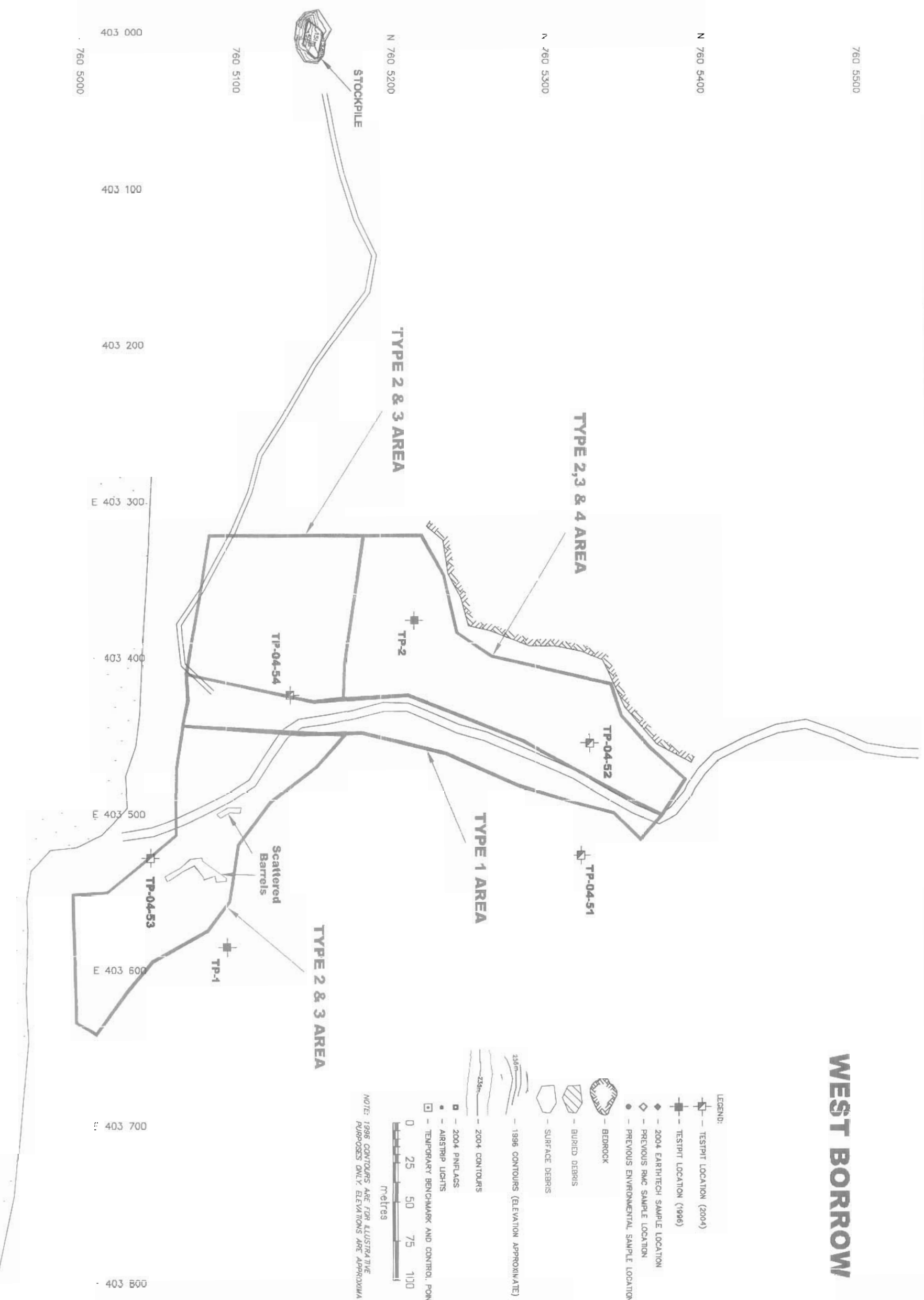





WEST BORROW



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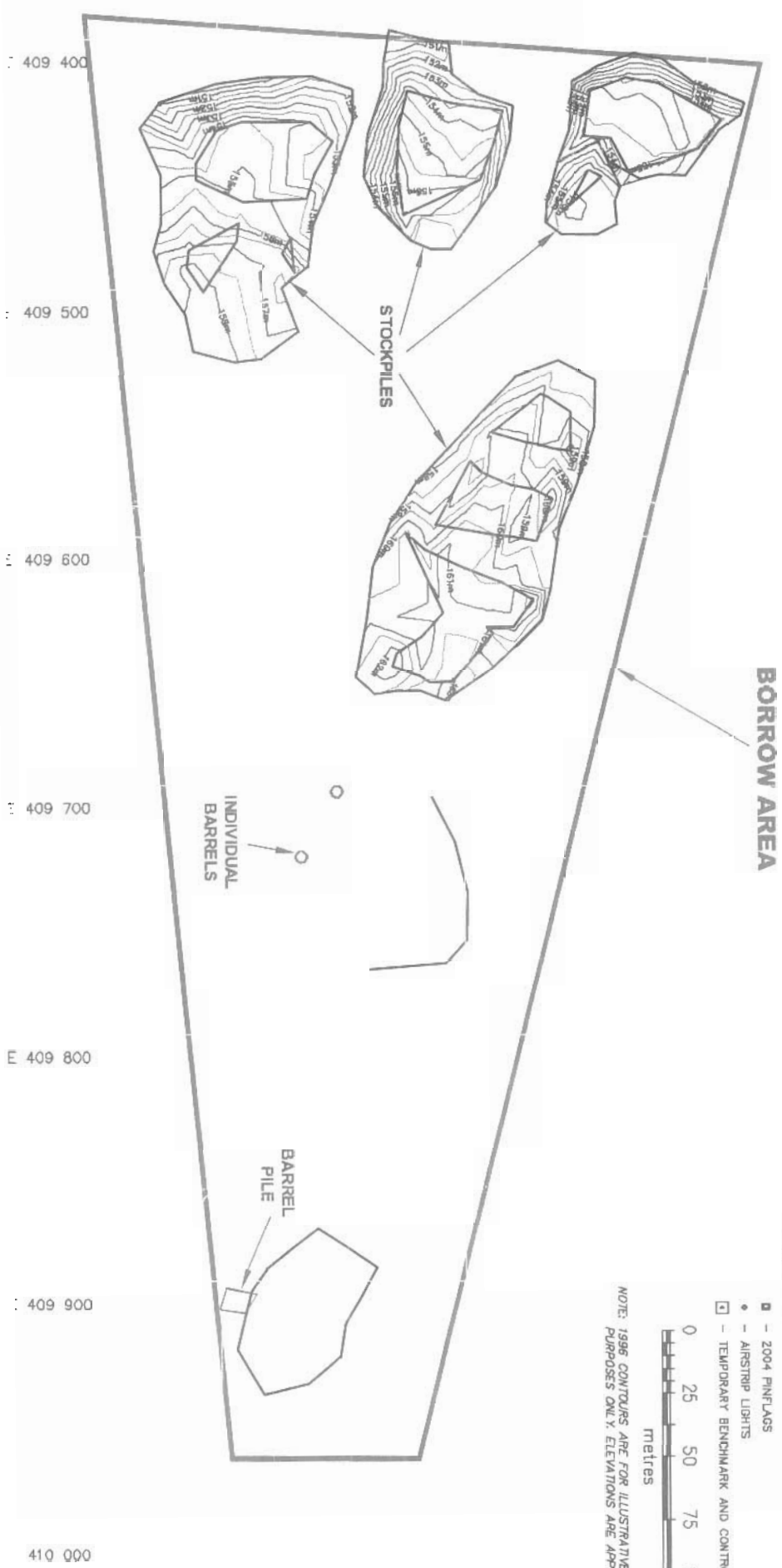
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- TESTPIT LOCATION (1996)
- 2004 EARTHTECH SAMPLE LOCATION
- PREVIOUS RMC SAMPLE LOCATION
- PREVIOUS ENVIRONMENTAL SAMPLE LOCATION
- BEDROCK
- BURIED DEBRIS
- SURFACE DEBRIS
- 1996 CONTOURS (ELEVATION APPROXIMATE)
- 2004 CONTOURS
- 2004 PIN-FLAGS
- AIRSTRIP LIGHTS
- TEMPORARY BENCHMARK AND CONTROL POINT

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metres

NOTE: 1996 CONTOURS ARE FOR ILLUSTRATIVE PURPOSES ONLY. ELEVATIONS ARE APPROXIMATE.

BOA ENGINEERING CONSULTANTS LTD. 										 2420 Woodbine Ave. Unit 203 Scarborough, Ontario M1S 1W1 Canada										Telephone: (416) 291-0600 Facsimile: (416) 291-0601 Cellular: (416) 291-0602									
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APPENDIX A

GEOPHYSICAL SURVEY PROCEDURES

GEOPHYSICAL SURVEY PROCEDURES

A.1 Background

The objective of the geophysical program was to define the areal limits of known landfills, and to identify and delineate other locations with partially or completely buried debris in areas where suspicious activity has taken place. The geophysical data was recorded with complete spatial positioning information to enable both the results and coverage to be accurately documented for future reference. A number of geophysical techniques can be used including Magnetometer, Electromagnetic Induction tools, (EM31), Electromagnetic Transient (EM61) and Ground Penetrating Radar (GPR). All techniques have advantages and disadvantages and all techniques will be adversely affected by significant amounts of surface debris. Based on experience at other DEW Line sites a survey procedure using magnetometer systems was employed at CAM-F. This choice was driven by three considerations:

1. It provided the most cost effective solution in terms of maximising the area surveyed within the field time constraints.
2. The data collected permitted an analysis of the data in the field and easy field confirmation of the results.
3. Based on experience at many DEW Line sites, all debris areas and landfills contain a proportion of ferrous material and therefore can be mapped successfully using magnetometers. The issue of surface debris was addressed by noting the distribution and magnitude of debris and compensating for its presence when interpreting the measured results.

A.2 Magnetic Survey Procedure

For the CAM-F DEW Line site, EBA used a two magnetometer systems with a realtime differential GPS positioning system to achieve the above objectives.

A Geometrics G-858 portable cesium magnetometer/gradiometer magnetic system (G-858) was used to map the aerial extent of the landfills and partially or completely covered debris areas. A Geometrics G-856 proton precession magnetometer was used to record diurnal variations in the background magnetic field strengths for total magnetic field strength corrections.

The G-858 is a single-person portable system that was used to measure total magnetic field strengths at two sensor locations on a continuous basis as a survey area was walked. Variations in the total magnetic field (anomalies) are typically indicative of buried metallic (ferrous) debris. The two sensors are vertically separated by approximately 1 m, and magnetic readings are taken at both sensors and compared. The difference between the two readings provides the magnetic gradient, which is proportional to the quantity, distance and orientation of the neighbouring ferrous metal. All magnetic data is collected with an integrated DGPS positioning system. Data is usually collected along parallel profile lines to ensure consistent areal coverage, but in situations where access is restricted, or in a more general reconnaissance mode, a randomly oriented line approach may be appropriate. GPS positioning data is collected and logged at the same time as the geophysical data and is differentially corrected in real time using a RTCM differential correction string obtained from an MSAT based satellite link. The position of the magnetic sensor is logged to submetre accuracies (x,y) once every second during data collection. By integrating the magnetic data collected with a sub-metre real time DGPS positioning system, it is possible to cover large areas quickly and provide detailed grids over anomalies determining their shape and distribution in the field immediately after data collection. This data is then used to mark the boundaries of any buried material for consideration in the environmental sampling program.

A.3 Geophysical Survey Methodology

The survey methodology consisted of several steps.

1. All known areas of concern were surveyed using the G-858 with line spacing of approximately 5 meters.
2. Areas where there was no possibility of buried debris (outcrop rock, undisturbed soil) were generally not surveyed. There were three exceptions to this and they were:
 - a) Areas where it was important to document a “clean” zone surrounding landfill or debris areas for planning purposes.
 - b) Areas where it was important to document that there was minimal debris (potential borrow locations for example).
 - c) Areas where there was enough scattered surface debris over a large enough area to make mapping the location of the surficial debris using the magnetometer useful.

3. Magnetic base station data was collected using the G-856 at a nearby 'clean' area to allow the total magnetic field strength readings to be diurnally corrected.
4. The G-858 was used to walk the disturbed areas on site in reconnaissance mode to identify if there are further buried debris piles in areas showing surface disturbance. Any such areas found were surveyed in detail to define the extent of any buried material.
5. All geophysical data collected included integrated, real-time differentially corrected GPS positions with a sub-metre accuracy (x,y) to allow the location and contouring of the data in the field for evaluation and documentation.
6. The perimeter of any buried landfills and buried debris piles were marked using pin flags to facilitate environmental sampling.

A.4 Geophysical Data Presentation

The magnetometer data was processed and plotted as a colour contour map with UTM coordinates. Site plan information is integrated as a layer on the drawing.

On the colour contour map, anomalies appear as areas of high magnetic gradients either red (positive) or blue (negative), on a yellow background of limited or no response. There is no significance to whether the anomaly is red or blue. The red/blue colours simply represent the positive/negative gradient. Locations with high magnetic gradients will correspond to locations with ferrous debris and therefore the landfill or debris pile. The extent and intensity of the total magnetic field readings usually indicates whether one is looking at a small highly magnetic surface object or conversely a more massive, deeply buried object.

Interpreting the data is done by grouping the magnetic gradient anomalies (red or blue areas) into anomaly areas. Anomaly areas are groupings of individual magnetic responses that may be related based on knowledge of site conditions (buried concrete rubble with rebar, water wellhead, barbed wire fence), similarities in total field data, or by reviewing the final colour plots. These anomaly groupings are then compared against the total magnetic field readings for those locations in order to gauge their potential significance (quantity of ferrous material).

A.5 Magnetic Theory

The theory behind magnetic or gradiometer data at its simplest level involves taking a point measurement of the earth's total magnetic field strength at a specific location at an instant in time. The earth is surrounded by a magnetic field generated by the interaction of the molten core, convection currents within the core, and the earth's rotation. The field strength varies with time (diurnal variations). These variations are primarily caused by changes in the convection currents and the influence of solar activity, which is highest during periods of intense solar flaring (sunspot activity) and conversely lowest level when the sun is quiet. Usually, these variations are less than a few hundred gammas (nanoTesla, nT) in magnitude, but they are more pronounced at more northerly and southerly latitudes. Variations due to location on the earth's surface are solely a function of relative position with respect to the earth's magnetic poles. As the magnetic poles drift, so do the location readings. The earth's magnetic field varies by approximately 35,000 gammas from the magnetic poles to the equator.

Magnetic data is useful in locating objects such as buried steel and other ferrous objects since the earth's background magnetic field is distorted by the presence of magnetized rocks, soils and ferrous (iron) objects. This is because these objects also possess an induced field in the presence of the background field and the background and induced fields will combine to produce a resultant total field strength that is a summation of the two magnetic field vectors. Objects can be detected by subtracting the earth's background magnetic field from field data and contouring the remainder. In general, the effect from natural materials such as rocks and soils is small over small areas and is usually less than 1 gamma/m. Concentrated ferrous debris; however, can cause magnetic field distortions of up to 30,000 gammas/m.

A gradiometer differs from a magnetometer only in that two readings of the total magnetic field strength are taken at a specific location and time. The two readings are taken at slightly different positions; therefore, the difference between the two readings is a reflection of the magnetic gradient at that location. This reading is sensitive to near surface ferrous objects and gradient anomalies can, therefore, be interpreted as an indicator of potential targets. This difference is plotted as contours on a grid system and provides a visual representation of the location and distribution of magnetic gradient anomalies.

The G856 proton precession magnetometer takes advantage of the fact that molecules of hydrocarbon fluids behave as small magnets (dipoles) and; therefore, will align or polarize themselves with the lines of magnetic flux when exposed to a uniform magnetic field. In the

sensor head this is achieved in a controlled fashion by means of an energized electric coil. When the uniform magnetic field is removed, the molecules will rotate (precess) from their polarized orientation in a circular fashion around the direction of the ambient or local magnetic field lines (similar to the way a spinning top will wobble in a circular fashion in the presence of a gravitation field). The rate at which this precession occurs is proportional to the intensity of the ambient field. By measuring the rate (frequency) of precession and applying a well known atomic constant (the gyromagnetic ratio of the proton), one can calculate the total magnetic field strength at a specific point in time.

By using this technique to measure total magnetic field strength, measurements can be made utilizing an instrument with no moving parts to an accuracy of 0.1 nT (gammas). The disadvantage of this method is that adequate time has to be allowed for the sensor system to energize (polarize the molecules) and then relax the field and take the reading. This requires a minimum reading rate of no faster than one reading every three seconds. As the sensor has to be stationary during this period it is difficult to collect data at a high enough rate for real-time evaluation of the data. In addition, the system stability and accuracy degrades in the presence of high magnetic gradients and background noise. If correctly tuned and setup; however, proton precession magnetometers are ideal for monitoring background magnetic readings at a static location.

A G858 cesium vapour magnetometer offers several advantages over the more traditional proton precession or flux-gate magnetometers, particularly for collecting field readings over large survey areas. These advantages include more stable readings in high field gradients, increased resolution (0.01 nT), and high sampling rates. This means that it is possible to use these devices as “real-time” detectors when seeking magnetic anomalies and it also allows data to be collected rapidly with high horizontal data resolutions while walking a site without having to stop at each reading location.

The theory behind how cesium vapour magnetometers work is based on quantum physics. Briefly, the sensor head measures the total magnetic field at a point in space at a reading interval of up to 10 times a second. It does this by shining circularly polarized light through a glass chamber (called an absorption cell) containing a small amount of cesium vapour in a partial vacuum. Cesium vapour is used because it only has one electron present in the atom’s outermost electron shell and this simplifies the excitation effect being measured. This electron can exist in nine different energy states in the presence of an external magnetic field. This effect is called Zeeman splitting. The energy differences from one Zeeman level to the next are approximately

equal and are proportional to the strength of the ambient external magnetic field. By shining circularly polarized light generated by a cesium lamp through the absorption cell and measuring the Larmor frequency of an injected RF signal (called the H1 drive) required to reset photons within the absorption cell (so that they can absorb that light), one can measure their changes in energy and hence the ambient magnetic field strength. The constant of proportionality between the Larmor frequency and the ambient magnetic field strength is 3.498572 Hz/nT. This value is valid for the full range of typically encountered magnetic field values (20K nT to 90K nT).

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APPENDIX B

TESTPIT LOGS

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

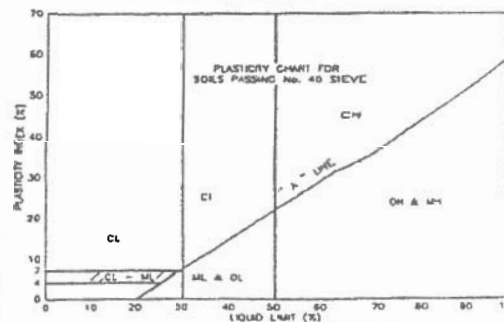
MAJOR DIVISION		GROUP SYMBOL	GRAPH SYMBOL	COLOR CODE	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 200 SIEVE)	GRAVELS MORE THAN HALF COARSE GRAINS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	RED	WELL GRADED GRAVELS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 4$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$
		GP		RED	POORLY GRADED GRAVELS, AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12 %
		GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I. MORE THAN 7
	SANDS MORE THAN HALF FINE GRAINS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	SW	RED	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 6$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$
		SP		RED	POORLY GRADED SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12 %
		SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I. MORE THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES 200 SIEVE)	SILTS BELOW "A" LINE NEGLECTIBLE ORGANIC CONTENT	$w_L < 50\%$	ML	GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)
		$w_L \geq 50\%$	MH	BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMEACEOUS, FINE SANDY OR SILTY SOILS	
	CLAYS ABOVE "A" LINE ON PLASTICITY CHART NEGLECTIBLE ORGANIC CONTENT	$w_L < 30\%$	CL	GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS	
		$30\% < w_L < 50\%$	CI	GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	
		$w_L > 50\%$	CH	BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC SILTS & CLAYS BELOW "A" LINE ON PLASTICITY CHART	$w_L < 50\%$	OL	GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G. SF IF A MIXTURE OF SAND WITH SILT OR CLAY
		$w_L > 50\%$	OH	BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	
	HIGHLY ORGANIC SOILS		PI	ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR DOOR, AND OFTEN FIBROUS TEXTURE

SPECIAL SYMBOLS			
LIMESTONE		OILSAND	
SANDSTONE		SHALE	
SILTSTONE		FILL (UNDIFFERENTIATED)	
SOIL COMPONENTS			
FRACTION	U.S. STANDARD SIEVE SIZE	DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
GRAVEL	PASSING	PERCENT	DESCRIPTOR
	RETAINED		
COARSE	75mm	50-35	'AND'
FINE	19mm	4.75mm	
SAND	4.75mm	35-20	'Y' OR 'LY'
	2.00mm	20-10	'SOME'
	425um	10-1	'TRACE'
SILT (NON PLASTIC)	75um		
CLAY (PLASTIC)	2um		

PLASTICITY CHART FOR SOILS PASSING NO. 40 SIEVE

1. ALL SIEVE SIZES MENTIONED ON THIS CHART ARE U.S. STANDARD A.S.T.M. E.11
 2. BOUNDARY CLASSIFICATIONS POSSESSING CHARACTERISTICS OF TWO GROUPS ARE GIVEN COMBINED GROUP SYMBOLS, E.G. CW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH CLAY BINDER BETWEEN 5 % AND 12 %

OVERSIZED MATERIAL		
ROUNDED OR SURROUNDED	NOT ROUNDED	
COBBLES 75mm TO 200mm	ROCK FRAGMENTS > 75mm	
BOULDERS > 200mm	ROCKS > 0.75 CUBIC METRE IN VOLUME	



1. ALL SIEVE SIZES MENTIONED ON THIS CHART ARE U.S. STANDARD A.S.T.M. E.11
2. BOUNDARY CLASSIFICATIONS POSSESSING CHARACTERISTICS OF TWO GROUPS ARE GIVEN COMBINED GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH CLAY BINDER BETWEEN 5 % AND 12 %

GROUND ICE DESCRIPTION

ICE NOT VISIBLE

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION	
N:	NI	Poorly-bonded or friable	
	NbN	Nb: smooth ice, well-bonded	
	Nbn	Excels: ice, well-bonded	

NOTE:

1. Dark symbols are used to indicate boundaries or other ice characteristics.
2. Visual estimates of ice contents indicated on borehole logs ± 5%.
3. This system of ground ice description has been modified from HRC Technical Memo 75, Guide to the Field Description of Permafrost for Engineering Purposes.

LEGEND

Soil Ice

VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION	
V	Vx	Individual ice crystals or inclusions	
	Vo	Ice coatings on particles	
	Vr	Random or irregularly oriented ice formations	
	Vs	Stratified or distinctly oriented ice formations	

VISIBLE ICE GREATER THAN 50% BY VOLUME

ICE	ICE + Soil Type	
ICE	Ice without soil inclusions (greater than 25 mm (1 in.) thick)	
	Ice with soil inclusions	

**CAM-F (SARCPA LAKE) DEW LINE SITE
2004 SITE INVESTIGATION
TESTPIT LOGS**

Testpit	Depth (m)	Description
TP-04-01	0.0	<u>Airstrip (northwest end, south crest)</u> GRAVEL and SAND – trace silt, some cobbles, occasional boulders, medium to coarse grained sand, maximum aggregate size 300 mm, sub-angular to rounded, damp, brown (Sample at 0.0 – 0.6, Sieve - Gravel = 53%, Sand = 44%, Silt/Clay = 3% M.C. = 4.7%)
	0.6	GRAVEL AND SAND (TILL) – some silt to silty, some clay, trace to some cobbles, subangular to rounded, wet, grey
	0.6	Water seepage (Sample at 0.8 – 1.0, M.C. = 11.7%)
	1.2	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-02	0.0	<u>Airstrip (middle, south crest)</u> GRAVEL and SAND – trace silt, some cobbles, occasional boulders, well graded, maximum aggregate size 450 mm, sub-angular to rounded, damp, brown
	0.6	SAND (TILL) – silty, gravelly, trace clay, trace to some cobbles, subangular to rounded, grey
	1.2	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-03	0.0	<u>Airstrip (southeast end, south crest)</u> SAND (TILL) – silty, gravelly, trace clay, trace to some cobbles, occasional boulder, subangular to rounded, maximum aggregate size 450 mm, damp, grey (Sample at 0.0 – 0.5, Sieve - Gravel = 25%, Sand = 39%, Silt = 26%, Clay = 10%, M.C. = 8.6%)
	1.1	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-04	0.0	<u>Borrow Area 2 (east portion, south road edge)</u> ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, gravelly, trace to some clay, trace to some cobbles, occasional boulders, subangular to rounded, maximum aggregate size 450 mm, wet, grey (Sample at 0.3 – 0.5, M.C. = 9.0%)
	1.0	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-05	0.0	<u>Borrow Area 2 (east portion, south road edge)</u> ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, gravelly, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, wet, grey (Sample at 0.3 – 0.4, M.C. = 9.4%)
	1.1	END OF TESTPIT – REFUSAL ON PERMAFROST

Testpit	Depth (m)	Description
TP-04-06		<u>West Access Road (north road edge)</u>
	0.0	ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, trace to some clay, trace cobbles, subangular to rounded, damp, grey
	1.0	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-07		<u>West Access Road (north road edge)</u>
	0.0	ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, occasional boulders, subangular to rounded, maximum aggregate size 300 mm, damp, grey (Sample at 0.8 – 0.9)
	1.1	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-08		<u>Borrow Area 4 (west portion, south road edge)</u>
	0.0	ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 400 mm, damp, grey (Sample at 0.3 – 0.4, M.C. = 7.5%) (Sample at 0.9 – 1.0, M.C. = 7.3%)
	1.2	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-09		<u>Borrow Area 4 (west portion, south road edge)</u>
	0.0	ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 300 mm, moist to damp, grey (Sample at 0.4 – 0.5, M.C. = 6.6%) (Sample at 0.9 – 1.0, M.C. = 7.6%)
	1.1	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-10		<u>Borrow Area 4 (centre portion, south road edge)</u>
	0.0	ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, some clay, trace to some cobbles, subangular to rounded, maximum aggregate size 250 mm, damp, grey
	1.0	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-11		<u>Borrow Area 4 (centre portion, south road edge)</u>
	0.0	SAND (TILL) – silty, gravelly, trace to some clay, trace cobbles, trace boulders, subangular to rounded, maximum aggregate size 450 mm, damp, grey (Sample at 0.5 – 0.6, M.C. = 8.2%)
	1.1	END OF TESTPIT – REFUSAL ON BOULDER

Testpit	Depth (m)	Description
TP-04-12	0.0	<u>Borrow Area 4 (east portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 300 mm, damp, grey
	1.2	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-13	0.0	<u>Borrow Area 4 (east portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, damp to wet, grey
	1.1	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-14	0.0	<u>Borrow Area 4 (centre portion, south road edge)</u> ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, gravelly, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 400 mm, moist, grey
	1.2	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-15	0.0	<u>Borrow Area 5 (west portion, south road edge)</u> ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 500 mm, damp to wet, grey (Sample at 0.5 – 0.6, M.C. = 8.4%)
	1.25	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-16	0.0	<u>Borrow Area 5 (centre portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, subangular to rounded, damp, grey (Sample at 0.6 – 0.7, M.C. = 8.1%)
	1.2	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-17	0.0	<u>Borrow Area 5 (centre portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 400 mm, damp, grey
	0.6	END OF TESTPIT – REFUSAL ON BOULDER
TP-04-18	0.0	<u>Borrow Area 5 (centre portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 250 mm, damp, grey (Sample at 0.4 – 0.8, M.C. = 7.4%)
	1.0	END OF TESTPIT – REFUSAL ON PERMAFROST

Testpit	Depth (m)	Description
TP-04-19	0.0	<u>Borrow Area 5 (east portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, trace boulders, subangular to rounded, maximum aggregate size 300 mm, damp, grey
	1.25	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-20	0.0	<u>Borrow Area 5 (east portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, trace to some cobbles, subangular to rounded, damp, grey (Sample at 0.5 – 0.6, M.C. = 8.7%)
	1.0	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-21	0.0	<u>Borrow Area 2 (west portion, offset from south road edge)</u> ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, trace to some clay, some cobbles, occasional boulders, subangular to rounded, damp to wet, grey
	0.4	Moisture content increases with depth
	1.0	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-22	0.0	<u>Borrow Area 2 (east portion, offset from south road edge)</u> ORGANICS – rootlets
	0.05	GRAVEL AND SAND (TILL) – silty, trace clay, some cobbles, occasional boulders, subangular to rounded, damp to wet, grey
	1.1	END OF TESTPIT – REFUSAL ON BOULDER
TP-04-23	0.0	<u>Borrow Area 2 (east portion, offset from south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, some cobbles, occasional boulders, subangular to rounded, maximum aggregate size 250 mm, damp to wet, grey
	1.0	END OF TESTPIT – REFUSAL ON BOULDER
TP-04-24	0.0	<u>Borrow Area 2 (centre portion, offset from south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, some cobbles, occasional boulders, subangular to rounded, damp, grey
	1.1	END OF TESTPIT – REFUSAL ON BOULDER
TP-04-25	0.0	<u>Borrow Area 2 (west portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, some cobbles, trace boulders, subangular to rounded, maximum aggregate size 300 mm, damp, grey
	1.1	END OF TESTPIT – REFUSAL ON PERMAFROST
TP-04-26	0.0	<u>Borrow Area 2 (west portion, south road edge)</u> GRAVEL AND SAND (TILL) – silty, trace to some clay, some cobbles, trace boulders, subangular to rounded, maximum aggregate size 250 mm, damp, grey
	1.15	END OF TESTPIT – REFUSAL ON PERMAFROST