	46	91	3.7	36	3	1450	2.8	4.3	51	2	4	72	<100	3.35	6.07
86JPJ0129A	379500	7329000	16	0.2	<1.0	10	760	10	16	55	130	2.3	36	<4	920	2.1	3.2	33	<2	3	66	430	5.10	1.45
86JPJ0129B	379500	7329000	16	<0.1	1.2	10	730	19	27	67	140	5.2	94	<3	1450	3.8	5.4	54	<2	4	215	290	7.55	2.67
86JPJ0130	371400	7338300	16	0.1	<0.8	10	990	9	20	43	64	3.7	29	5	1700	2.7	3.8	39	<2	4	96	<160	2.75	2.28
86JPJ0131	367900	7323600	16	<0.2	1.6	<9	840	18	<11	125	200	4.7	48	9	2000	4.2	6.0	60	6	5	154	<250	7.20	0.88
86JPJ0132	625700	7318200	15	<0.1	2.5	<4	720	21	20	66	89	5.9	40	3	2500	5.2	7.4	87	3	4	126	<120	7.55	7.38
86JPJ0133	612300	7318700	15	<0.1	<2.1	<12	770	14	21	28	120	3.0	30	14	3020	4.6	9.1	61	7	8	188	<350	7.05	0.70
86JPJ0134	441400	7237900	16	0.3	2.9	<3	870	16	15	84	110	6.6	46	3	1900	4.6	5.7	67	<1	3	128	190	4.20	7.60
86JPJ0135	443050	7224900	16	0.1	1.8	<3	930	27	26	130	140	5.5	86	<2	2400	6.0	7.4	94	<1	<2	180	230	4.90	7.97
86JPJ0136	441050	7210900	16	0.4	0.8	4	1000	38	39	220	280	8.3	205	<2	2300	9.8	12.0	182	<1	4	250	240	10.50	7.17
86JPJ0137	432900	7204950	16	1.0				18		68			40		1250	3.6		64			80		6.10	
86JPJ0138	429600	7219650	16	<0.1	2.7	4	670	41	41	256	200	4.9	111	<2	2100	6.6	10.0	136	<1	3	172	230	13.50	7.79
86JPJ0139	428700	7232800	16	<0.1	2.6	<3	850	20	19	110	120	5.7	60	3	1650	6.5	6.9	101	3	3	150	<130	8.55	6.28
86JPJ0140	419050	7241500	16	0.1	1.7	7	830	21	23	122	150	5.8	77	3	1850	6.0	6.3	91	4	3	168	220	3.80	6.74
86JPJ0141	416800	7227200	16	0.2	2.6	<3	780	40	45	174	240	3.7	153	3	2300	9.4	12.0	189	<1	3	250	170	10.40	8.86
86JPJ0142	414700	7214200	16	0.3	1.8	<4	600	30	35	106	160	2.2	121	<3	1850	5.7	6.2	84	<2	<2	152	<100	23.15	7.43
86JPJ0143	400300	7208400	16	0.2				17		70			51		1750	4.2		68			84		10.20	
86JPJ0144	400300	7222550	16	0.2	1.3	4	690	22	22	90	130	2.2	70	<2	1000	5.4	5.1	87	<1	2	124	180	12.35	4.27
86JPJ0145	402400	7238700	16	0.1	<1.0	<6	740	29	25	116	150	5.4	124	<4	1350	6.3	8.2	96	<2	4	385	400	12.95	2.64
86JPJ0146	617650	7247600	15	IS				IS		IS			IS		1750	IS		IS			IS		11.25	
86JPJ0148	631700	7244700	15	0.1	<0.5	<2	1000	5	9	30	85	1.2	13	<2	740	1.8	3.0	25	<1	3	40	<100	1.10	10.06
86JPJ0149A	628050	7231500	15	IS				IS		IS			IS		1150	IS		IS			IS		6.40	
86JPJ0149B	628050	7231500	15	0.2	0.9	6	890	42	45	230	310	8.8	166	<2	1900	9.4	11.0	169	<2	3	220	320	11.60	5.56
86JPJ0150	361500	7232100	16	0.3	12.0	<4	700	15	11	60	150	8.9	42	2	800	4.6	5.7	73	4	4	114	260	9.10	4.49
86JPJ0151	367950	7250500	16	0.2	2.4	<4	580	20	22	90	110	6.3	67	<2	1300	7.6	8.6	132	2	4	540	620	25.10	5.78
86JPJ0152	374500	7238600	16	0.5	2.4	<4	510	40	38	210	290	5.6	126	<2	2100	8.5	11.0	131	<2	3	250	250	15.60	6.14
86JPJ0153	375300	7225100	16	0.3	1.2	<3	980	10	14	58	130	1.6	25	<2	840	3.1	4.5	47	<1	3	76	<100	2.75	6.14
86JPJ0154	362700	7219800	16	0.3	<0.5	<2	970	19	23	96	150	3.2	57	2	1200	4.7	5.7	77	<1	<2	136	<130	2.60	7.17
86JPJ0155	372900	7211800	16	0.4	1.2	5	890	43	39	210	260	7.2	110	<1	2300	9.0	11.0	160	2	<2	230	220	10.10	6.41
86JPJ0156	390050	7210400	16	<0.1	<0.6	<3	1100	35	34	132	170	5.6	81	3	1800	6.2	8.5	111	3	<2	200	270	4.35	6.01
86JPJ0157	378000	7286600	16	<0.1	1.3	<3	920	25	21	66	65	9.0	32	3	2500	5.8	6.8	82	<1	3	210	160	3.35	6.97
86JPJ0158	587200	7323100	15	<0.1				10		30			22		1250	3.1		55			68		IS	
86JPJ0159	575500	7329300	15	<0.1	0.9	<4	720	9	7	22	30	4.0	13	6	800	2.0	2.7	28	<2	4	47	<180	4.90	7.28
86JPJ0160	563750	7332400	15	<0.1	1.2	18	860	9	7	20	<20	3.0	19	3	990	2.3	3.4	27	<2	4	52	<110	11.90	3.91
86JPJ0161	562700	7324000	15	<0.1	<0.8	<5	540	24	22	120	150	10.8	55	<4	3200	6.0	7.8	161	2	10	220	<140	9.80	8.17
86JPJ0162	548950	7330600	15	<0.1	<0.9	<5	880	10	10	27	35	2.9	17	<4	1000	2.3	4.4	32	3	4	142	280	4.65	2.10
86JPJ0163	557100	7342000	15	0.1	<2.0	16	820	9	21	31	110	5.9	29	<8	1300	2.9	7.2	39	<5	<4	81	<380	5.60	0.78
86JPJ0164	568600	7345600	15	0.1				28		56			61		1650	4.6		76			140		16.80	
86JPJ0165	565050	7355800	15	<0.1	<1.2	<7	900	14	14	23	78	4.0	41	<5	1175	2.6	2.9	37	3	<2	86	<230	6.70	1.21
86JPJ0166	582050	7356200	15	<0.1	0.6	3	600	8	10	13	25	3.5	12	<2	1300	1.8	2.8	26	<1	<2	73	<100	0.55	7.52
86JPJ0167	583800	7343550	15	<0.1	<1.3	17	480	19	37	87	130	9.1	74	<5	1350	4.2	6.1	58	3	<2	121	<240	14.75	1.29
86JPJ0168	588000	7331550	15	0.1	1.8	6	570	32	21	158	170	11.0	177	<2	1450	5.2	6.4	94	3	4	180	260	17.95	5.03
86JPJ0169	389300	7223900	16	<0.1	0.7	<3	730	21	19	92	140	2.1	50	3	1050	3.9	5.4	84	<1	2	100	<100	8.20	5.11
86JPJ0170	389700	7239500	16	<0.1	<0.5	<3	720	40	38	190	220	6.8	101	<2	1950	6.6	10.0	157	2	3	230	260	7.05	7.91
86JPJ0171	382600	7251000	16	<0.1	1.4	<3	590	48	45	210	260	6.3	106	4	1500	7.8	12.0	168	2	<2	210	<150	13.25	7.10
86JPJ0172	384300	7267200	16	0.1				45		180			110		1900	6.2		155			180		55.20	
86JPJ0173	395150	7251900	16	0.2	1.6	9	300	28	18	130	180	2.9	48	<4	1250	6.5	7.8	110	<3	2	174	340	19.65	1.57
86JPJ0174	398400	7257700	16	0.1	4.5	<3	500	37	30	169	180	7.7	105	<2	1700	6.4	9.2	147	<1	3	215	230	10.55	7.99

Appendix; Table VII. Geochemical analyses of surficial samples, Wager Bay area, N.W.T., cont'd

SAMPLE #	HFna PPM	HGcv PPB	LAna PPM	MNaa PPM	MOaa PPM	MOna PPM	NIaa PPM	NIna PPM	PBaa PPM	RBna PPM	SBna PPM	SCna PPM	SNxf PPM	TAna PPM	TBna PPM	THna PPM	Una PPM
86JP 0061T	4	35	190	820	1	<1	55	27	32	270	0.3	15.0	1	1.4	1.1	68.0	5.3
86JP 0098T	9	55	78	1800	5	6	85	97	49	340	1.0	22.5	6	3.3	0.7	149.0	27.4
86JPJ0001A	5	25	110	440	2	2	27	20	32	230	0.2	7.7	6	1.7	0.8	59.7	4.9
86JPJ0001B	6	<5	150	460	2	4	31	<20	26	270	0.1	8.6	5	1.9	1.1	85.3	5.9
86JPJ0002	4	10	150	440	2	<1	26	<20	20	230	<0.1	7.8	2	1.2	1.1	77.1	5.6
86JPJ0003	5	20	110	360	<1	<1	20	<20	24	210	0.3	7.2	2	1.8	0.6	71.4	10.0
86JPJ0004	4	10	120	560	<1	<1	30	29	17	260	<0.1	10.0	6	1.8	0.8	66.2	8.1
86JPJ0005	3	20	130	880	2	<1	39	<20	23	340	0.1	13.0	11	2.4	1.0	116.0	13.0
86JPJ0006	4	10	140	960	<1	<1	49	40	22	400	<0.1	14.0	5	2.2	0.9	88.4	8.1
86JPJ0007	3	10	120	600	<1	<1	39	23	18	290	<0.1	10.0	4	1.7	0.9	55.9	5.2
86JPJ0008	4	10	120	640	<1	<1	26	21	19	350	<0.1	10.0	5	1.9	0.7	83.8	7.3
86JPJ0009	6	15	150	720	<1	<1	32	24	23	370	<0.1	12.0	4	2.5	1.0	88.5	10.0
86JPJ0010	4	10	130	700	<1	<1	32	27	24	300	0.1	11.0	6	2.2	0.9	73.4	8.1
86JPJ0011	4	IS	180	1200	2	7	35	47	39	320	0.6	13.0	IS	2.9	1.5	111.0	19.0
86JPJ0013	8	60	317	1300	2	<2	29	<20	44	210	0.6	15.0	8	2.4	2.6	106.0	18.0
86JPJ0014	5	70	50	980	2	4	35	30	44	380	0.2	14.0	12	4.2	0.6	54.8	39.8
86JPJ0015	4	10	120	560	<1	<1	35	<20	19	270	<0.1	10.0	<1	1.6	0.7	52.9	4.8
86JPJ0016	4	50	110	960	2	1	44	<20	41	230	0.4	10.0	4	1.9	1.0	88.1	9.4
86JPJ0017	3	30	95	860	2	<1	67	73	52	280	0.4	11.0	5	2.2	0.7	88.2	35.5
86JPJ0018A	6	20	130	660	<1	<1	55	50	52	140	0.1	5.8	<1	1.1	0.8	91.7	9.1
86JPJ0018B	3	IS	170	2200	4	<3	112	94	101	120	0.8	6.7	IS	1.4	1.3	252.0	13.0
86JPJ0019	3	<5	100	460	2	<1	26	21	16	250	<0.1	8.4	7	1.6	0.7	66.6	7.5
86JPJ0020	5	10	202	960	2	<2	46	57	39	400	0.4	14.0	6	2.8	1.5	173.0	16.0
86JPJ0021	4	<5	88	840	2	3	32	24	29	260	0.2	10.0	6	2.0	1.0	80.8	11.0
86JPJ0022A	10	10	150	520	<1	3	16	<22	29	190	0.2	8.2	6	1.7	1.4	102.0	13.0
86JPJ0022B	5	40	160	960	2	<2	25	<20	57	210	0.7	9.3	8	2.6	1.4	158.0	19.0
86JPJ0023	7	10	244	1500	2	<2	24	<20	57	260	0.3	10.0	4	3.4	1.7	171.0	20.6
86JPJ0024	12	10	228	1200	4	4	52	<20	68	370	0.5	17.0	9	4.9	1.7	203.0	77.8
86JPJ0025A	8	20	538	1500	8	<2	16	<20	37	400	0.3	16.0	6	3.5	2.4	200.0	14.0
86JPJ0025B	5	20	190	780	10	8	23	<20	49	210	0.4	10.0	4	3.6	1.6	82.0	18.0
86JPJ0026	7	30	285	1100	8	4	15	<20	65	330	0.1	15.0	6	4.2	2.1	151.0	15.0
86JPJ0027	7	20	180	550	4	2	31	<20	48	210	0.6	8.9	6	2.6	1.1	145.0	21.6
86JPJ0028	9	30	290	880	5	1	20	<20	49	290	0.5	11.0	5	3.1	1.5	156.0	21.0
86JPJ0029	4	40	170	500	2	3	13	<20	33	180	0.5	10.0	<1	1.4	1.0	51.2	9.4
86JPJ0030	4	20	150	560	<1	<1	46	<20	36	220	0.4	9.3	10	1.3	0.9	67.3	3.9
86JPJ0031	3	50	160	1300	2	<2	55	57	63	130	0.9	11.0	4	<0.5	1.1	65.7	9.0
86JPJ0032	3	10	110	460	<1	<1	37	<20	20	250	0.1	9.1	1	1.1	0.8	50.1	3.5
86JPJ0033	4	35	81	500	<1	<1	38	29	19	210	0.1	8.8	6	1.5	0.7	62.0	5.3
86JPJ0034	4	10	97	360	<1	<1	32	22	19	210	0.1	8.4	2	1.5	1.0	52.5	4.6
86JPJ0035	2	20	110	1200	<1	<1	62	54	33	210	0.2	11.0	4	1.1	0.6	74.7	2.9
86JPJ0036	3	10	120	480	<1	<1	36	21	18	290	0.2	9.4	5	1.8	0.8	59.7	5.8
86JPJ0037	3	<5	120	440	<1	<1	33	28	16	240	0.1	9.0	<1	1.6	0.9	48.8	3.5
86JPJ0038	4	45	343	1600	6	<1	14	<20	22	460	0.8	15.0	3	2.1	1.5	140.0	12.0
86JPJ0039	3	10	202	1600	4	2	64	32	28	400	0.2	17.0	2	2.6	1.1	105.0	21.8
86JPJ0040	1	<5	85	720	<1	<1	2130	1900	13	200	<0.1	11.0	<1	1.3	<0.5	39.2	6.6
86JPJ0041	3	45	110	1400	8	7	103	81	25	290	0.2	16.0	1	1.8	0.8	73.5	8.9
86JPJ0042	5	20	130	1500	4	3	65	66	30	300	0.4	16.0	9	2.9	1.0	69.7	19.0
86JPJ0043	3	<5	160	1400	<1	<1	87	73	17	360	0.2	14.0	3	1.9	1.1	54.5	14.0
86JPJ0044	10	20	296	1100	<1	<1	24	<20	21	240	0.2	9.1	6	2.5	2.5	103.0	34.1
86JPJ0045	6	45	237	960	12	14	32	<20	28	250	0.5	13.0	8	4.3	1.9	108.0	23.3
86JPJ0046	6	10	310	360	1	<2	14	<40	28	200	0.6	7.6	9	2.9	1.7	124.0	19.0
86JPJ0047	3	35	160	780	1	<1	138	120	18	230	0.1	24.4	4	0.9	0.9	51.1	3.2
86JPJ0048	1	20	55	1300	<1	<1	346	370	12	260	0.2	25.5	2	0.7	<0.5	16.0	1.6
86JPJ0049	3	<5	84	440	<1	<1	74	61	8	130	0.2	12.0	2	0.5	0.8	24.1	2.1
86JPJ0050	5	10	120	1600	1	<1	80	47	23	210	0.5	17.0	1	1.0	1.0	55.5	2.9
86JPJ0051	2	55	77	920	4	7	140	130	13	210	0.2	26.5	2	0.8	0.9	32.9	3.6
86JPJ0052	4	45	28	1200	<1	<1	66	57	13	230	0.2	25.6	1	0.9	0.6	20.0	2.8
86JPJ0053	1	35	51	1800	1	<1	147	150	17	220	0.2	23.9	3	0.9	0.5	37.9	3.2
86JPJ0054	2	10	170	760	1	<1	114	100	18	240	0.1	20.8	3	1.1	0.7	92.5	3.4
86JPJ0067	2	20	41	300	2	<1	23	28	12	97	0.2	6.6	<1	<0.5	<0.5	17.0	2.4
86JPJ0068	2	20	61	400	2	<1	33	27	11	110	0.1	8.6	1	0.7	<0.5	20.0	1.5
86JPJ0069	5	80	37	640	<1	<1	42	38	18	190	0.4	15.0	<1	1.0	0.6	15.0	2.8
86JPJ0070	1	30	32	280	1	<1	26	<20	15	95	0.2	6.2	<1	0.8	<0.5	15.0	1.8
86JPJ0071	4	55	63	580	<1	<1	63	52	26	230	0.5	19.0	<1	1.2	1.1	27.0	4.2
86JPJ0072	3	25	110	590	<1	<1	76	69	13	200	0.1	17.0	5	1.2	0.8	35.0	1.6
86JPJ0073	5	25	98	200	<1	2	54	40	6	180	0.3	18.0	5	1.8	0.9	23.6	3.1
86JPJ0074	2	25	20	300	2	<1	36	24	18	98	0.2	7.0	1	<0.5	<0.5	6.7	1.5
86JPJ0075	3	35	65	560	1	1	72	54	21	190	0.2	13.0	3	0.9	0.7	30.9	1.4
86JPJ0078	3	35	73	630	<1	2	77	67	23	230	0.2	15.0	<1	1.0	1.0	35.3	1.7
86JPJ0078*	5	40	210	890	10	21	28	83	30	210	0.7	12.0	9	5.0	2.0	96.4	21.0
86JPJ0080	7	35	209	1100	8	19	39	30	30	280	0.3	14.0	9	4.4	2.3	96.6	21.4
86JPJ0084	6	35	206	880	11	21	27	64	26	260	0.6	13.0	5	3.8	1.8	93.3	21.5
86JPJ0085	6	30	208	880	8	16	26	<34	24	230	0.4	14.0	10	4.0	1.3	90.6	20.3
86JPJ0097	7	35	212	810	6	23	30	<21	26	250	0.2	13.0	4	3.9	2.0	96.6	22.2
86JPJ0101	7	10	83	320	<1	5	14	<20	11	180	<0.1	8.6	2	2.3	1.1	31.0	8.6
86JPJ0101*	<2	30	210	870	8	19	34	62	32	240	0.7	12.0	10	4.0	2.0	91.3	19.0
86JPJ0104	5	25	362	1500	<1	4	38	27	39	450	0.3	21.1	5	3.2	2.0	127.0	9.4
86JPJ0105	2	45	95	610	4	12	105	100	55	230	0.3	17.0	3	2.5	0.8	104.0	18.0
86JPJ0106	5	70	58	112	12	22	355	400	28	120	1.2	9.4	<1	<0.8	0.8	38.8	7.0
86JPJ0107	6	35	88	680	2	4	33	40	21	160	0.5	10.0	<1	2.0	0.8	52.8	8.3

Appendix; Table VII. Geochemical analyses of surficial samples, Wager Bay area, N.W.T., cont'd

SAMPLE #	HFna PPM	HGcv PPB	LAna PPM	MNaa PPM	MOaa PPM	MOna PPM	NIaa PPM	NIna PPM	PBaa PPM	RBna PPM	SBna PPM	SCna PPM	SNxf PPM	TAna PPM	TBna PPM	THna PPM	Una PPM
86JPJ0108		45		830	2		36		32				IS				
86JPJ0109		25		660	<1		38		13				IS				
86JPJ0110	4	10	130	1450	<1	3	280	240	27	400	0.2	18.0	4	2.5	1.3	60.8	12.0
86JPJ0111	<4	25	401	1000	2	3	33	43	25	280	0.5	15.0	<1	4.2	1.9	143.0	14.0
86JPJ0112	8	10	666	960	<1	3	16	<25	32	521	<0.1	21.0	<1	3.4	2.9	238.0	13.0
86JPJ0113	8	25	554	1200	3	7	12	<25	46	480	0.2	20.0	10	3.8	3.1	308.0	22.8
86JPJ0113B		45		1500	5		10		70				8				
86JPJ0114	<2	240	110	340	4	10	19	26	41	83	0.6	8.7	5	2.1	1.1	116.0	10.0
86JPJ0115	8	45	329	880	6	14	43	28	34	270	0.3	15.0	11	3.4	1.5	115.0	16.0
86JPJ0116	4	160	180	720	2	6	55	39	48	200	0.4	13.0	7	1.6	1.5	166.0	13.0
86JPJ0117	8	80	130	480	2	7	52	56	38	280	0.2	15.0	3	2.7	1.5	97.0	19.0
86JPJ0118A	8	70	206	800	1	13	38	<27	52	250	0.4	12.0	3	2.8	1.9	147.0	20.9
86JPJ0118B	6	55	202	640	5	12	28	<21	36	270	0.5	11.0	8	2.9	1.7	136.0	20.2
86JPJ0119	6	45	120	450	2	6	25	24	31	240	0.3	10.0	3	2.2	0.6	75.7	13.0
86JPJ0120	7	10	224	840	<1	7	35	32	28	340	0.4	18.0	3	2.6	1.8	100.0	16.0
86JPJ0121		35		1000	<1		62		20				IS				
86JPJ0122	6	70	150	800	4	11	57	93	29	240	0.5	16.0	8	3.1	1.9	88.7	12.0
86JPJ0123		90		IS	IS		IS		IS				IS				
86JPJ0124	4	25	223	610	2	6	50	47	56	360	0.4	13.0	3	3.6	1.7	235.0	27.5
86JPJ0125	3	<5	190	880	<1	3	40	42	43	380	0.3	13.0	<1	2.7	1.3	193.0	14.0
86JPJ0126	5	35	71	520	2	4	29	30	25	180	0.6	9.5	3	2.5	1.2	100.0	9.3
86JPJ0127	8	<5	160	330	<1	4	20	<20	20	180	0.3	6.8	3	2.3	1.4	73.4	8.9
86JPJ0128	6	<5	140	460	<1	6	30	20	28	220	0.3	8.9	5	2.6	1.2	106.0	12.0
86JPJ0129A	6	10	100	420	2	9	40	68	29	160	0.6	10.0	2	1.7	0.7	68.4	8.8
86JPJ0129B	8	25	120	720	3	10	59	28	123	240	0.7	12.0	2	2.6	1.2	108.0	19.0
86JPJ0130	4	10	150	420	2	6	26	39	19	230	1.9	9.2	<1	2.0	1.1	117.0	10.0
86JPJ0131	7	35	190	720	2	5	70	82	23	340	0.7	12.0	4	2.6	1.3	118.0	14.0
86JPJ0132	6	30	180	1010	2	7	41	49	35	290	0.4	14.0	4	3.9	1.5	121.0	15.0
86JPJ0133	7	35	494	1100	4	11	18	<56	35	390	1.0	16.0	7	4.8	2.8	219.0	17.0
86JPJ0134	4	10	160	660	<1	1	48	61	22	310	0.2	13.0	2	1.8	1.0	73.6	6.3
86JPJ0135	3	10	160	860	<1	1	79	89	21	330	0.1	16.0	2	2.0	0.7	76.2	4.2
86JPJ0136	5	10	170	1200	8	12	110	110	31	260	<0.1	20.8	5	1.7	1.0	93.0	19.0
86JPJ0137		25		480	<1		38		20				IS				
86JPJ0138	5	35	120	880	2	9	75	89	38	240	0.4	17.0	2	2.3	1.0	82.8	7.9
86JPJ0139	7	35	150	600	1	3	64	48	30	300	0.2	13.0	<1	2.3	1.1	91.3	11.0
86JPJ0140	5	10	140	760	1	3	73	66	36	290	0.1	13.0	<1	2.1	1.1	83.2	8.3
86JPJ0141	5	35	208	1100	2	7	90	78	42	240	0.4	17.0	5	1.5	1.2	103.0	10.0
86JPJ0142	5	80	248	480	2	5	74	74	40	170	0.3	13.0	4	0.8	1.3	156.0	7.9
86JPJ0143		35		320	1		46		21				IS				
86JPJ0144	2	45	74	480	<1	5	70	80	18	140	0.2	11.0	3	0.9	0.5	39.7	2.1
86JPJ0145	5	45	170	1000	3	7	71	96	25	260	0.3	14.0	3	2.2	1.3	90.4	9.1
86JPJ0146		45		IS	IS		IS		IS				IS				
86JPJ0148	7	<5	68	210	<1	2	21	32	11	140	0.2	10.0	<1	1.6	0.8	22.1	4.4
86JPJ0149A		25		IS	IS		IS		IS				IS				
86JPJ0149B	3	35	120	1200	2	10	135	120	32	310	0.2	19.0	3	2.5	1.0	87.5	15.0
86JPJ0150	7	25	70	310	1	5	48	48	28	150	1.6	16.0	<1	2.2	0.9	32.9	6.0
86JPJ0151	4	80	120	590	1	4	55	51	34	230	0.3	14.0	5	2.2	1.2	74.1	11.0
86JPJ0152	4	55	140	1200	2	7	201	190	33	280	0.4	19.0	4	1.6	0.7	87.0	6.1
86JPJ0153	6	10	81	340	<1	4	40	33	12	160	0.2	11.0	1	1.6	0.8	30.4	4.6
86JPJ0154	5	10	76	560	<1	3	71	66	18	190	<0.1	13.0	1	1.1	0.9	33.1	4.5
86JPJ0155	3	35	71	1100	2	5	148	130	27	350	0.1	17.0	4	1.8	<0.5	55.8	7.0
86JPJ0156	3	25	120	1090	2	2	79	70	23	300	<0.1	16.0	5	1.3	0.7	48.5	4.9
86JPJ0157	3	10	180	1000	2	4	37	41	27	390	0.2	14.0	2	2.5	1.4	83.3	12.0
86JPJ0158		25		500	2		11		53				IS				
86JPJ0159	9	25	306	370	2	3	8	<20	37	200	0.2	7.5	2	3.2	3.2	125.0	49.6
86JPJ0160	11	25	170	360	3	9	8	<20	22	160	0.3	10.0	3	3.0	1.8	80.5	23.7
86JPJ0161	8	35	450	1100	5	10	48	<21	57	380	0.1	18.0	8	4.6	2.9	172.0	39.7
86JPJ0162	7	10	150	520	3	8	12	26	24	220	0.5	10.0	2	4.0	1.6	83.6	25.9
86JPJ0163	11	10	260	640	4	22	17	<46	33	240	1.2	11.0	8	3.7	3.0	138.0	37.0
86JPJ0164		50		1000	4		27		50				IS				
86JPJ0165	6	25	160	620	2	3	19	<31	22	250	0.6	8.3	7	2.3	1.6	128.0	14.0
86JPJ0166	6	10	97	470	<1	3	5	<20	16	220	<0.1	9.0	3	1.1	0.9	66.6	10.0
86JPJ0167	4	35	120	820	1	4	54	60	32	190	0.6	11.0	4	2.9	1.2	90.0	17.0
86JPJ0168	7	50	130	1000	1	6	89	88	54	240	0.3	13.0	5	3.2	1.6	103.0	21.5
86JPJ0169	4	35	87	530	2	5	53	59	20	150	0.3	11.0	3	1.2	0.6	34.0	2.9
86JPJ0170	5	25	140	1100	2	3	103	100	32	340	0.1	18.0	<1	2.1	0.8	88.5	13.0
86JPJ0171	7	50	140	1100	2	4	106	84	32	340	0.4	20.0	1	2.3	0.7	72.8	7.9
86JPJ0172		50		1400	3		96		26				IS				
86JPJ0173	4	75	99	880	3	6	71	80	20	190	0.5	12.0	5	0.8	0.6	62.0	3.8
86JPJ0174	6	35	180	1000	4	8	79	61	42	300	0.3	18.0	3	2.4	1.0	110.0	11.0

SAMPLES WITH ELEMENT CONCENTRATIONS ABOVE THE DETECTION LIMIT FOR THE FOLLOWING ELEMENTS. THE SAMPLES HAD ELEMENT CONCENTRATIONS BELOW THE DETECTION LIMIT.

SAMPLE #	CDaa PPM
86JPJ0035	0.2
86JPJ0038	0.2
86JPJ0039	0.2
86JPJ0040	0.2
86JPJ0041	0.3
86JPJ0042	0.2
86JPJ0045	0.2
86JPJ0051	0.2
86JPJ0067	0.6
86JPJ0113B	0.2
86JPJ0137	0.2
86JPJ0150	0.4
86JPJ0151	0.2
86JPJ0163	0.2

SAMPLE #	AGna PPM
86JPJ0129	10

SAMPLE #	CDna PPM
86JPJ0029	7
86JPJ0131	15
86JPJ0165	10

SAMPLE #	IRna PPB
86JPJ0163	110

THERE WERE NO SAMPLES ABOVE DETECTION FOR SELENIUM.

LEGEND FOR TABLE 8

<	BELOW DETECTION LIMIT
IS	INSUFFICIENT SAMPLE
*	SECOND ANALYSIS
AGaa	ANALYZED ELEMENT
AGaa	METHOD OF ANALYSIS
aa	ATOMIC ABSORPTION
na	NEUTRON ACTIVATION
si	SPECIFIC ION
cv	COLD VAPOUR ATOMIC ABSORPTION
xf	X-RAY FLUORESCENCE

Table VIII. Geochemical statistics for metals, surficial samples, Wager Bay, N.W.T.

ELEMENT	METHOD OF ANALYSIS	UNITS OF MEASURE	MINIMUM VALUE	MAXIMUM VALUE	POSSIBLE THRESHOLD VALUES			
					HISTOGRAM	98 %TILE	95 %TILE	2SD + MEAN
Ag	AA	PPM	0.1*	1.0	0.6	-	-	0.4
Ag	NA	PPM	2.*	10	8	-	-	5
As	NA	PPM	0.5*	12.0	12.0	9.0	6.8	5.3
Au	NA	PPB	2.*	76	17	28	23	22
Ba	NA	PPM	200	1100	-	1100	990	1095
Cd	AA	PPM	0.2*	0.6	0.5	-	-	0.2
Cd	NA	PPM	5.*	15	9	-	-	7
Co	AA	PPM	5	64	48	49	45	41
Co	NA	PPM	7.*	74	59	60	51	45
Cr	AA	PPM	9	510	250	290	230	212
Cr	NA	PPM	20.*	750	300	370	290	287
Cs	NA	PPM	0.8*	24.0	12.0	15.0	11.0	11.0
Cu	AA	PPM	7	809	200	260	177	206
Eu	NA	PPM	1.*	14	8	10	8	5
F	SI	PPM	460	17000	5000	5000	3400	4740
Fe	AA	PCT	1.5	14.4	8.9	9.4	9.0	8.7
Fe	NA	PCT	2.4	13.0	-	13.0	12.0	11.0
Hf	NA	PPM	1	12	-	11	9	9
Hg	CV	PPB	5.*	240	78	90	80	79
Ir	NA	PPB	50.*	110	70	-	-	55
La	NA	PPM	20	666	400	538	362	345
Mn	AA	PPM	112	2200	1550	1800	1600	1580
Mo	AA	PPM	1.*	12	9	11	10	9
Mo	NA	PPM	1.*	23	20	22	19	13
Ni	AA	PPM	5	2130	200	346	147	403
Ni	NA	PPM	20.*	1900	390	370	130	374
Pb	AA	PPM	6	123	65	70	63	61
Rb	NA	PPM	83	521	-	460	400	408
Sb	NA	PPM	0.1*	1.9	1.2	1.2	0.9	0.8
Sc	NA	PPM	5.8	26.5	-	25.5	21.1	22.0
Se	NA	PPM	5.*	21.*	-	-	-	-
Sn	XF	PPM	1.*	12	-	11	10	10
Ta	NA	PPM	0.5*	5.0	-	4.8	4.3	4.0
Tb	NA	PPM	0.5*	3.2	2.8	3.0	2.6	2.3

Appendix; Table VIII. Geochemical statistics for metals, surficial samples, Wager Bay, cont'd.

ELEMENT	METHOD OF ANALYSIS	UNITS OF MEASURE	MINIMUM VALUE	MAXIMUM VALUE	POSSIBLE THRESHOLD VALUES			
					HISTOGRAM	98 %TILE	95 %TILE	2SD + MEAN
Th	NA	PPM	6.7	308.0	210.0	238.0	200.0	195.1
U	NA	PPM	1.4	77.8	40.0	39.8	34.1	30.5
V	AA	PPM	22	189	-	169	160	139
W	NA	PPM	1.*	9	-	-	-	4
Yb	NA	PPM	2.*	10	9	10	8	7
Zn	AA	PPM	40	540	320	360	290	289
Zn	NA	PPM	100.*	620	390	470	400	323

LEGEND FOR TABLE 13

METHOD OF ANALYSIS

AA = ATOMIC ABSORPTION
NA = NEUTRON ACTIVATION
SI = SPECIFIC ION
CV = COLD VAPOUR ATOMIC ABSORPTION
XF = X-RAY FLUORESCENCE

* = DETECTION LIMIT

THRESHOLD VALUE = THE ELEMENT CONCENTRATIONS ABOVE THIS VALUE COULD BE CONSIDERED ANOMALOUS, DEPENDING ON THE BEDROCK TYPE, OTHER ASSOCIATED ELEMENTS, AND A COMPARISON WITH LITHOGEOCHEMICAL ANALYSES. THIS LIST SHOWS DIFFERENT POSSIBLE THRESHOLD VALUES USING VARIOUS METHODS.

THE HISTOGRAM COLUMN SHOWS THE THRESHOLD VALUES THAT WERE VISUALLY ESTIMATED FROM THE HISTOGRAMS OF ELEMENT CONCENTRATIONS.

SD = STANDARD DEVIATION
NOTE: THE CALCULATION OF STANDARD DEVIATION AND MEAN OF EACH ELEMENT INCLUDES VALUES THAT WERE LOWER THAN THE DETECTION LIMITS, BUT HAVE BEEN RECALCULATED TO 65% OF THE DETECTION LIMIT.

- INDICATES THAT THE VALUES WERE NOT SIGNIFICANT.