MAR 20060018: BUFFALO HILLS

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Alberta Mineral Assessment Reporting System

ASSESSMENT REPORT, "PART B" & "PART C"
for the:
Buffalo Hills Property (AB001)

ASSESSMENT REPORT
&
APPENDICES

report submitted to:
COAL AND MINERAL DEVELOPMENT BRANCH
Ministry of Energy
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prepared by:
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David Willis, Land Administrator

Andrew Berry, Project Manager

Document Date: September 22, 2006

Confidential Until: September 22, 2007

0.1 ABSTRACT

This report is being submitted to satisfy the ninth and tenth year assessment work requirements outlined in section 8(1) of the Metallic and Industrial Mineral Tenure Regulations. During the past two years Ashton Diamonds (Canada) Inc., EnCana Corporation and Pure Gold Minerals (Alberta) Inc. have incurred exploration expenditures totaling $1,017,611.02 with the intention of finding diamondiferous kimberlite pipes. All exploration activities took place within 81 contiguous Metallic and Industrial Mineral Permits (MIMPs) in the Buffalo Head Hills Region of Alberta. Collectively these 81 MIMPs are referred to as the Buffalo Hills Property. Work being submitted in this report include: two airborne geophysical surveys, six ground geophysical surveys, three diamond drill holes. No kimberlite discoveries were made during the term of this assessment period.

COMPANY:	Ashton Diamonds (Canada) Inc. 3869008 Canada Limited
MIMP:	Buffalo Hills Property: ◆ 9396060030, 9396060035, 9396060036 ◆ 9396060038 to 9396060044 ◆ 9396060046 ◆ 9396060048 to 9396060062 ◆ 9396060065 to 9396060069 ◆ 9396060073 to 9396060077 ◆ 9396060079 to 9396060085 ◆ 9396080086, 9396080090 ◆ 9305010852 ◆ 9305031074 to 9305031082 ◆ 9305031084 to 9305031108 Also 9397030018
Assessment Period:	October 1, 2004 to June 1, 2006
NTS:	84B10 to 84B15 84C09, 84C16 84F01, 84F08 84G02 to 84G06
Administrative Location:	Northwest Corporate Region Lesser Slave Corporate Area Lakeshore District
Geographic Region:	Buffalo Head Hills
Legal Location:	Township 88 to Township 95 Range 7 to Range 14 W5M

0.2 Table of Contents

0.3 List of Figures

0.4 List of Tables

0.5 LIST OF APPENDICES

1.0 INTRODUCTION

This report summarizes work done on the Buffalo Hills Property that is being applied to satisfy the ninth and tenth year assessment work requirements outlined in section 8(1) of the Metallic and Industrial Mineral Tenure Regulations. The report is divided into eight sections and two appendices. The report summarizes property geology and exploration work performed while the appendices are dedicated to exploration data.

2.0 PROPERTY DESCRIPTION & LOCATION

The Buffalo Hills Property consists of 81 contiguous Metallic and Industrial Mineral Permits (MIMPs) totaling 426,259.00 hectares (Figure 1). Collectively the permits form a square approximately seven townships east to west by seven townships north to south. MIMPs range in size from 192 hectares to 9216 hectares and can be described by the ATS system as occurring within townships 88 to 95 and ranges 7 to 14. The western boundary of the property is located approximately 89 kilometers northeast of Peace River and the southern boundary is located approximately 157 kilometers north of Slave Lake. The closest community to the property is Red Earth Creek located just outside the southeastern property boundary.

3.0 PHYSIOGRAPHY

The property is characterized by a striking change in relief from the Buffalo Head Hills on the western half of the property to the Loon River Lowlands on the eastern half. The Buffalo Head Hills have a maximum elevation of 820 metres above mean sea level and are covered by a northern boreal forest punctuated by streams and creeks draining into the Loon River Lowlands. The lowlands occur at an elevation of 487 metres above mean sea level and are marked by vast tracts of muskeg. Seismic lines, access roads and clear cuts are common features throughout the property.

4.0 PROPERTY GEOLOGY

Base geological data for the property area is summarized in the following four subsections.

4.1 Surficial Geology

The most recent glacial deposition occurred during the Wisconsin retreat of the Laurentian ice sheet. Two distinct deposit types dominate the property. The first, a fine-grained glaciolacustrine sediment of silt and clay dominates the eastern half of the property while the second, a glacial till blanket, dominates the western half (Figure 2). Drift thickness varies considerably across the property (Figure 3). In general the thickest depositional sequences (>150 meters) correspond with the glaciolacustrine sediment on the eastern half of the property. The western half is much more variable with drift ranging between 15 and 150 meters. The recorded ice flow directions vary throughout the properties (Figure 2). In general, regional ice flow movement was to the southwest and southeast, however evidence of local movement to the south and west has been noted.

4.2 Bedrock Geology

Three Cretaceous sedimentary formations underlie the property (Figure 4): Upper Cretaceous Smokey Group, Upper Cretaceous Dunvegan Formation and Middle Cretaceous Shaftsebury Formation. The Smokey Group forms the top of the Buffalo Head Hills. Interpreted as a marine foredeep, the Smokey Group is a dark grey shale that is sideritic to calcareous in composition. Underlying the Smokey Group is the older Dunvegan Formation, which is a marine unit of conglomerate, sandstone, siltstone, and shale that is locally expressed in the geology. The oldest unit, the Shaftsebury Formation, underlies the central and the northwestern portions of the property group. Interpreted as a foredeep clastic wedge, it is both marine and non-marine in origin, consisting of deltaic fine-grained quartzose sandstone, a dark gray fossiliferous silty shale and laminated siltstone.

4.3 Basement and Structural Geology

The property is situated on the Early Proterozoic Buffalo Head Terrain. The Peace River Arch is a structural feature trending NE across the southern half of the property. The Arch, characterized by uplift and subsidence, was active in the Late Proterozoic to the Late Cretaceous (Figure 5).

4.4 Kimberlite Potential

Kimberlites tend to occur in groups referred to as kimberlite fields. Ashton Mining has discovered 38 kimberlites within an 80 kilometre radius of the property centre (Figure 6).

5.0 EXPLORATION WORK

The following sections describe exploration work that is being applied to satisfy the assessment filing requirements on the Buffalo Hills Property. All exploration expenditures are outlined in Part "A" of the report along with a notarized statement of expenditure, a permit maintenance map, a permit maintenance table and notice of designation forms

5.1 Airborne Gravity Survey

Technical advances with airborne gravity sensors have only recently broken the theoretical sensitivity thresholds of kimberlite detection. In early 2004, the joint venture agreed to test an airborne gravity survey on the Buffalo Hills property if a system became available before year-end. Contemplated was an 1,100 line kilometre survey to be flown within a 10,000-hectare block. The proposed block was centered over the core area of the Buffalo Hills Kimberlite cluster. The area envisioned encompasses nine kimberlites, stretching from K5 in the south to K91 in the north, and includes the significantly diamondiferous K252 and K14 bodies. A map showing the survey area is included as Appendix "A".

Bell Geospace, an airborne gravity surveyor headquartered in Texas, notified Ashton that their Full Tensor Gradiometer (FTG) system was available in October. The proposed gravity survey was expected to take two weeks to complete. With a field crew based out of the serviced airstrip in Peace River, the survey commenced in late October 2004. Due to weather, primarily turbulence from high winds over the Buffalo Head Hills themselves and to a lesser extent, equipment failure, the survey lasted over a month. A second, smaller survey was also flown 40 kilometres north of the main block. This survey covered a large TEM target designated BH319. In all, Bell flew approximately 1,300 line kilometres of FTG survey data, 1,200 line kilometres over the Buffalo Hills core area at 100-metre line spacing and 100 line kilometres on BH319 at 500 metres line spacing.

A report dated January 2005 from Bell Geospace titled "Final Report, Acquisition and Processing, Air-FTG Survey, Buffalo Head Hills, Alberta, Canada" is included in Appendix "A".

5.2 Ground Geophysics

In January 2005, MEG Systems out of Calgary was contracted to perform ground gravity surveying over selected targets. The primary objective was to perform ground gravity verification of previous TDEM targets and recent airborne air-FTG gravity gradient anomalies. A four person field crew was based out of the Red Earth Inn in the town of Red Earth Creek. Access to the targets was facilitated by an MD 500D helicopter contracted from Great Slave Helicopters. The program began on January 20 and was completed by February 28. The program was negatively influenced by unseasonably warm and inclement weather but was completed within budget.

Equipment utilized included a Lacoste & Romberg Model "G" gravity meter and an electrostatic chain level for survey elevations. Positioning was provided by handheld GPS and station elevations were surveyed using an electronic chain level from GDD Instruments. Elevations are not absolute but relative to a base value chosen at each target. Survey lines were not cut. Survey coordinates are in NAD27 Canada Mean Zone 11N. Gravity data are in milligals (mgals) and are corrected for all standard gravity corrections. Bouguer gravity values are calculated using densities in the range of 2.0 to 2.2 g/cc. For instrument drift calculations a base point was used on each surveyed target for completing survey loops. All data was checked for quality control in the field by MEG personnel and remotely by Ashton

Stations were marked and labelled with flagging every 50 metres. The data was processed to partial Bouguer gravity with terrain corrections where required (inner zones B & C terrain corrections as defined in the Hammer method). All recorded and processed data was delivered to Ashton Geophysist T. Ballantyne via email daily. Data was provided in Excel spreadsheets along with the original data processing formats.

The ground gravity program investigated six targets with a total of 32 line kilometres of survey data. Targets BH313, BH328 and BH319 were selected from a 2003 GEOTEM airborne survey and subsequently followed up with a ground TDEM survey. The ground gravity survey over these three targets utilized the existing TDEM 100 metre spaced grid. Targets BH330, BH331 and BH333 were selected from the Bell airborne FTG survey. Each target was surveyed with two orthogonal lines. Table 1 summarizes the ground gravity surveys.

Table 1. 2005 Ground Gravity Survey Summary

Anomaly	Datum	Zone	Easting	Northing	Line Km	Complete
BH313	NAD27	11	556,750	6,342,000	8.4	29-Jan-05
BH319	NAD27	11	602,115	6,344,580	8.2	16-Feb-05
BH328	NAD27	11	558,190	6,316,070	8.25	02-Sep-05
BH330	NAD27	11	583,000	6,309,100	2.4	21-Feb-05
BH331	NAD27	11	584,650	6,312,750	2.4	24-Feb-05
BH333	NAD27	11	579,345	6,314,135	2.4	28-Mar-05
				Total:	32.05	

Of the airborne gravity anomalies interpreted from the Bell Geospace FTG survey, only BH330 had a response that could be reproduced by the ground gravity surveying. The amplitude of the ground response however is below the detection limit of the airborne gravity sensors and the ground gravity response is therefore more reasonably deemed a coincidence. The lack of correlation between the ground gravity data and the airborne gravity data has suggested the requirement for more sophisticated post processing techniques on the Bell Geospace airborne FTG gradiometer data before it can be used to pick anomalies with confidence.

Appendix "B" contains a survey location map and geophysical plots for each survey.

5.3 Drilling

In May 2005, Ashton staff conducted ground investigated of the three coincident TDEM / Ground Gravity targets to assess their amenability for drill testing in September. All targets were covered by dry land and were accessible using a heli-portable drill rig. In addition, all three sites had proximal water sources to support drilling operations. In late August, Ashton representative Dave Willis and a cutting crew from Loon River Construction timbered 50 metre by 50 metre clearings at each drill site to provide space for a drill setup and helicopter landing area. Mature forest with large trees at all drill sites dictated a longer than anticipated site preparation schedule.

In preparation for the drill program, arrangements were made for Ashton staff and contracted drillers to attend an H2S Alive course before commencement to familiarize themselves with the hazards of drilling in producing gas fields. Standard Safety in Edmonton provided gas detection/response equipment for the drilling program and trained staff and contractors in the operation of this equipment.

The drilling crew mobilized to Red Earth from Edmonton on September 9. Drilling on the first target, BH313, began on September 13.

Table 2. 2005 Drill Hole Summary

Hole #	Easting	Northing	Inclination	Azimuth	O/B Depth (m)	EOH (m)
BH313-01	556,639	6,342,127	-90	n/a	113.6	178.0
BH328-01	558,148	6,315,954	-90	n/a	79.7	162.8
BH319-01	602,500	6,344,270	-90	n/a	76.7	120.1
					Total:	460.9 m

Drilling was completed by October 2. All three coincident TDEM / Gravity targets were drill tested (see Table 2. 2005 Drill Hole Summary). No kimberlite was intersected. A total of 460.85 metres of NQ2 drilling was undertaken. Overburden depths ranged from 76 to 113 metres. The drilling results suggest that geophysical variations in deep overburden can mimic shallow, kimberlite-like EM and gravity responses.

Cored overburden samples weighing 10 to 20 kilograms were collected from the bedrock interface from each of the three drill holes. These samples were shipped to Ashton's North Vancouver Laboratory facilities in October for indicator mineral analysis. Results are expected in the 2007 calendar year.

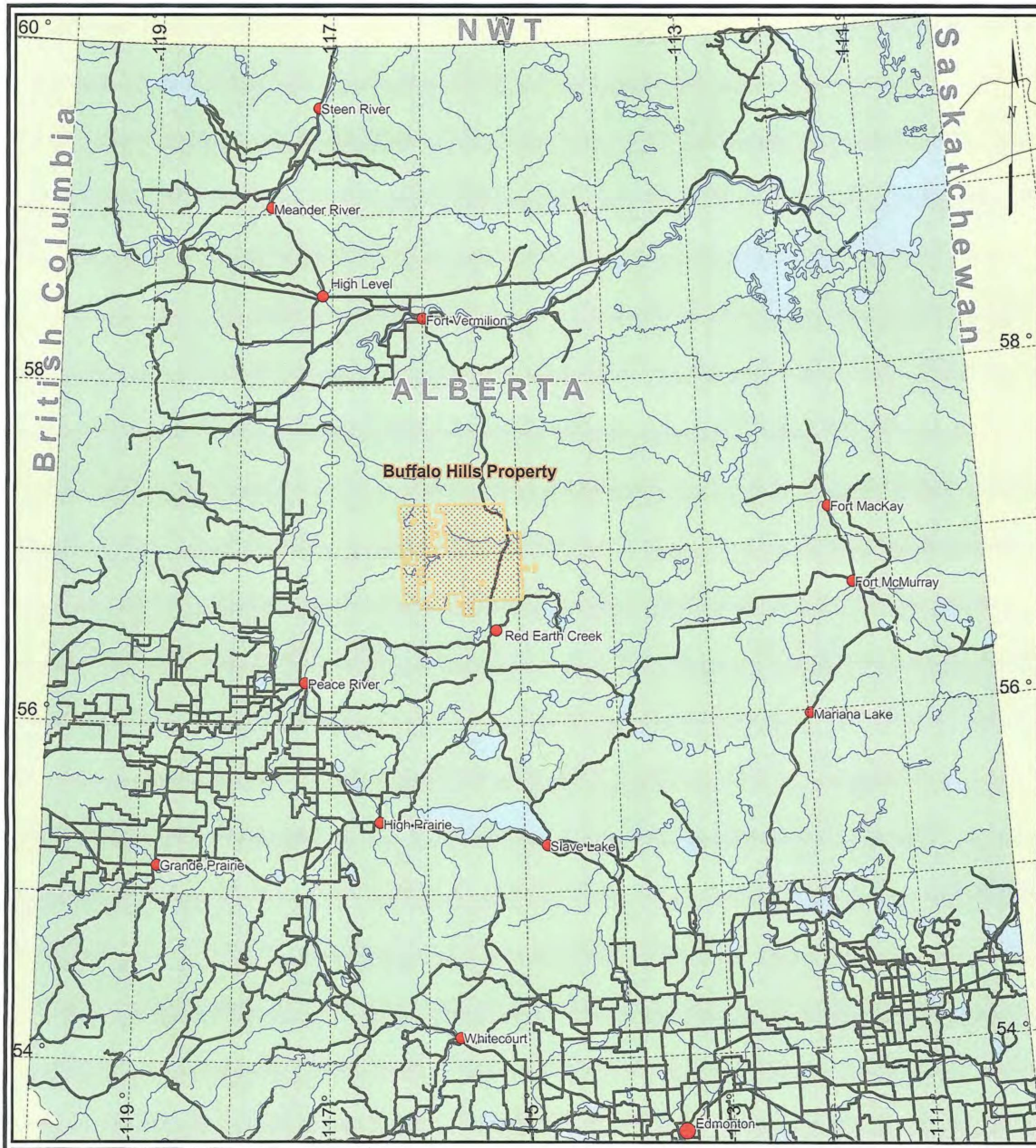
6.0 CONCLUSION

Airborne geophysical surveying complemented and corroborated by ground magnetic, electromagnetic and gravity surveys over anomalous features and followed by drill testing as warranted, is a proven exploration methodology for the successful discovery and delineation of kimberlitic intrusions in Alberta. To date, the techniques have resulted in the discovery of 38 kimberlite pipes on the Buffalo Hills property by the joint venture between Ashton Diamonds (Canada) Inc., EnCana Corporation and Pure Gold Minerals (Alberta) Inc., with Ashton as the operator. Several of these kimberlites have proven to be significantly diamondiferous although, thus far, a production scenario has not yet been realized.

This report has been submitted to satisfy the ninth and tenth year assessment work requirements outlined in section 8(1) of the Metallic and Industrial Mineral Tenure Regulations on 81 contiguous Metallic and Industrial Mineral Permits (MIMPs) in the Buffalo Head Hills Region of Alberta. Collectively these 81 MIMPs are referred to as the Buffalo Hills Property.

Exploration work conducted on the property during the two-year period includes an airborne Bell Geospace Full Tensor Gravity Gradiometer survey, ground gravity surveying over six individual targets and a diamond drilling program whereby three geophysical targets with characteristic consistent with kimberlite emplacement were tested. The joint venture incurred exploration expenditures totaling $1,017,611.02 in relation to this work. The work is sufficient to advance approximately 67,800 hectares in good standing through the next assessment period. There were no kimberlites discovered as a result of these programs.

As the region is host to several significantly diamondiferous kimberlites, some of these being relatively large and shallow, further geophysical work followed by drill testing remains warranted and is recommended.



50 0 50 100 150

Kilometres

Scale: 1:3,500,000

Legend

Ashton Property

Road

Ashton Diamonds (Canada) Inc.

AUG 28, 2006

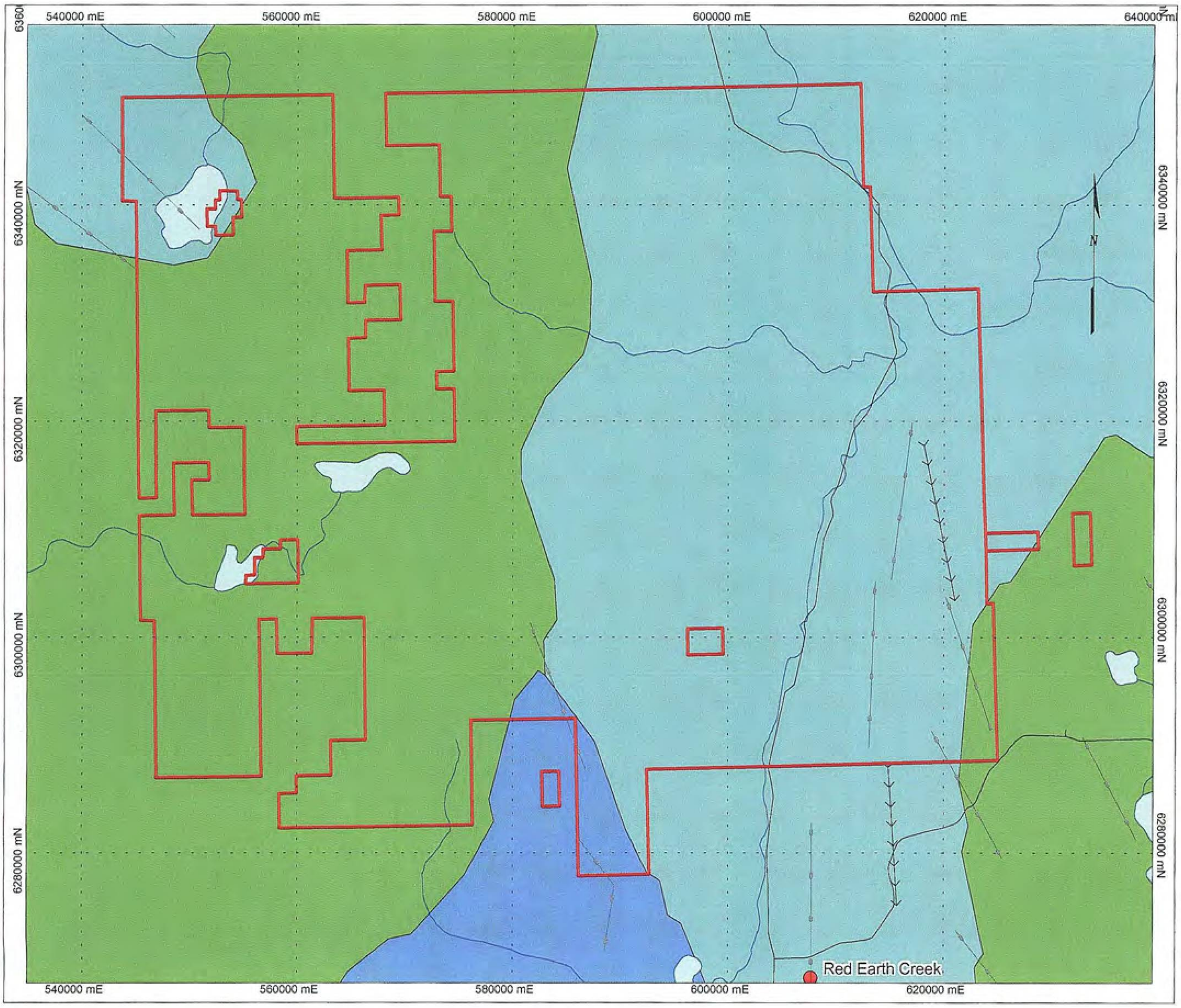
Author: SS,DW

Proj: UTM11 NAD27

FIGURE 1

Buffalo Hills Property Location Map Alberta

J:\6Maps\AB\Regional\Property Location\



Till Blanket

Fine Grained (Glacio) Lacustrine

Coarse Grained (Glacio) Lacustrine

Property Boundary

General Ice Flow (known)

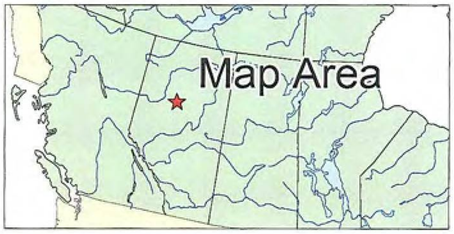
General Ice Flow (unknown)

12 0 12 24 36

Kilometers

Scale: 1:600,000

Citation:
R.J. Fulton 1996: Surficial Materials of Canada; Geological Survey of Canada, Map 1880A



Ashton Diamonds (Canada) Inc.

Aug. 28, 2006

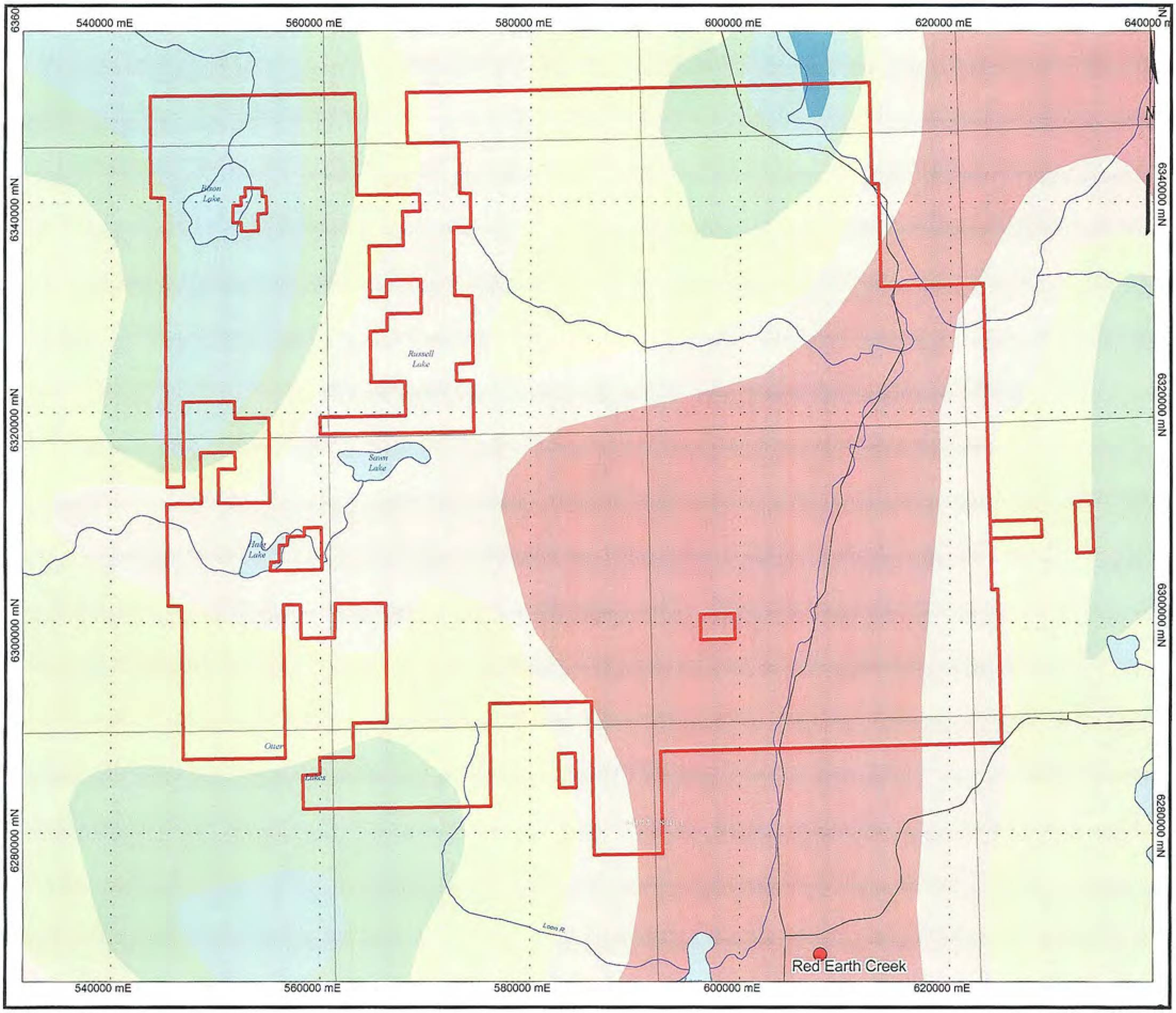
Author: DW

Office: Van

Proj: UTM12 NAD27

Figure 2

Buffalo Hills Property
Surficial Geology
Alberta



Legend

Drift Legend

- 0m
- 0 - 15m
- 15 - 45m
- 45 - 90m
- 90 - 150m
- > 150m

Ashton Property

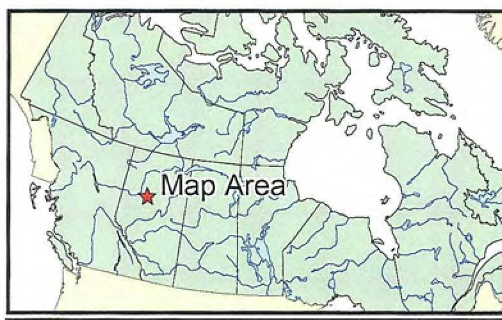
Road

Note: Interpreted drift thickness.
Modified from Pawlowicz & Fenton (1995)

0 12 24 36

Kilometers

Scale: 1:600,000



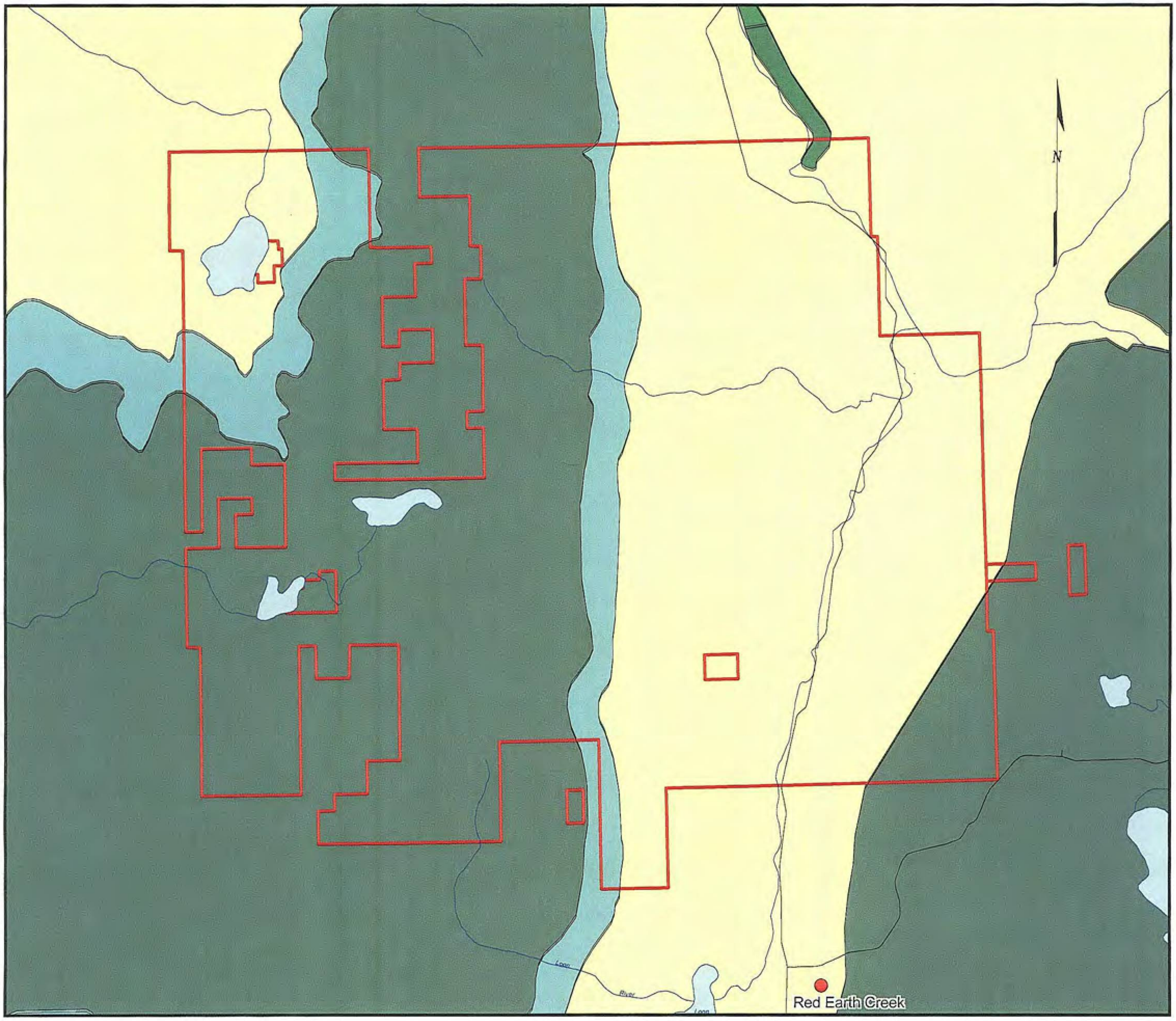
Ashton Diamonds (Canada) Inc.

Aug. 28, 2006
Author: SS, DW
Proj: UTM11 NAD27

FIGURE 3

Buffalo Hills Property
Drift Thickness
Alberta

J:\6Maps\AB\Property\Swampy Lake\Geology\



Smoky Group

Shaftesbury Formation

Dunvegan Formation

Property Boundary

Roads

Citation:
Hamilton W. N., Price M.C., Langenberg, W., Chao, D.K., 1998; Geological Map of Alberta, Alberta Energy and Utilities Board, Alberta Geological Survey, Map 236

10 0 10 20 30

Kilometers

Scale: 1:600,000

Ashton Diamonds (Canada) Inc.

Aug. 28, 2006

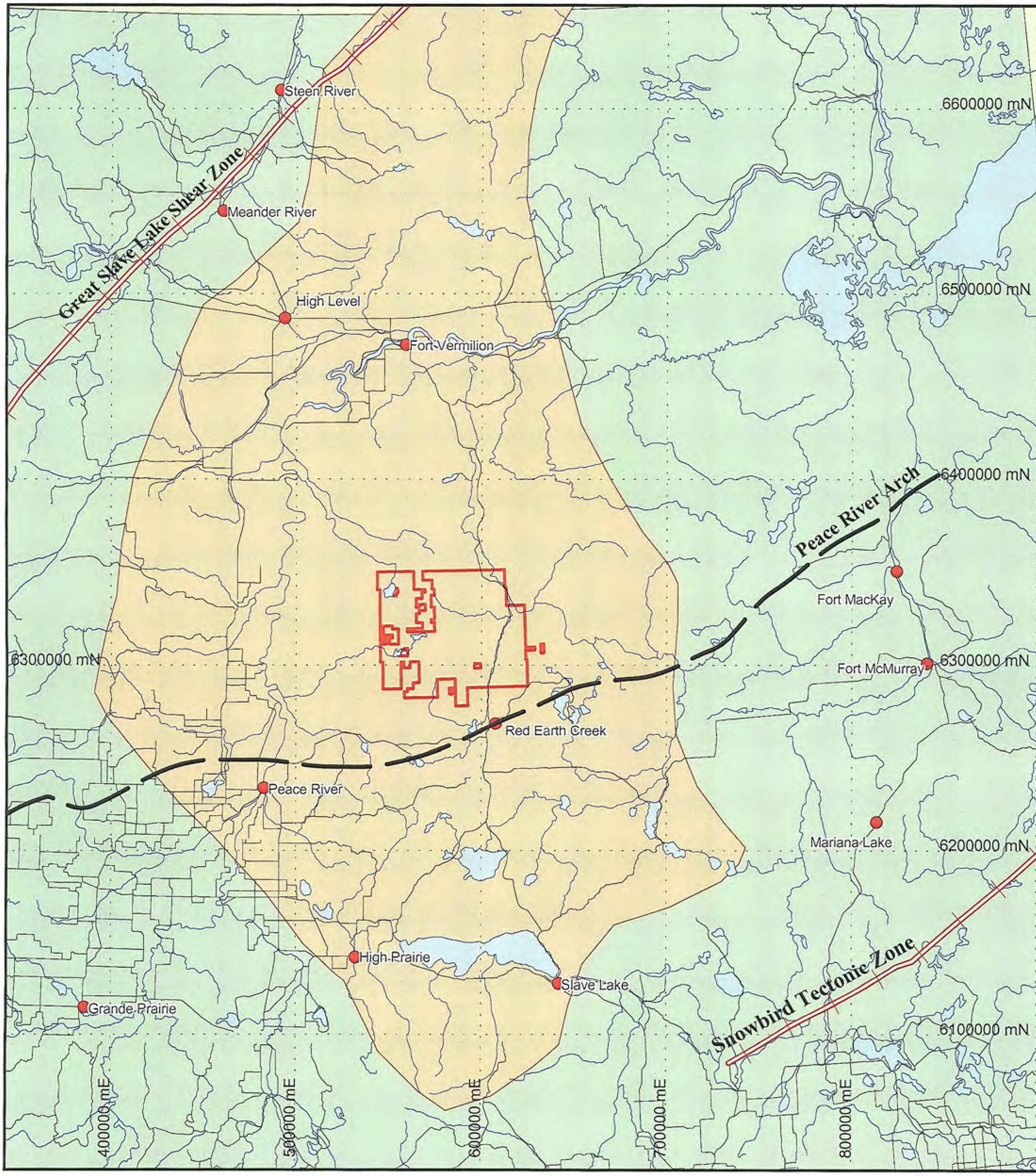
Author: DW

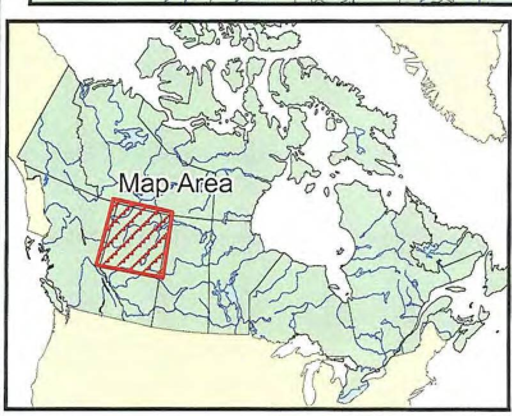
Office: Van

Proj: UTM12 NAD27

Figure 4

Buffalo Hills Property
Bedrock Geology
Alberta





50 0 50 100 150

Kilometres

Scale: 1:3,000,000

Legend

Ashton Property

Buffalo Head Terrane

Road

Ashton Diamonds (Canada) Inc.

Aug. 28, 2006

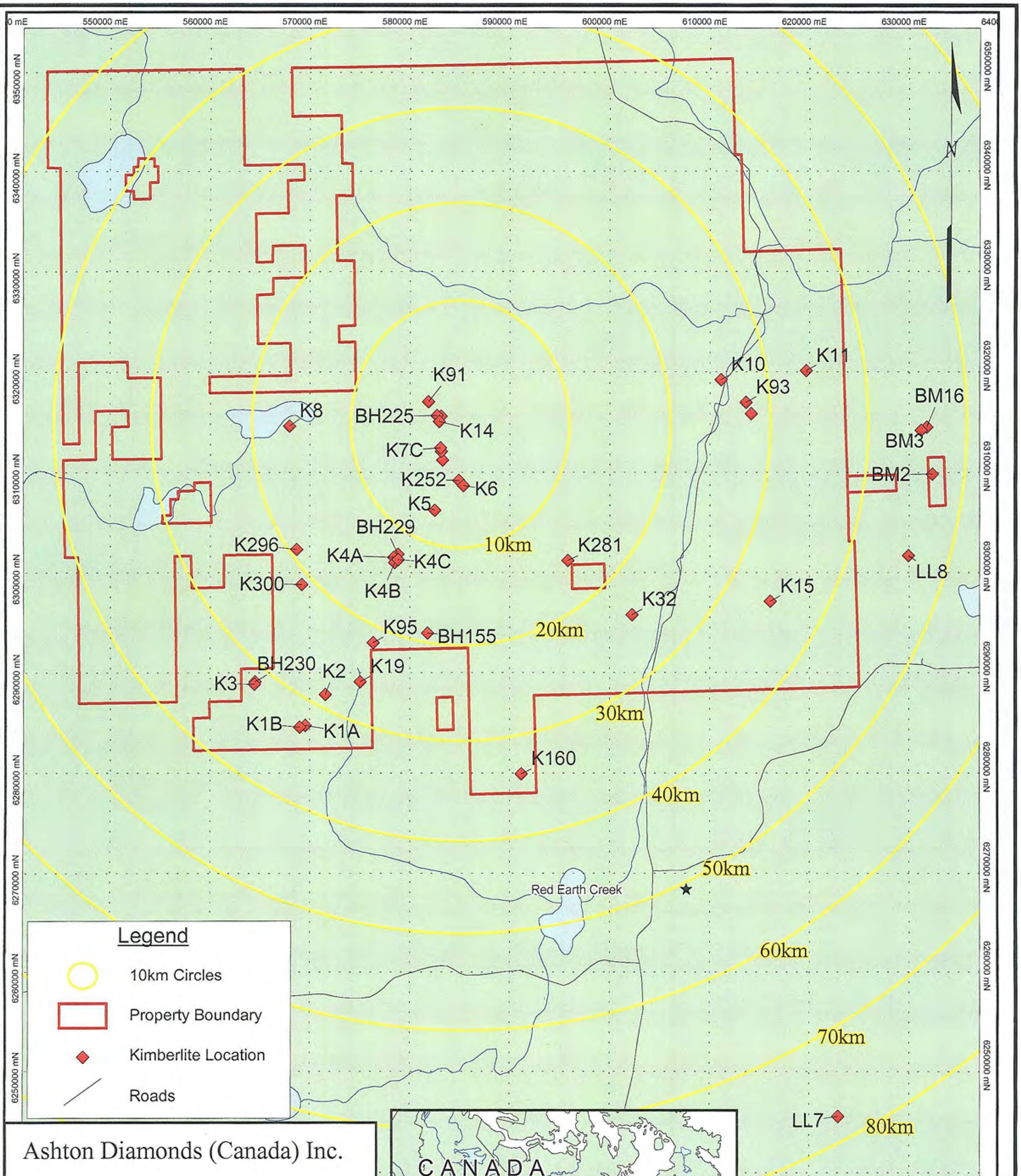
Author: SS, DW

Proj: UTM11 NAD27

FIGURE 5

Buffalo Hills Property Basement & Structural Geology Alberta

J:\6Maps\AB\Property\Swampy Lake\Geology\



Ashton Diamonds (Canada) Inc.

Figure 6

Buffalo Hills Property
Kimberlites on Property
Alberta

Aug. 28, 2006
Author: DW
Office: Van
Proj: UTM12 NAD27

X:\Property_files\Alberta\AL01_Buffalo_Hills\Assessment 2006\Figure 6 Kimberlite Potential

7.0 References

#	Date	Author	Title	Year
1	MIN20060013	Willis, D	Assessment Report for the Swampy Lake Property 2006	2006
2	MIN20040018	Ward J., Willis D.	Assessment Report for the Buffalo Hills Property 2004	2004
3	MIN20020010	Skelton D., Willis D	Assessment Report for the Buffalo Hills Property 2002	2002
4	MIN20010007	Skelton D., Willis D	Assessment Report for the Loon Lake, Birch Mountain, Rabbit Lake and Muddy River Properties	2001
5	MIN20000009	Skelton D., Bursey T	Assessment Report, Caribou Mountains (AL06) Property	2000
6	Min20000002	Skelton D., Bursey T	Assessment Report, Athabasca (AL07), Lesser Slave (AL08), and Whitemud Hills (AL09) Properties	2000
7	MIN19990010	Skelton D., Bursey T	Assessment Report, Buffalo Hills (AL01), Loon Lake (AL02), Birch Mountain (AL03), Rabbit Lake (AL04) and Muddy River (AL05) Properties	1999
8	MIN19980015	Skelton D., Bursey T	Assessment Report, Buffalo Hills Property (AL01)	1998

Paulen, R.C., Fenton, M.M. and Pawlowicz, J.G. (2006): Surficial geology of the Peerless Lake Area, Alberta (NTS 84B); Alberta Energy and Utilities Board, Alberta Geological Survey Map 269, scale 1:250 000.

Fenton, M.M. and Pawlowicz, J.G. (1995); Drift Thickness of Alberta, Alberta Energy and Utilities Board, Alberta Geological Survey Map 226, scale 1:2,000,000

Dufresene, M.B., Olsen, R.A., Schmitt, D.R., McKinstry, B., Eccles, D.R., Fenton, M.M., Pawlowicz, J.G., Edwards, W.A.D., and Richardson R.J.H. (1996); The Diamond Potential of Alberta, Alberta Energy and Utilities Board, Alberta Geological Survey Bulletin No. 63

Ross, G.M., Broome, J., Miles, W. (1994); Potential Fields and Basement Structure – Western Canadian Sedimentary Basin. Produced in the Geological Atlas of the Western Canadian Sedimentary Basin. G.D. Mossop and I. Shetsen (comps). Calgary, Canadian Society of Petroleum Geologists and Alberta Research Council , p. 41 – 47.

O'Connell, S.C., (1994); Geological History of the Peace River Arch. Produced in the Geological Atlas of the Western Canadian Sedimentary Basin. G.D. Mossop and I. Shetsen (comps). Calgary, Canadian Society of Petroleum Geologists and Alberta Research Council , p. 431 – 437.

Hamilton W. N., Price M.C., Langenberg, W., Chao, D.K., 1998; Geological Map of Alberta, Alberta Energy and Utilities Board, Alberta Geological Survey, Map 236

CERTIFICATE OF QUALIFICATIONS

I, Andrew D. Berry, of 1101 6TH Avenue, New Westminster, British Columbia, hereby certify:

1. I am a graduate of Sir Sandford Fleming School of Resources and hold a technical diploma in exploration geology.
2. I am presently employed as a geologist with Ashton Mining of Canada Inc. at Unit 116, 980 West First Street, North Vancouver, B.C. V7P 3N4
3. I have been employed in the mineral exploration industry by various mining companies since 1984.
4. That the information, conclusions and recommendations in this report are based on work in Alberta and on the property, in collaboration with colleagues involved in various aspects of exploration.

DATED at North Vancouver, British Columbia, this 20th day of September, 2006.

ASHTON DIAMONDS (CANADA) INC.

[redacted]

Andrew D. Berry

8.2 Certificate of Qualification - David Willis

I, David Willis, 4216 Graveley Street, Burnaby, British Columbia hereby certify that:

1. I am presently employed as a Land Administrator with Ashton Mining of Canada Inc. and its subsidiary Ashton Diamonds (Canada) Inc. at Unit 116 – 980 West 1st Street, North Vancouver, B.C.
2. I am a graduate of the University of Alberta and hold a B.A. Degree in anthropology.
3. I am a graduate of the Northern Alberta Institute of Technology and hold a diploma in mineral engineering.
4. I have been employed with Ashton Mining of Canada Inc. since 1997.
5. That the information in this report is based on work done to evaluate the property, in collaboration with colleagues involved in various aspects of exploration.

DATED at North Vancouver, British Columbia, this 20th day of Septemberr 2006.

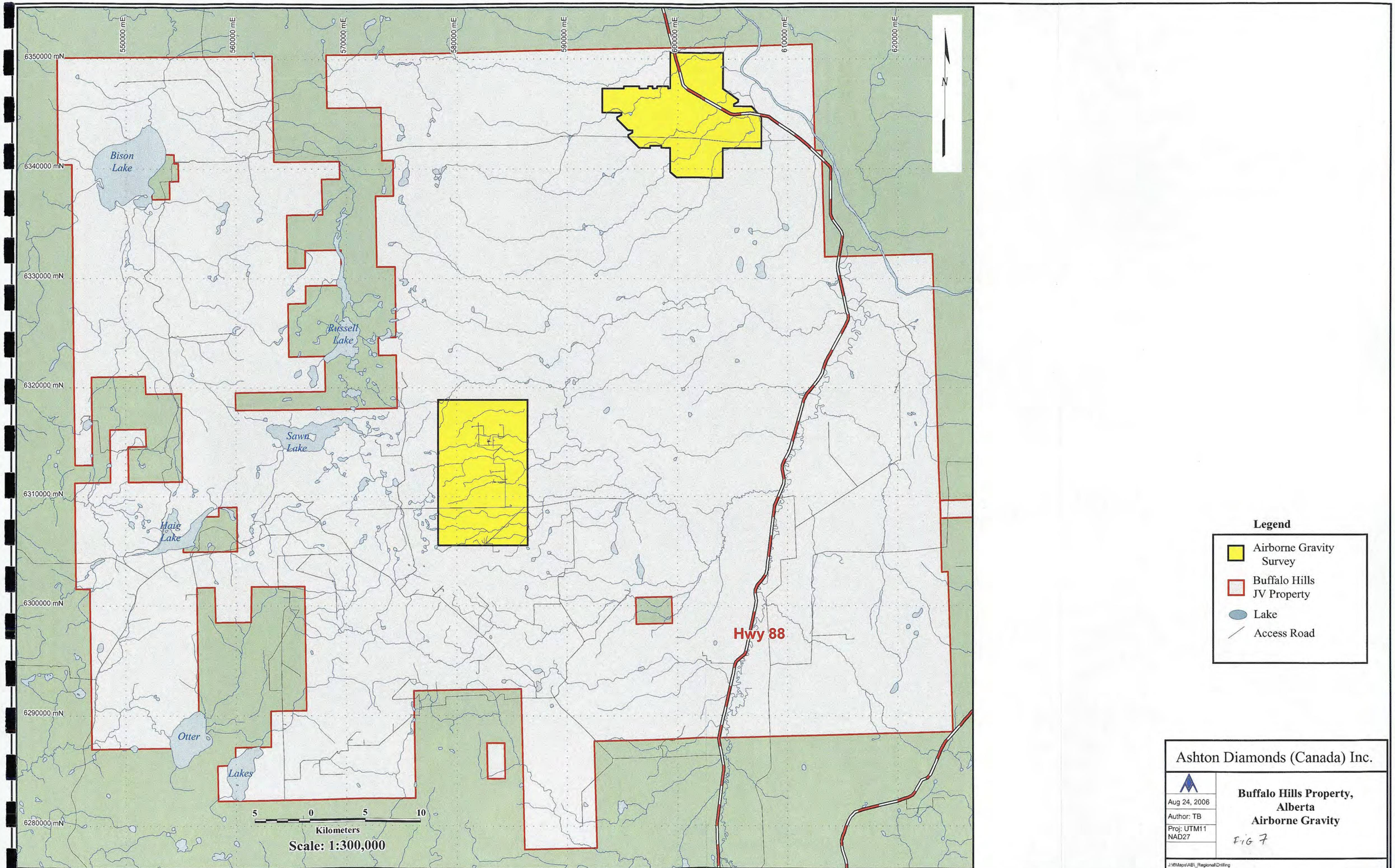
ASHTON DIAMONDS (CANADA) INC.

[redacted]

David Willis, B.A., Dip Mineral Engineering

APPENDIX "A" – AIRBORNE GEOPHYSICS

- Airborne Survey Location Map
- Bell Geospace Air Report


550000 mE
560000 mE
570000 mE
580000 mE
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610000 mE
620000 mE
6350000 mN
6340000 mN
6330000 mN
6320000 mN
6310000 mN
6300000 mN
6290000 mN
6280000 mN
N
Bison Lake
Russell Lake
Sawn Lake
Haig Lake
Otter Lakes
Hwy 88
5 0 5 10
Kilometers
Scale: 1:300,000
Legend
Airborne Gravity Survey
Buffalo Hills JV Property
Lake
Access Road
Ashton Diamonds (Canada) Inc.
Aug 24, 2006
Author: TB
Proj: UTM11 NAD27
Buffalo Hills Property, Alberta Airborne Gravity
FIG 7

Ashton Mining of Canada Inc.

980 West 1st Street, Unit 116
North Vancouver, BC,
V7P 3N4
Canada

Final Report
Acquisition & Processing

Air-FTG® Survey
Buffalo Head Hills, Alberta, Canada

January 2005

By

BELL GEOSPACE

2 Northpoint Drive, Suite 250
Houston, TX 77060
Ph. 281-591-6900
Fax 281-591-1985
www.bellgeo.com

TABLE OF CONTENTS

Introduction

Since 2001 Bell Geospace has been acquiring Air-FTG® in Africa and North America. This report summarises the results of Air-FTG® data acquired over two areas in Alberta, Canada. The most detailed survey is referred to as Buffalo Head Hills. The other survey is approximately 38 kilometers northeast and has more widely spaced lines. It is referred to as East of Buffalo Head Hills. Figure 1 shows the general location of the survey areas. The surveys encompass approximately 111 km^2 and 132 km^2, respectively.

This report provides information pertinent to the acquisition and processing of these two Air-FTG® surveys. Appendices 1-6 contain additional information on the processing sequence as well as maps of the free air and terrain corrected survey data.

Figure 1. Approximate Survey Location

Gradient Data Survey Acquisition

Gradiometry data is initially acquired in an internal coordinate system that is referenced to the axes of the three Gravity Gradient Instruments (GGIs) that are the primary measurement components of the FTG. This data is later transformed into a left handed coordinate system with x and y in the plane of the earth's surface and z perpendicular to that plane but pointed down into the earth rather than upward.

Before acquisition can begin, a self-calibration procedure is performed with the plane on the ground. This creates a table of calibration factors that will be used later in the processing to remove the gradient effects of the variations in plane position caused by pitch, roll and yaw experienced by the plane in flight.

FTG Data is acquired continuously throughout the flight, usually at ground speeds of approximately 120 knots. About 400 megabytes of data an hour are recorded including the navigation data and data on the plane's accelerations. The data are stored on hard drive and backed up onto AIT tape cartridges. Two sets of backup tapes are made which are sent to Houston in separate shipments. One set is used for final processing and engineering analysis while the other is stored in the warehouse as an offsite backup.

Figures 2a and 2b show the Air-FTG® survey flight lines for each survey. In the Buffalo Head Hills survey the inlines are oriented north-south and are approximately 100 meters apart. The ties lines were flown east-west and are generally 1000 meters apart. There were 81 inlines and 14 tie lines flown. In the East of Buffalo Head Hills survey the inlines are flown north-south, 500 meters apart and the tie lines are east-west and 1500 meters apart. There were 6 inlines and 3 tie lines acquired.

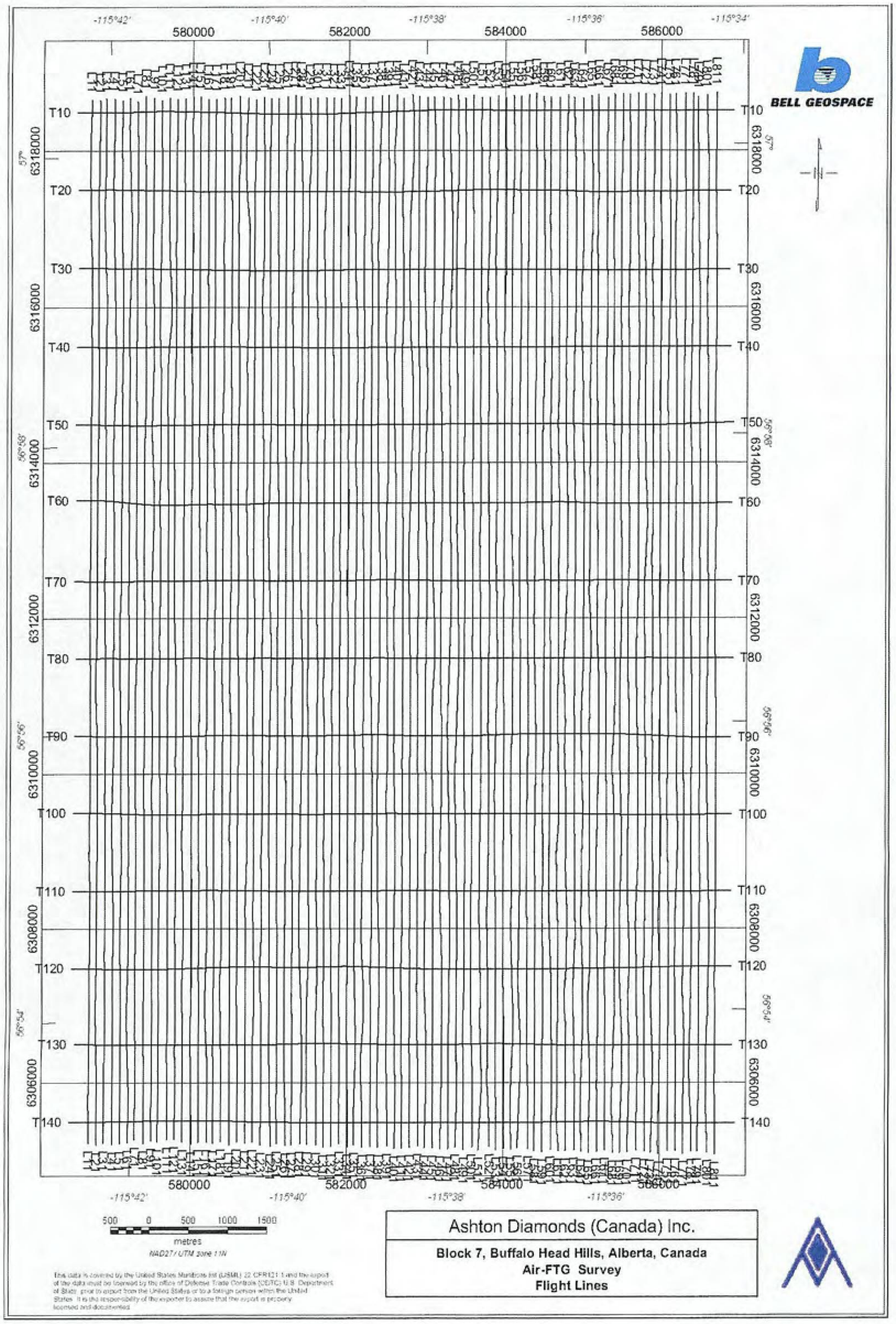


Figure 2a. Air-FTG® Flight Lines, Buffalo Head Hills Survey

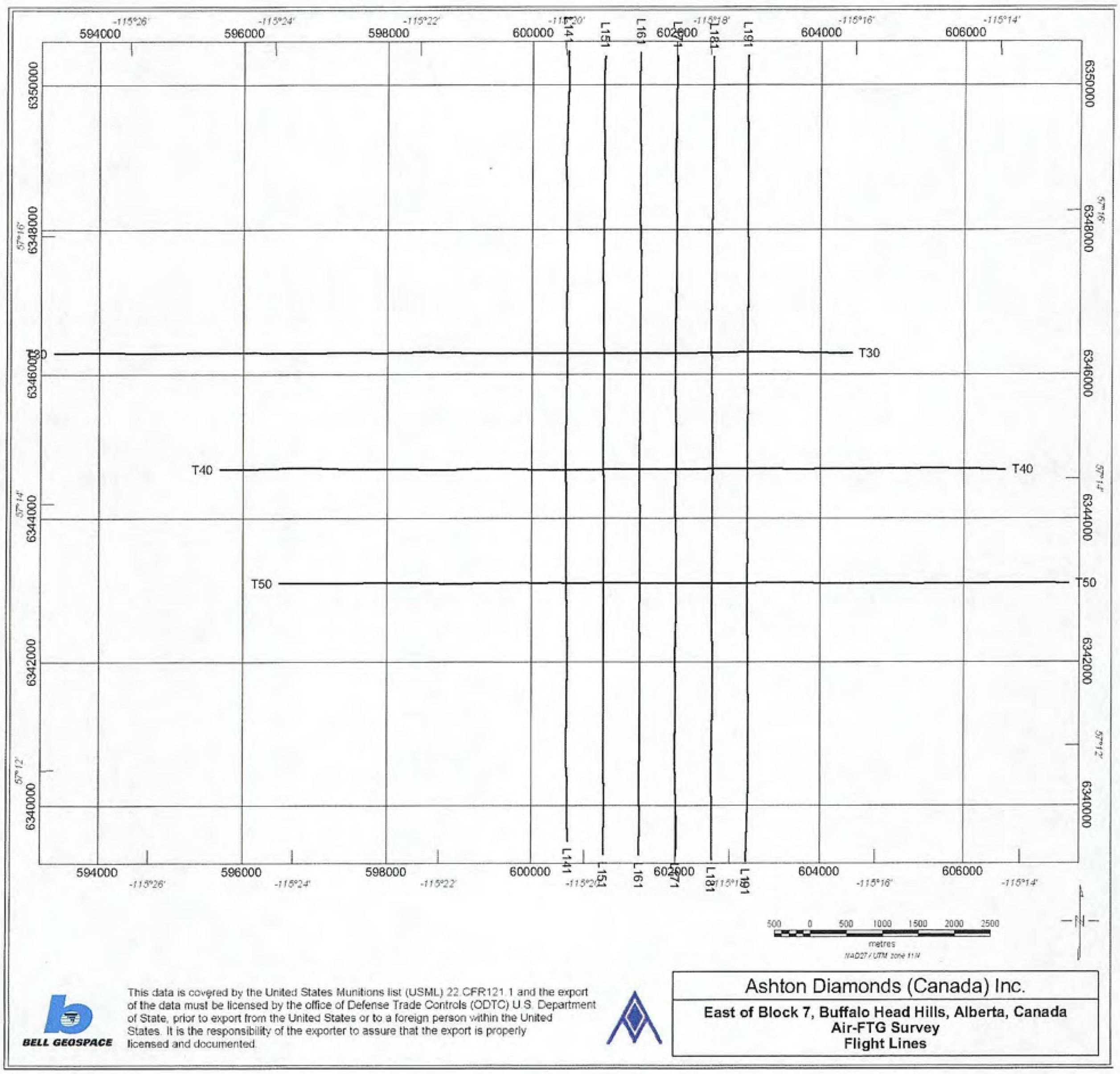


Figure 2b. Air-FTG® Flight Lines, East of Buffalo Head Hills Survey

The surveys were typically flown at an altitude of 80 meters above the ground surface. The survey plan included draping the flight path to maintain a constant altitude for the entire length of each survey line. However, due to limitations on the capabilities of the airplane to ascend/descend safely, it is not possible to maintain a constant clearance if the terrain changes too rapidly. Table 1 includes information about the altitudes for these surveys. The maximum ground clearance typically occurs over terrain lows where surrounding high ground prevents a lower approach.

Buffalo Head Hills

	Min	Max	StdDev	Mean
Terrain	557.9	808.7	66.4	647.0
GPS Altitude	637.2	892.2	65.2	753.8
Ground Clearance	63.0	162.0	15.8	103.5

East of Buffalo Head Hills

	Min	Max	StdDev	Mean
Terrain	444.8	519.7	14.9	479.6
GPS Altitude	533.7	601.1	14.9	561.0
Ground Clearance	72.5	112.5	7.9	85.7

Table 1. Altitude Statistics

Operations Summary

The survey crew arrived on location September 27, 2004 and was stationed in Peace River, Alberta. Flight operations for both surveys were conducted from this base. Data acquisition began September 28 and was concluded October 28. During this time there were 8 days of data acquisition with the remaining days being non-productive due to weather and/or reconnaissance flights. The East of Buffalo Head Hills survey was completed in two days, October 24 and 25.

The 3D Full Tensor Gradient data are collected with Bell Geospace's FTG-001 onboard a Cessna Grand Caravan C-GSKT (Figure 3). Aries Aviation operates the aircraft. FTG-001 was installed in the main cabin nearest the center of pitch, roll, and yaw of the plane. Both GPS and DGPS systems are used for positioning with latitude and longitude co-ordinates acquired relative to the WGS84 ellipsoid. The final data is then projected into Universal Transverse Mercator (UTM) Zone 11N using the NAD27 ellipsoid.

Figure 3. Cessna Grand Caravan C-GSKT

Weather

The weather during data acquisition varied only slightly, with the primary concern being wind. Flight operations were prevented or halted early on many days due to high wind and up or down drafts. Vertical winds quickly push the vertical accelerations of the aircraft beyond the limits where useable data can be collected. Low visibility was also a problem that prevented acquisition for one day. Gradient data does not degrade as quickly as gravity data in rough weather, but gradient data quality can generally be directly tied to extreme vertical accelerations, measured by the Air-FTG® system in milli-g's. Lines acquired in the most turbulent conditions were re-acquired later during better weather when possible.

General Tectonic Setting of the Buffalo Head Hills Region

The Buffalo Head Hills property occurs within the western Canada sedimentary basin of northern Alberta. The property is made up of Pleistocene surficial cover, mainly deposits due to recent glaciations. The kimberlites of Buffalo Hills are hosted by a Cretaceous succession composed dominantly of marine shales of the Shaftsbury Formation and Smoky Group, which are separated by deltaic to marine sandstones of the Dunvegan Formation. The tectonic setting in this region differs from other potential kimberlite areas like the Slave Province where exploration focuses on stable Archean craton rather than within the mobile belts.

Instrumentation

Gradiometer

The Full Tensor Gradient Instrument System used by Bell Geospace is currently the only operational full tensor gradiometer available on a moving platform. The gradiometer is "permanently" installed in the aircraft along with all the required support gear. This includes the control electronics, computers, monitors, printers, air conditioning and other peripheral devices needed to support FTG data acquisition. The FTG is contained in an airtight case while in operation. The case is approximately 1 cubic meter and weighs 500 pounds with all the instrumentation installed. The electronics cabinet is about the same size and weighs 350 pounds. The case provides a temperature, pressure, and humidity controlled environment for the FTG during data acquisition. Figure 4 shows a picture of the FTG System.

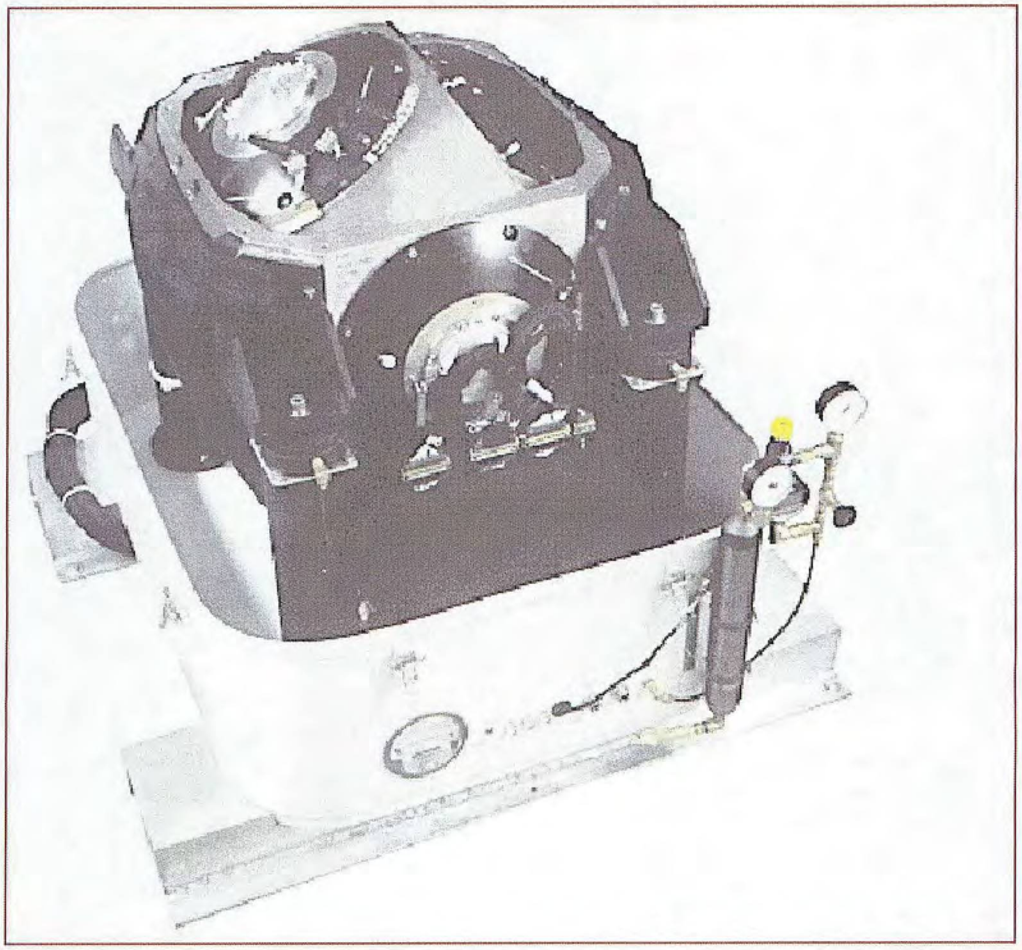


Figure 4.

Global Positioning System (GPS)

Global Positioning System consists (at present) of a constellation of 24 active satellites orbiting the earth. The orbital period for each satellite is approximately 12 hours with an altitude of approximately 20 000 km. Each satellite contains a very accurate cesium clock that is synchronized to a common clock by the ground control stations (operated by the U.S. Air Force).

Each satellite transmits individually coded radio signals that are received by the user's GPS receiver. Along with timing information, each satellite transmits ephemeredes (astronomical almanac or table) information that enables the receiver to compute the satellite's precise spatial position. The receiver decodes the timing signals from the satellites in view (4 satellites or more for a 3-dimensional fix) and, knowing their respective locations from the ephemeredes information, the GPS system computes a latitude, longitude, and altitude for the user.

A Novatel Propak OEM4 airborne differential GPS Systems (dual-frequency) was used on the aircraft. It presents an accuracy of ±5 meters and positions were real-time differentially corrected with the Omni-Star system. The GPS systems were used in conjunction with a PNAV-2001 Navigation System. The main features of this system are:

- Real-time graphical and numerical display of flight path with survey-area and grid-line overlay
- Distance-from-line and distance-to-go indicators
- Operation in survey-grid or waypoint navigation mode
- Recording of raw range-data for all satellites from both the aircraft-borne and base-station GPS receivers, for post-flight refinement of GPS position

FTG Onboard Quality Control

Accelerations measured by the instrument during data acquisition are closely monitored along with many other indicators of instrument performance. On the main FTG screen, the operators visually inspect the inline sums and cross signals, position and temperature of the gyros, GGI case and block temperatures and the north, east, and vertical accelerations. Any variances beyond the norm are closely watched and if an error is detected the system is halted and appropriate action is taken. Duplicate sets of spares are available in case of suspected hardware failure. Many other factors are also monitored that will help alert the operator to any unusual performance of the FTG. These include strip charts, coefficient tables, and onsite offline analysis of the data. In addition to the onboard QC checks, final survey data is compressed and sent into the Houston office via satellite phone for preliminary processing. Any substandard data will be identified by cross tie analysis and other methods. As soon as the source of the data degradation is identified and corrected, the suspect line(s) are quickly re-acquired and again transmitted into the office for approval before the aircraft leaves the survey area.

FTG Data Processing

The acquired FTG survey must undergo many steps in the process of rendering the final measured gravity gradient data used for interpretation purposes. Specific processing methods may be altered slightly depending on survey layout, weather conditions, and other factors affecting the data. A generalized FTG data processing schematic is provided in Appendix 2.

High Rate Post Mission Compensation

Raw data recorded by the instrument consists of two signals from each of three **G**ravity **G**radient **I**nstruments (GGI), these being referred to as the Cross and Inline signals. The three sets of signal data are run through proprietary software referred to as **H**igh-**R**ate **P**ost **M**ission **C**ompensation (HRPMC). This step operates on the most highly sampled data, using the gyro outputs at 1024 hertz and GGI outputs at 128 hertz. HRPMC compensates the data for most of the physical conditions during signal acquisition. This includes corrections for the gradients of the aircraft and the gradients of the instrument itself. Files monitoring GGI platform status are logged in real time and used to create tables of coefficients that are used later to help correct the data. A series of complex algorithms within the program use these files to generate coefficients for each 2 hour segment of acquisition, these coefficients are then used to calculate corrections for aircraft motion and position relative to the instrument during the entire survey. Another set of corrections is made to remove gradients due to the centripetal accelerations that result from the rotation of each of the three GGIs.

Upon completion of HRPMC, the data are subject to another step referred to as SAR, which **s**trips out the necessary elements, **a**verages the values and **r**eformats it into a 24-column binary file. The averaging process in SAR allows the processor to choose the data sample rate for all subsequent processing and final data. The final sample rate is currently limited to 1 second or greater but the possibility of sub-second final data sampling is being investigated. The SAR files are comprised of daily blocks of data and are combined to create one file containing all the data for the entire survey. Since FTG data is recorded continuously, this file also contains data recorded during traverses, turns, and on lines that were later re-acquired for various reasons. The data recorded in these instances are cut out of the data file before final processing.

It is during the SAR procedure that navigation and aircraft attitude data is merged with the gradient data. Gravity is also merged in at this point if applicable.

Terrain Correction Method

The terrain corrections were computed with a 3-D prism based modelling package. The program uses grids and prisms to compute the gravity effect of each defined layer. The computation assumes a density of 1.0 gm/cc and calculates the gravity response of a model that represents the mass of the Earth between the terrain surface and the ellipsoid. The result of the computation is a terrain correction for each tensor component that can be subtracted from the measured data. This produces a set of tensor components that contain primarily the gravitational effects of the sub-surface geology only. This correction can be easily scaled to any density desired and applied using the following channels and formula:

Tzz_TC_267 = Tzz_FA – 2.67*TC_Tzz_100

where

Tzz_TC_200	is the terrain corrected Tzz component.
Tzz_FA	is the Free Air Tzz component
TC_Tzz_100	is the terrain correction factor for Tzz at a density of 1.00 gm/cc

Similar equations hold for the other components.

The terrain data used is a gridded dataset acquired during the Shuttle Radar Tomography Mission (SRTM) in February, 2000 (Figures 5a and 5b). This data was derived from the Shuttle-based radar system with a sample rate of about 90 metres. Relative vertical accuracy is estimated at less than 15 metres. The data set covers virtually the entire Earth between latitudes +/-60 degrees. For more detailed surveys, terrain data will have to be acquired or otherwise provided for.

FTG-Specific Line Corrections

The next process is another proprietary method referred to as FTG-Specific Line Correction. This step calculates the tensor components from the inline and cross signals and removes bulk low frequency errors through time based line levelling and correlated GGI output. This process assumes that there is no correlation between the error we want to remove and the signal that we want to keep.

The DGPS provides highly accurate aircraft position, heading, and speed measurements. The exact position of each GGI relative to the umbrella frame is provided from the servomotors that induce the rotations and from the gyros on the stabilized platform. From this information the measured accelerations in the inline and cross signals from each GGI can be converted to directional gradients and provides the tensor components Txx, Txy, Txz, Tyy, Tyz and Tzz. In this survey the carousel was not rotating so only the rotation of the GGI's must be compensated for. The carousel rotation rate is normally 360 degrees per hour, so due to the short lines in this survey a complete rotation would not occur while online and would not assist in noise compensation. Feed back from the gyros and GPS data allows the servomotors to keep each GGI in the same horizontal and vertical orientation relative to the ground throughout the survey.

The FTG data record is synchronized and time stamped with the GMT time at one second intervals. The differentially corrected GPS data is also GMT time stamped. Based on a match in GMT time, the umbrella frame co-ordinates in the FTG data are replaced with real world co-ordinates in the WGS-84 ellipsoid. Coordinates in other ellipsoids, datum's, and various projection methods can be produced later in the processing as requested by the client.

As GGI drift is not linear, traditional line levelling techniques are inadequate to correct for this error, and, since GGI drift is time dependent, levelling must occur in the time domain. Because of the nature of gradient data and its conformance with Laplace's equation (Tzz+Txx+Tyy = 0), complicated levelling procedures must be used to keep all components levelled both to themselves and to each of the other components so that this relationship is not adversely affected during correction. This process is generally executed as follows:

First, the data on the turns and traverses outside the survey area are deleted. Secondly, time-varying heading and roll corrections are calculated. Using the position and attitude of the aircraft relative to the carousel, line groups with the same heading and carousel angle are used to compute corrections that are linear over small sections of lines.

After this procedure, the data is free of DC shift and most low frequency error and can be mapped with a very little line error.

Final Line Levelling

After the data is FTG levelled and bulk corrected, some small misties at intersections still remain due to random noise content and non-specific linear errors. At this point a more traditional approach to line levelling can be taken to produce final data suitable for mapping. To best evaluate the remaining misties and noise, a Butterworth filter usually between .5 and 1 kilometer in length is applied and misties are calculated at every intersection. The misties in the filtered data are analyzed on the screen on a line by line basis. Each component is shown in profile form with intersection mistie information from crossing lines displayed as well. In most cases the largest misties are due to a noise spike on a line near an intersection or from remnant effects from turning on to or off of a line. Usually spikes occur over very few data points but still may affect the filtered trace enough to introduce a mistie. The erroneous unfiltered data is either interpolated across, or vertically adjusted for a better fit with the surrounding points. After each component has been edited by this method on every line, the filter is reapplied and misties are calculated and analyzed again. This procedure is repeated until all obvious errors are removed. After a thorough edit the data can be levelled by the application of low order polynomials or a tensioned spline. The adjustments calculated from the filtered trace are also applied to the unfiltered data. This process is completed in several passes, each time re-calculating misties, and applying a successively higher order fit to the data until the misties are very near zero and well within the noise envelope. After each polynomial adjustment, the data is gridded and mapped to the screen as an additional quality control to aid in mistie evaluation. Intersections that cannot be tied with the polynomial fit are re-examined in profile and map form to determine which line best fits the shape of the surrounding data and is then manually adjusted as necessary. This procedure finally produces mistie adjusted, unfiltered data. The unfiltered data can then be mapped without any apparent line oriented error. The Tzz is recalculated from the levelled Txx and Tyy to preserve the Laplace equation relationship.

Although this dataset produces quite reasonable maps, additional improvements can sometimes be achieved through microleveling. This is a process in which tie lines are excluded and only the correlation between parallel lines is analysed. The user can specify various filter lengths, tolerances, and other parameters to fine-tune the process to better address the characteristics of the non-correlateable frequencies. This process attempts to remove or reduce various frequencies in each line that are not present in neighbouring lines. This includes high frequency noise and lower frequency errors between intersections that cannot be removed in the tie line based adjustments. All filtering, levelling, and mapping is done in Geosoft's Oasis montaj data analysis package. No microleveling was performed on this dataset due to the varying line spacing.

Proprietary Denoising

The final step in the processing is a noise reduction technique based on the Laplacian relationship among the tensor components. This routine operates based on the fact that the tensor components are derivatives of the gravitational potential, which must be a solution to Laplace's equation. Any function that satisfies Laplace's equation is a harmonic function and supplies a means of separating signal from noise. All tensor components are considered simultaneously to estimate the coefficients of the harmonic function that describes the gravitational potential. The individual gradients are then re-calculated by differentiation of the resulting function. The re-calculated gradients are without much of the random noise inherent in measured gravity gradient data.

Several run parameters can be adjusted so that the frequencies to be retained can be somewhat tailored to known geologic or surface conditions. This process produces a grid with less random noise and more coherent frequency content across all tensor components and should be considered simultaneously with the microlevelled input.

Another benefit of this process is as a confirmation that the Laplacian relationship between tensor components has not been disrupted across any frequency in any of the previous processing steps. During this analysis the software makes any adjustments necessary to re-affirm the relationship between the tensor components.

This process has the most benefit for high noise or widely spaced surveys. Considering the variable line spacing and data quality of this survey, it was decided that the additional denoising had little benefit, primarily slightly reducing the amplitude of the anomalies in some cases, while offering insignificant improvement in noise reduction. The process was used to verify the Laplacian relationship between the leveled components. The leveled data is to be considered as the final product. Denoised datasets could be supplied at a later date if desired.

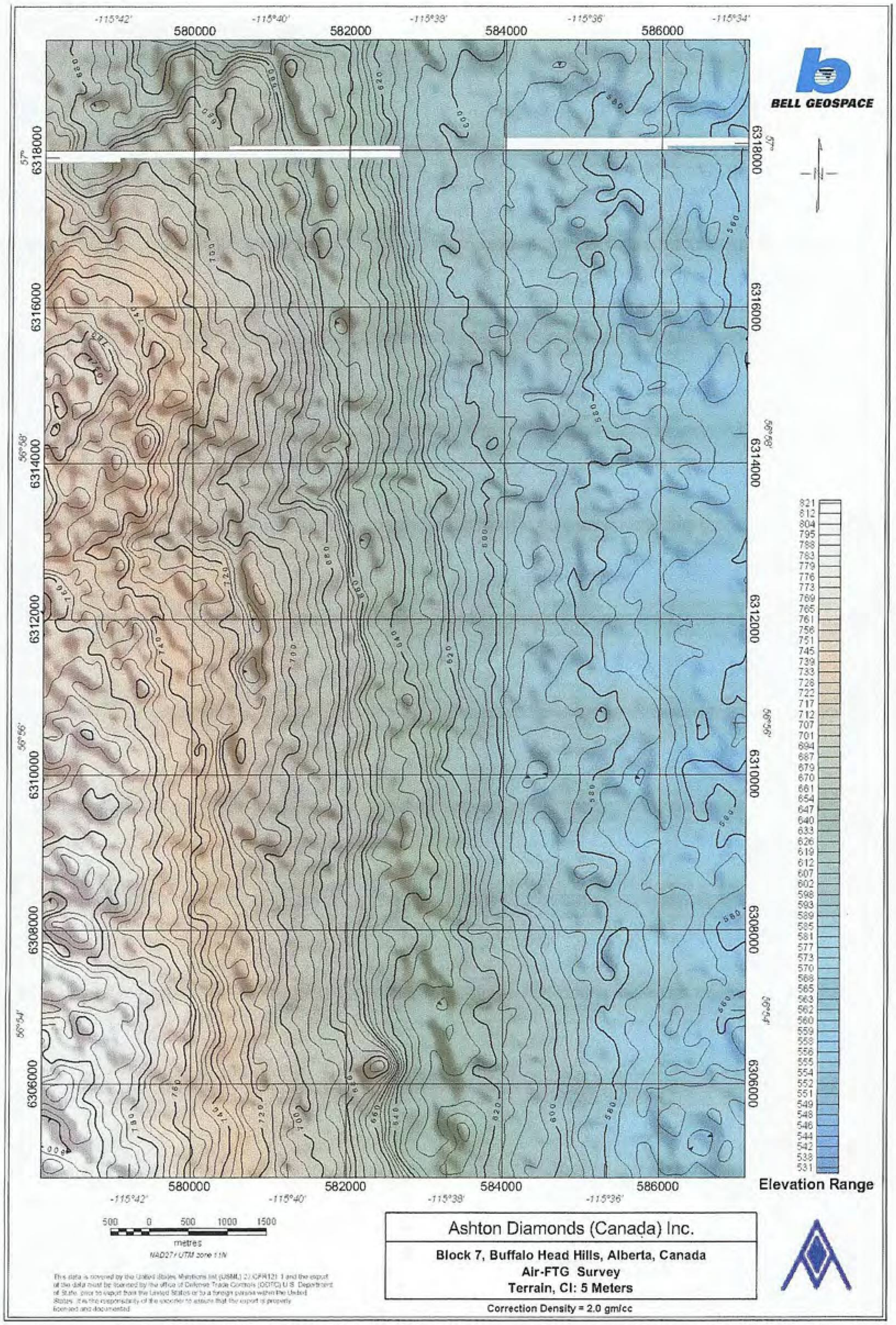


Figure 5a. The Digital Elevation Model for Buffalo Head Hills

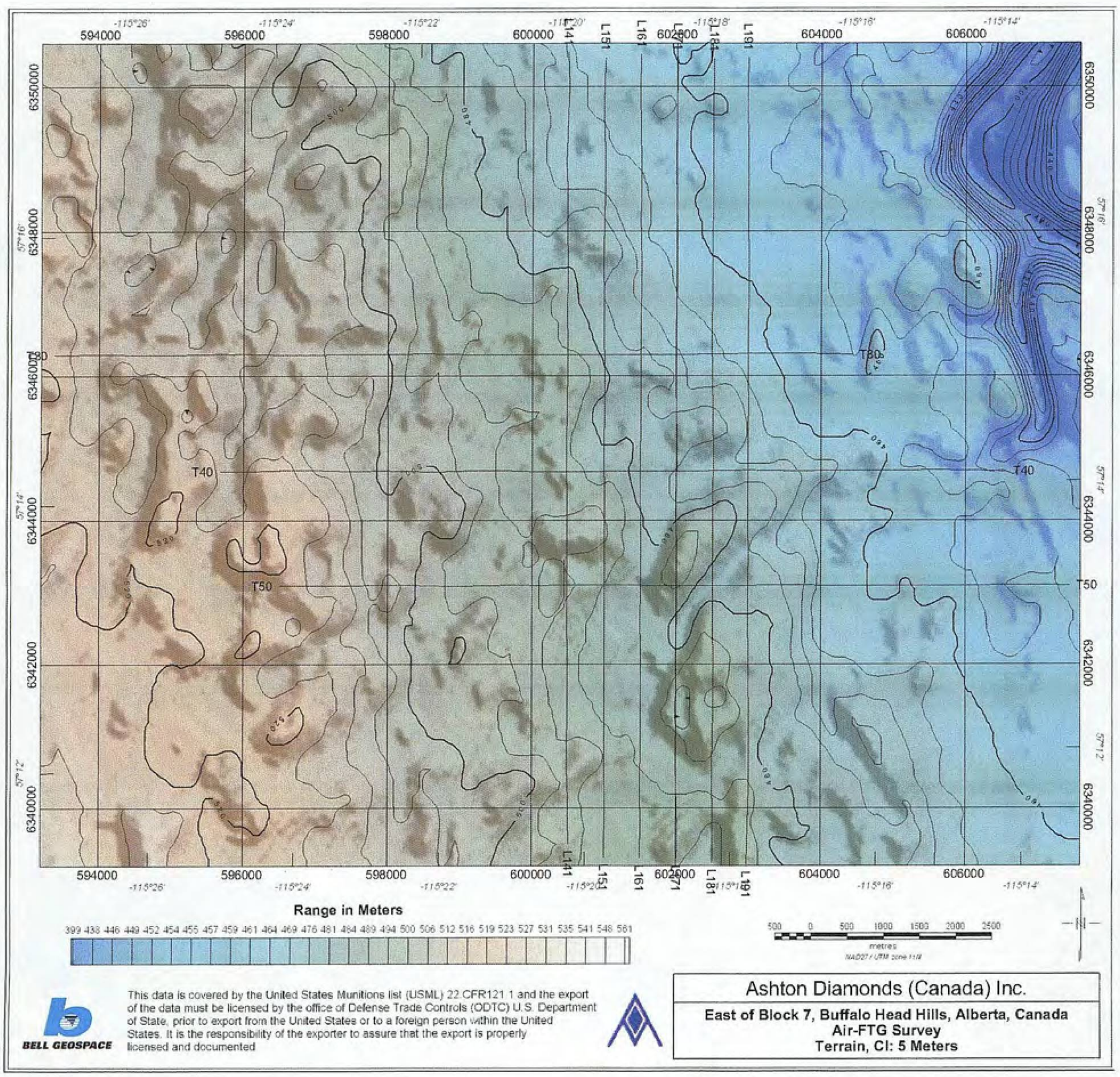
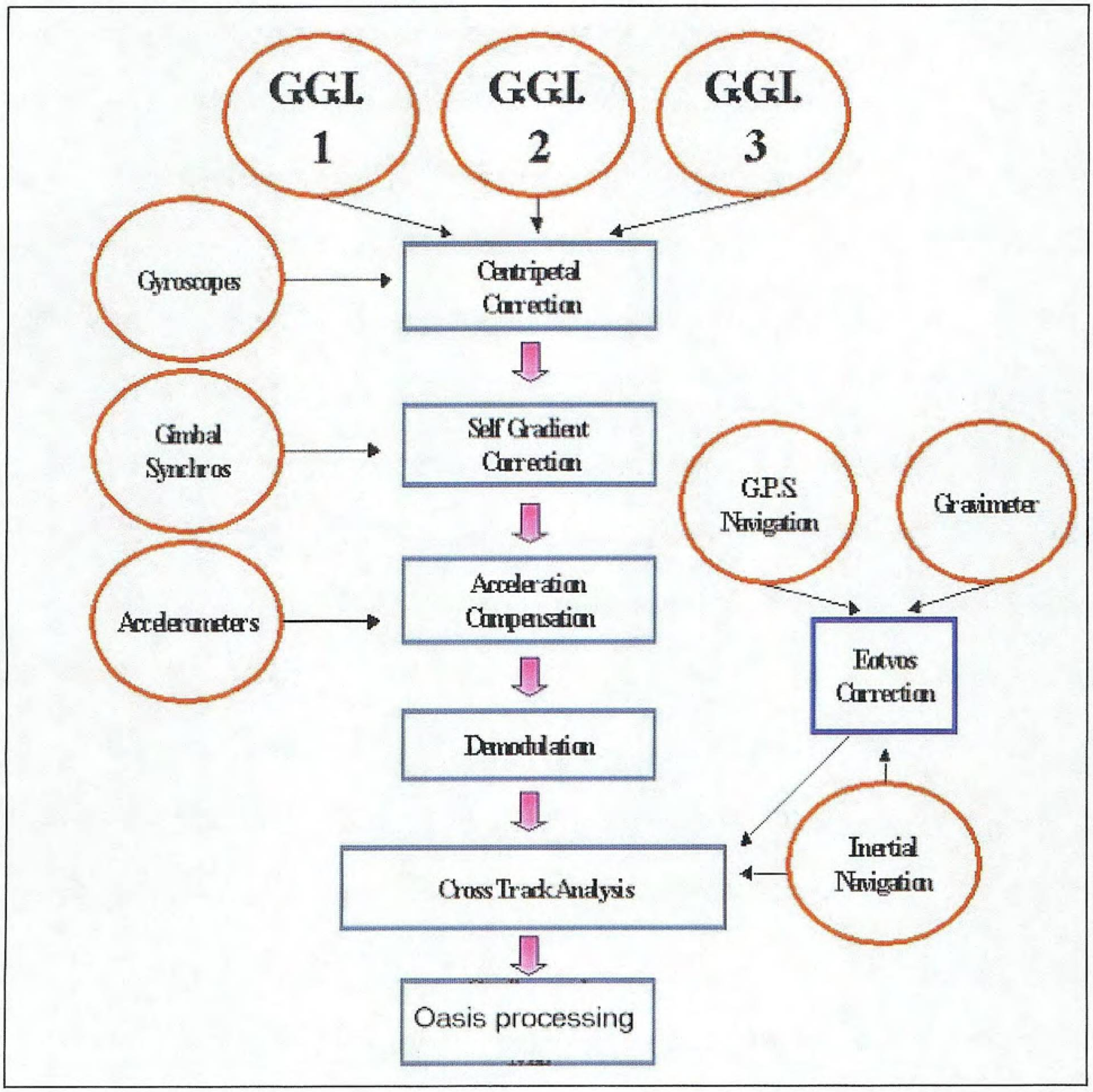
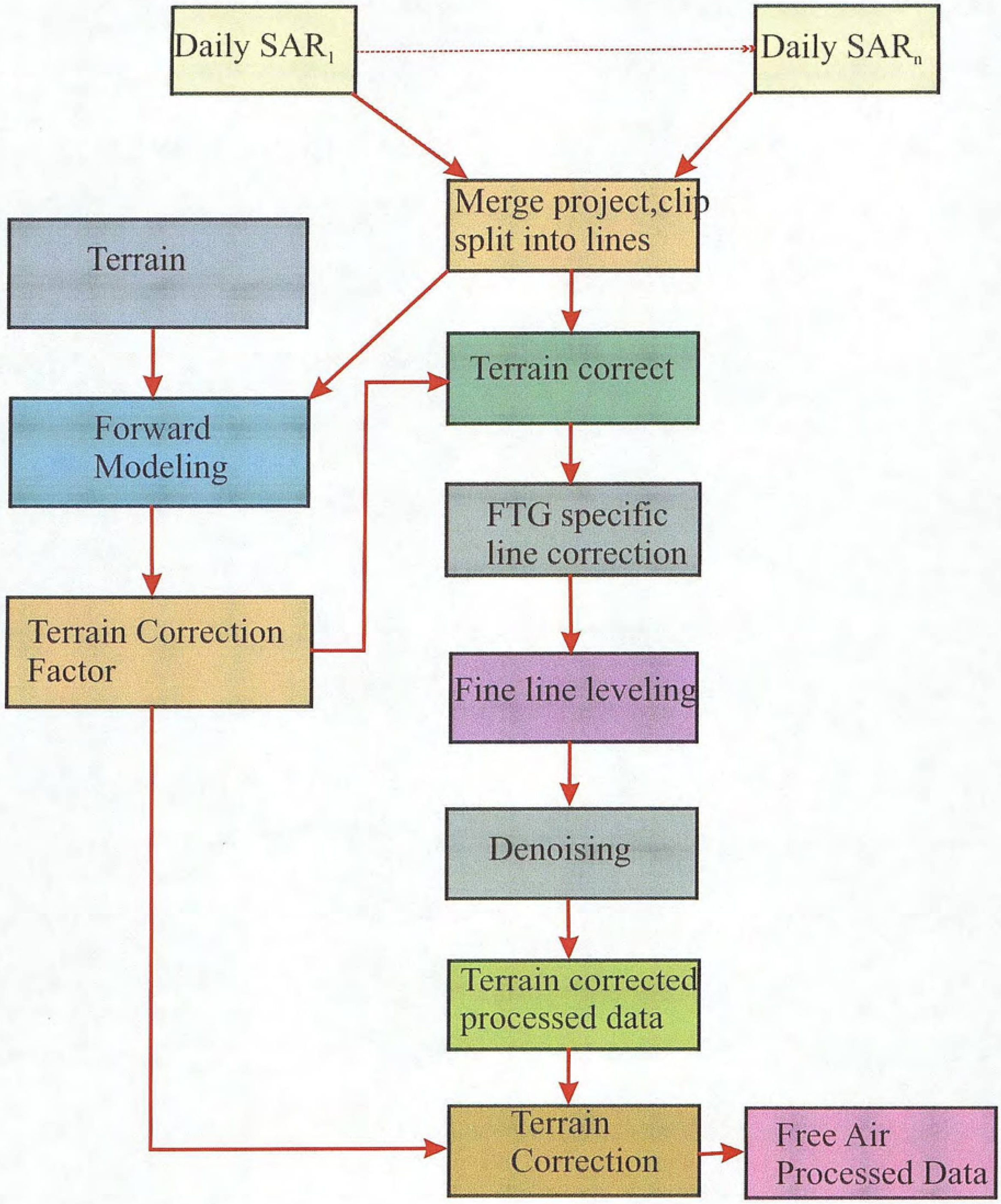


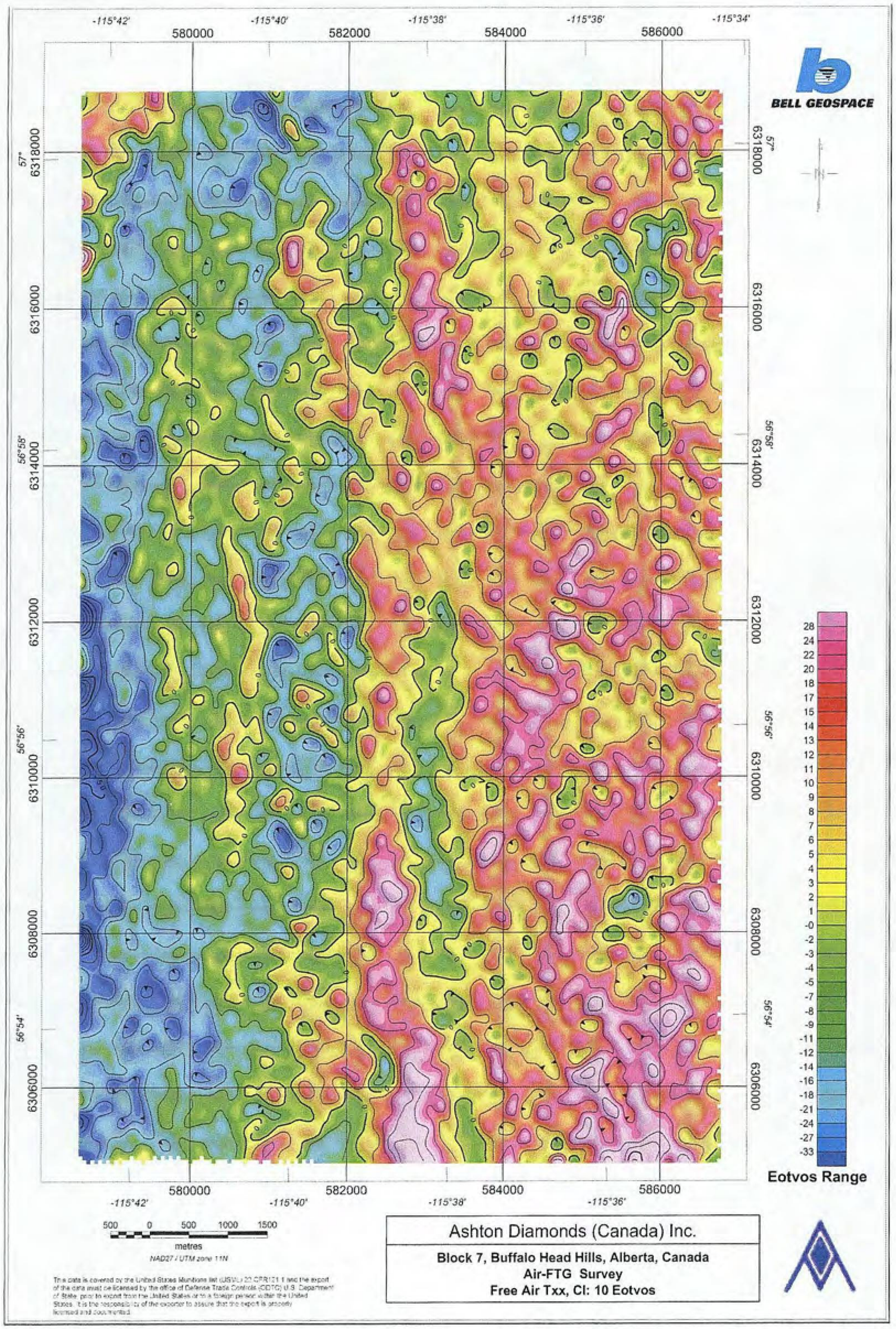
Figure 5b. The Digital Elevation Model for East of Buffalo Head Hills

Appendix 1. FTG Data Processing Schematic




Daily SAR1
Daily SARn
Merge project,clip split into lines
Terrain
Terrain correct
Forward Modeling
FTG specific line correction
Terrain Correction Factor
Fine line leveling
Denoising
Terrain corrected processed data
Terrain Correction
Free Air Processed Data

Appendix 2. Buffalo Head Hills Air-FTG® Free Air Data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Eotvos Range
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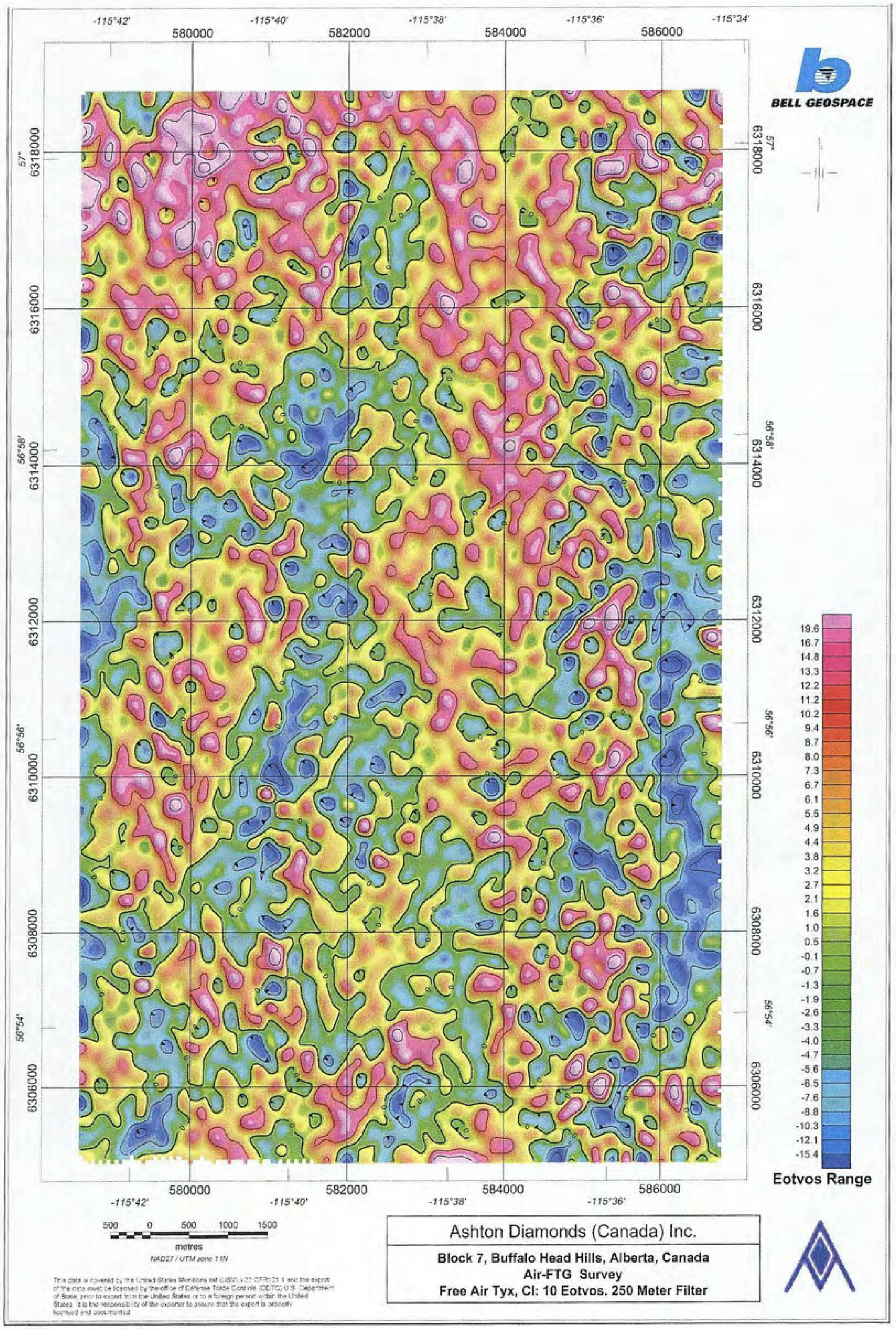
metres
NAD27 / UTM zone 11N
Ashton Diamonds (Canada) Inc.
Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Txx, CI: 10 Eotvos

Free Air Txx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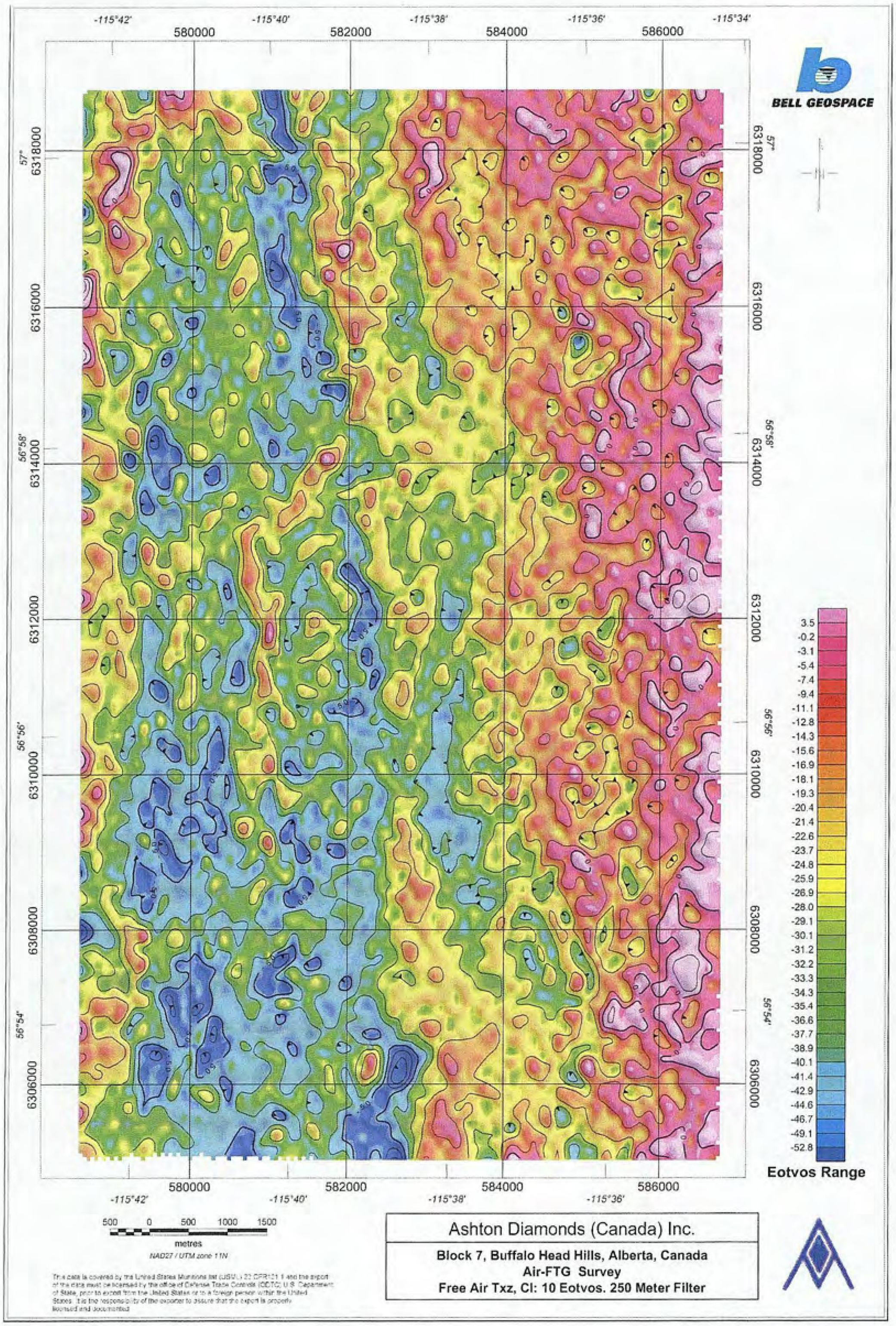
metres
NAD27 / UTM zone 11N
Ashton Diamonds (Canada) Inc.
Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tyx, CI: 10 Eotvos. 250 Meter Filter

Free Air Tyx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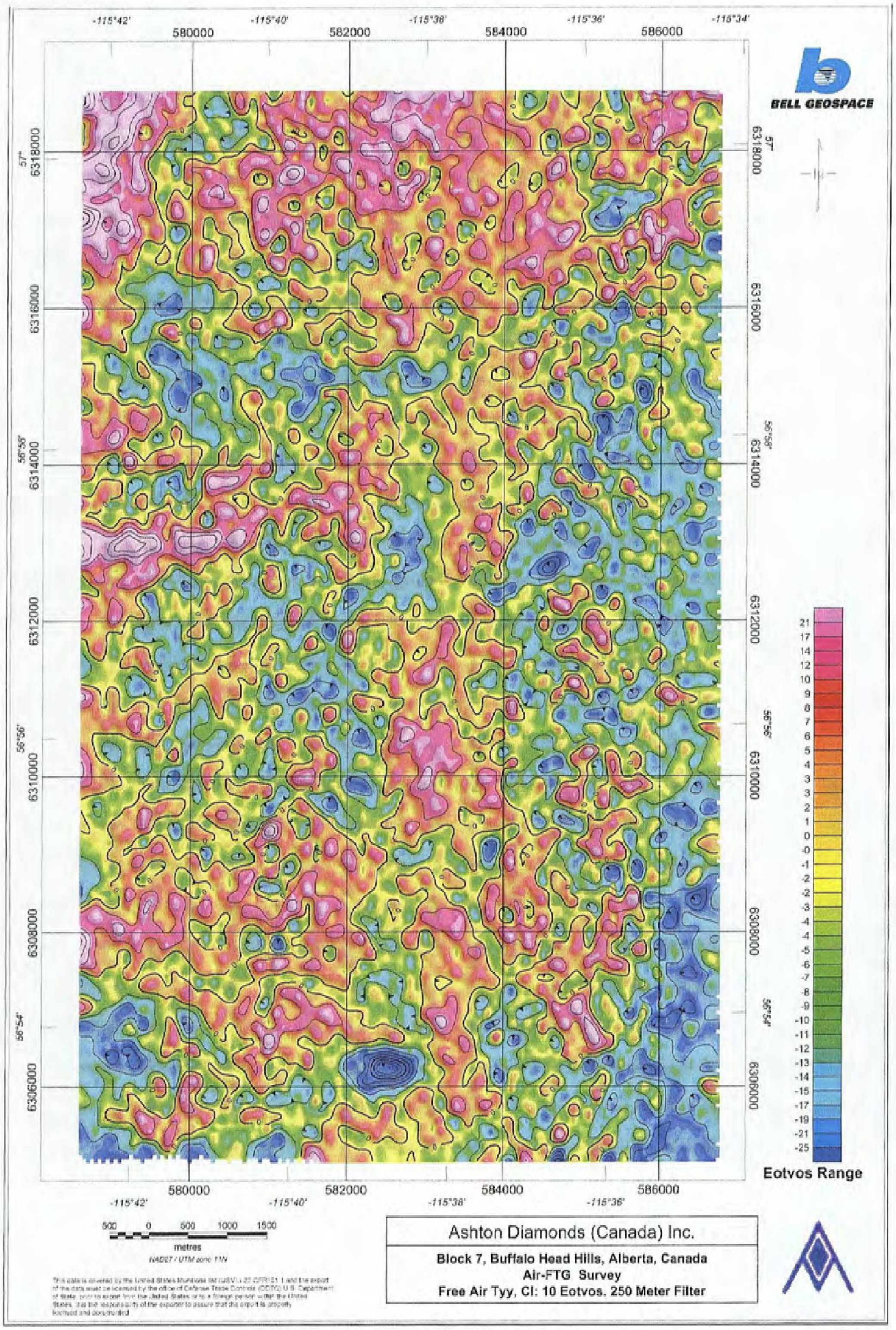
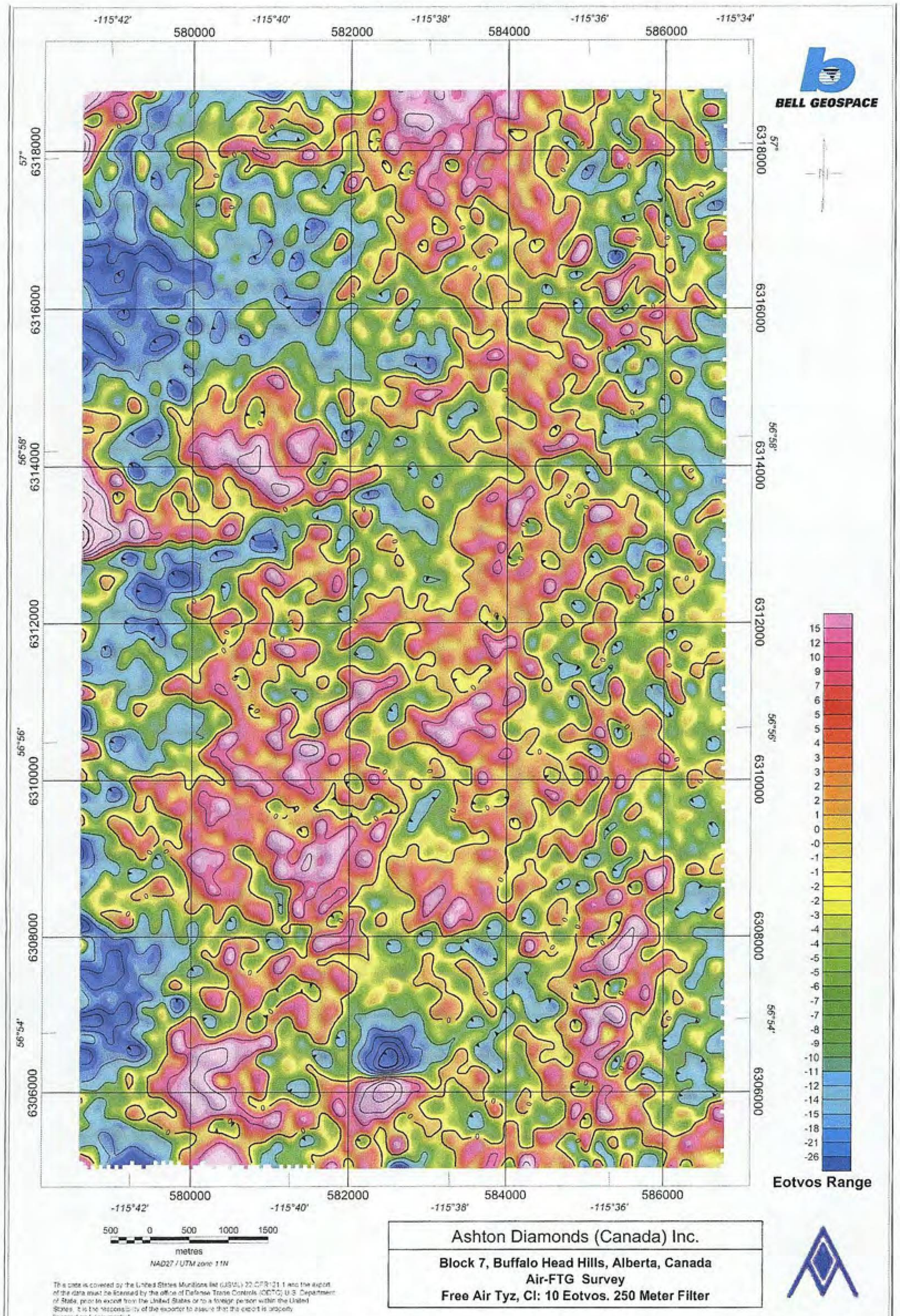
Ashton Diamonds (Canada) Inc.
Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Txz, CI: 10 Eotvos. 250 Meter Filter

Free Air Txz


BELL GEOSPACE
Eotvos Range
Ashton Diamonds (Canada) Inc.
Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tyy, CI: 10 Eotvos, 250 Meter Filter
metres

Free Air Tyy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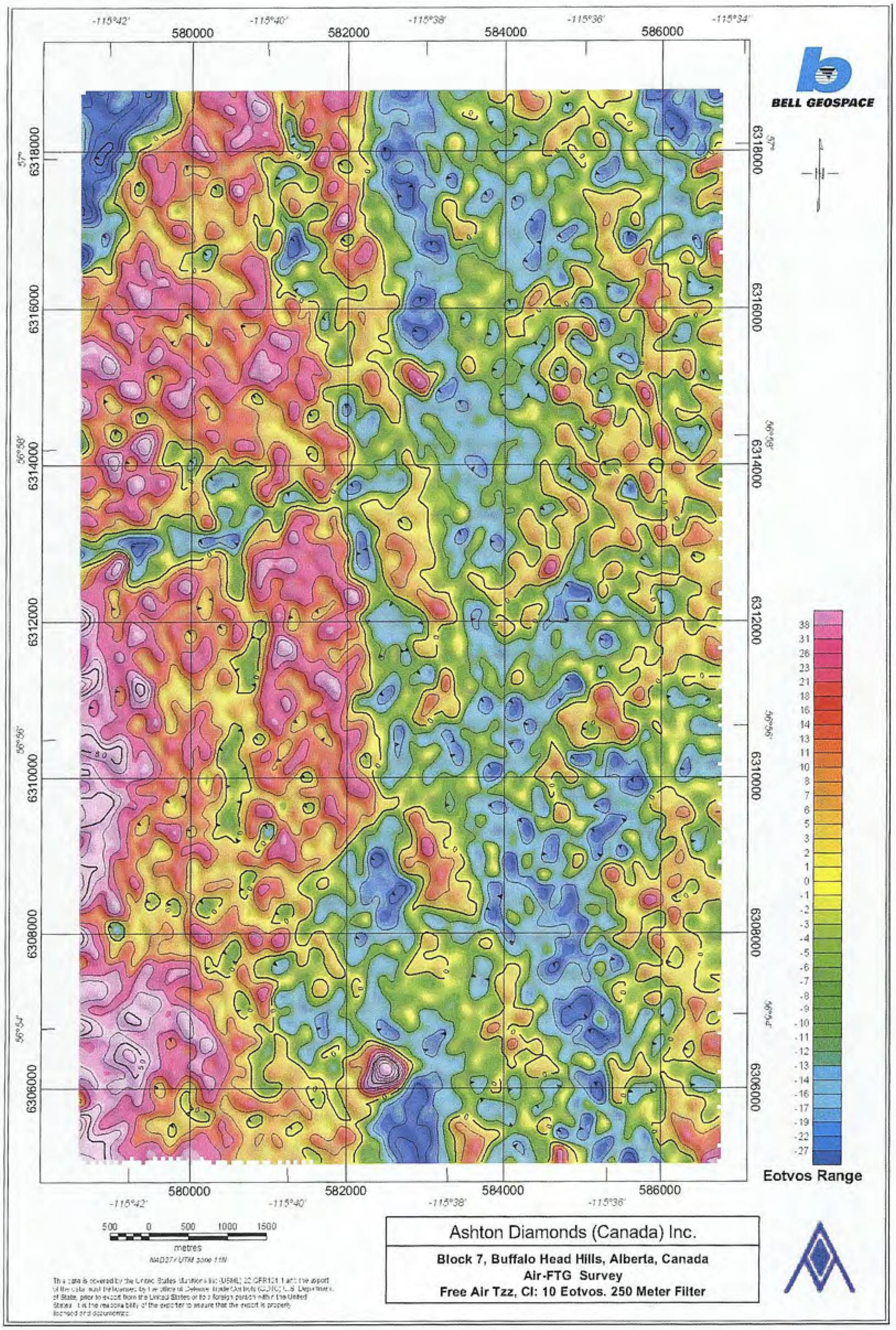
Ashton Diamonds (Canada) Inc.
Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tyz, CI: 10 Eotvos. 250 Meter Filter

Free Air Tyz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Eotvos Range
Ashton Diamonds (Canada) Inc.
Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tzz, CI: 10 Eotvos. 250 Meter Filter

Free Air Tzz

Appendix 3. Air-FTG® Buffalo Head Hills Terrain Corrected Data

(These Images excluded due to MS Word Size Constraints. These images can be found on the CD, in both Oasis Map, Grids and jpeg form.)

Terrain Corrected Txx , d = 2.0 gm/cc

Terrain Corrected Tyx, d = 2.0 gm/cc

Terrain Corrected Txz, d = 2.0 gm/cc

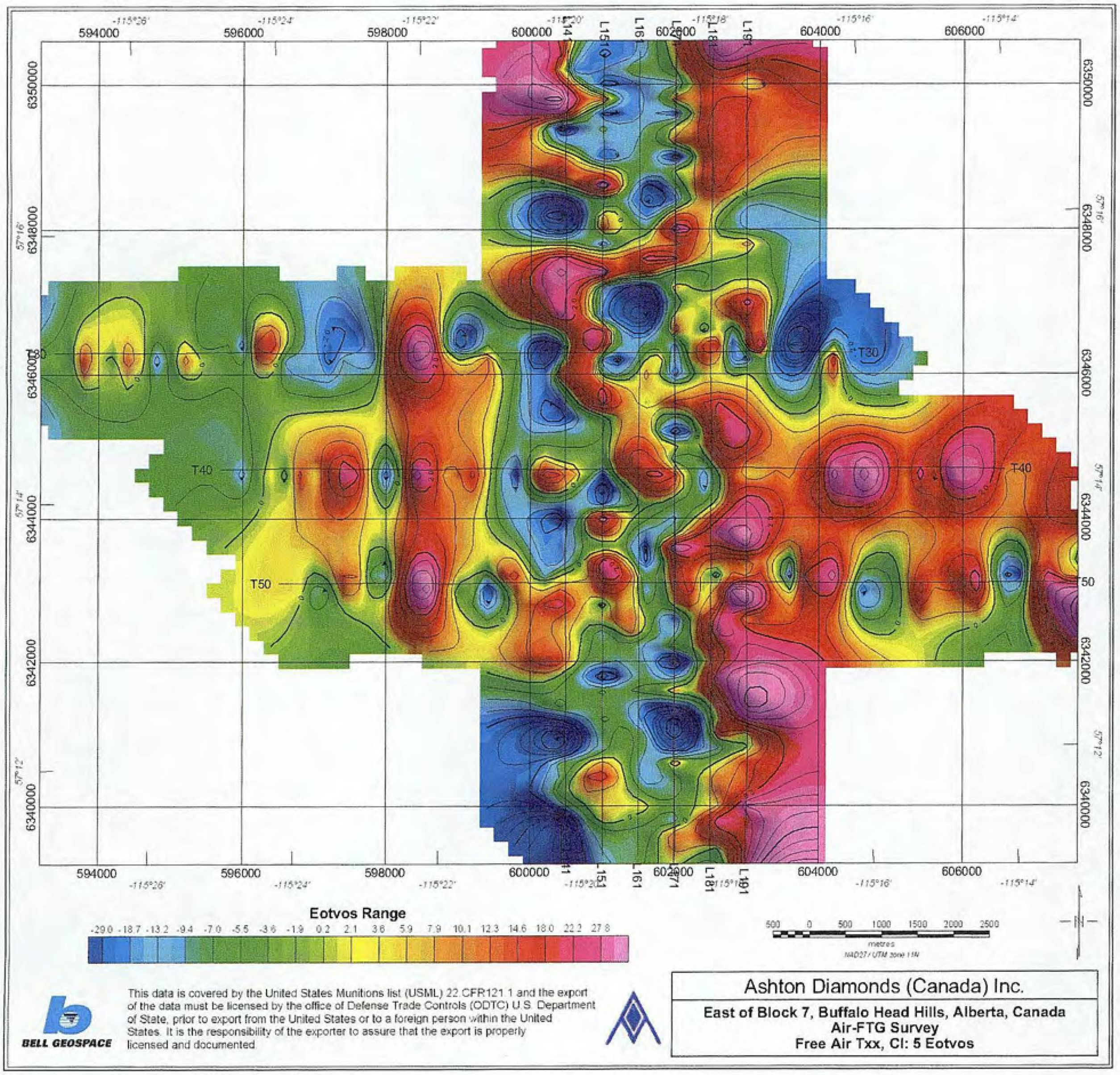
Terrain Corrected Tyy, d = 2.0 gm/cc

Terrain Corrected Tyz, d = 2.0 gm/cc

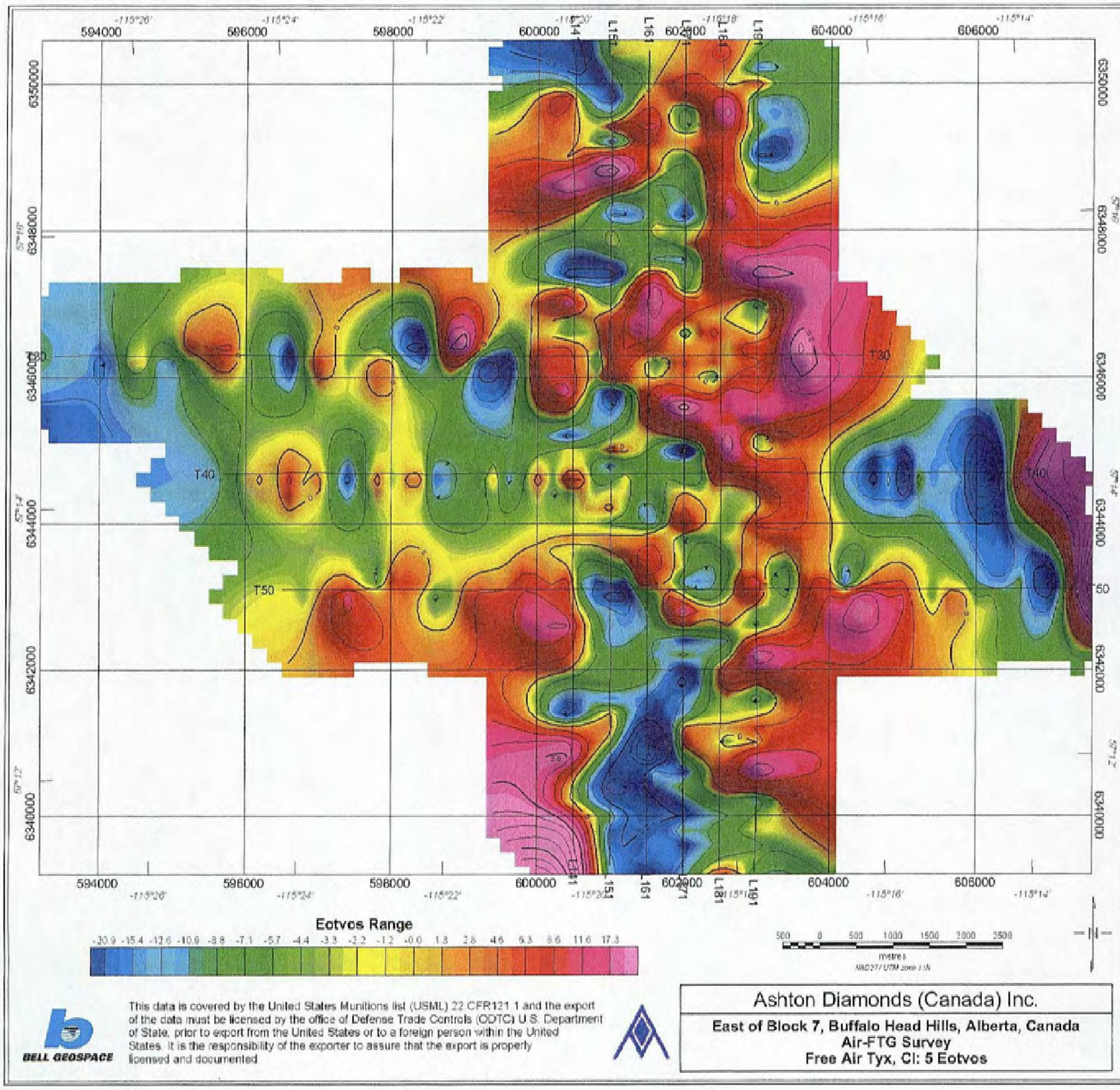
Terrain Corrected Tzz, d = 2.0 gm/cc

Dept. of Energy Note May 15, 2007
The CD is not part of this mineral assessment report

East of Buffalo Head Hills Air-FTG® Free Air Data



Txx Free Air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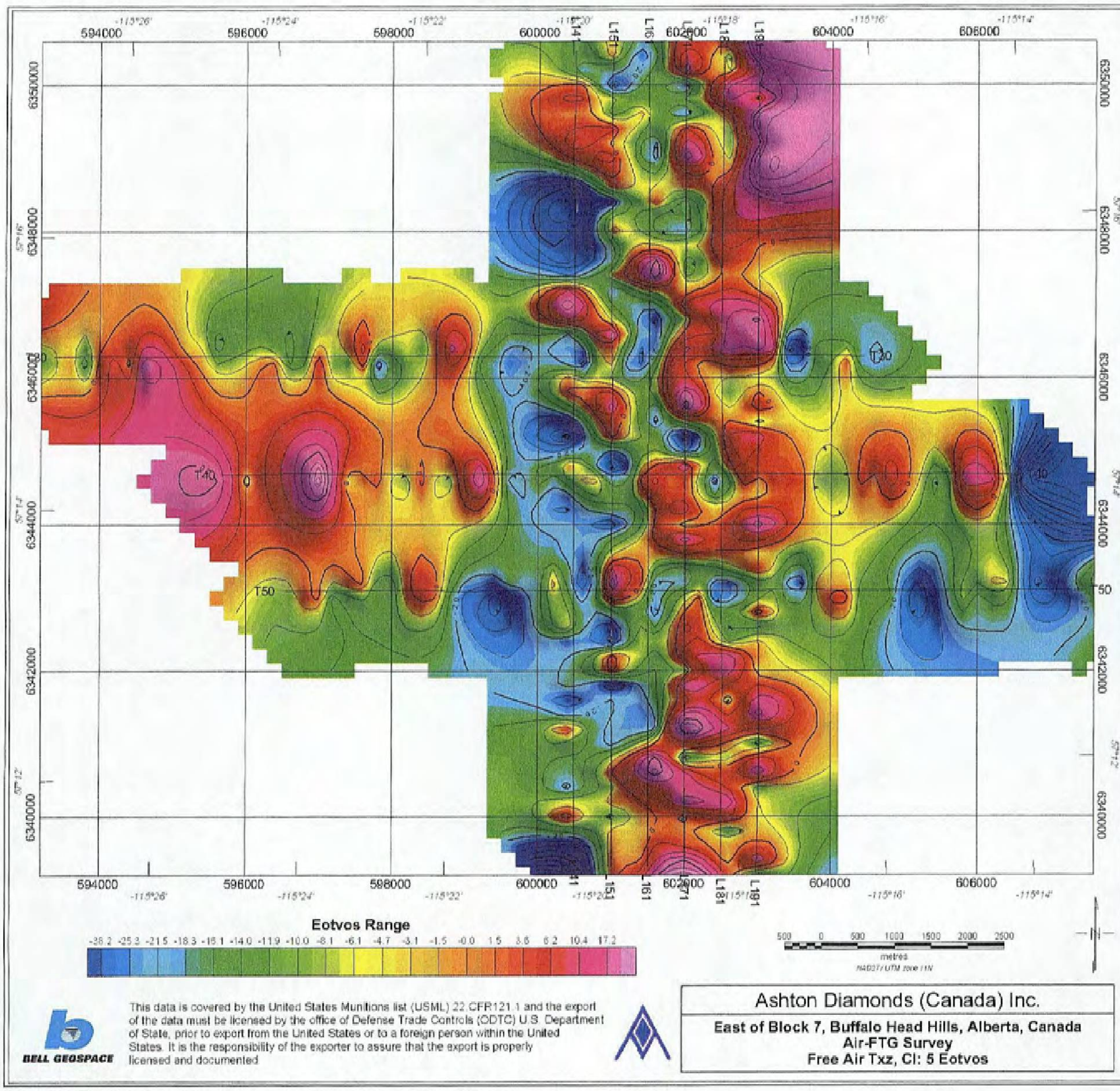
metres
This data is covered by the United States Munitions list (USML) 22 CFR121.1 and the export of the data must be licensed by the office of Defense Trade Controls (ODTC) U.S. Department of State, prior to export from the United States or to a foreign person within the United States. It is the responsibility of the exporter to assure that the export is properly licensed and documented
BELL GEOSPACE
Ashton Diamonds (Canada) Inc.
East of Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tyx, CI: 5 Eotvos

Tyx Free Air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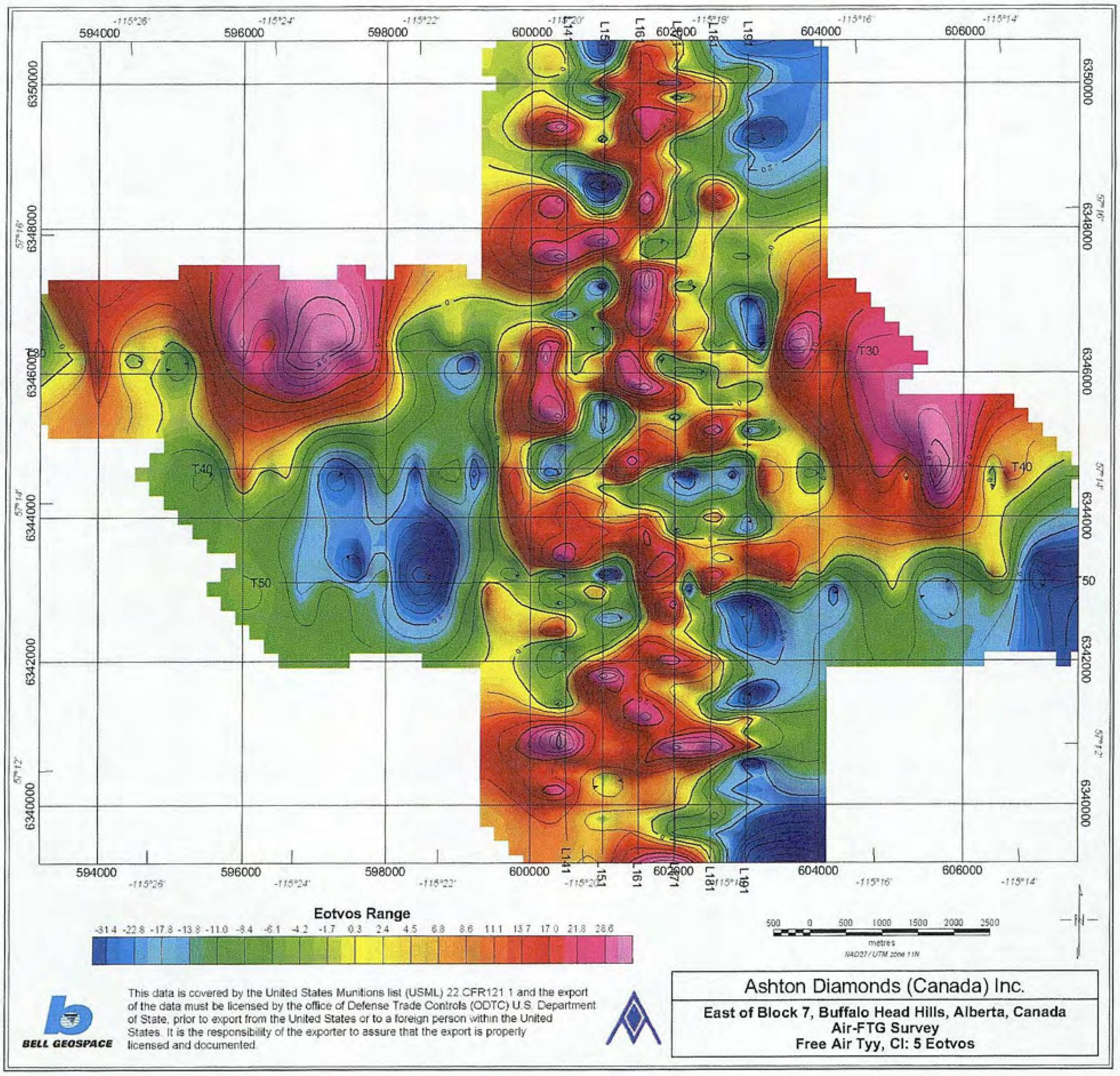
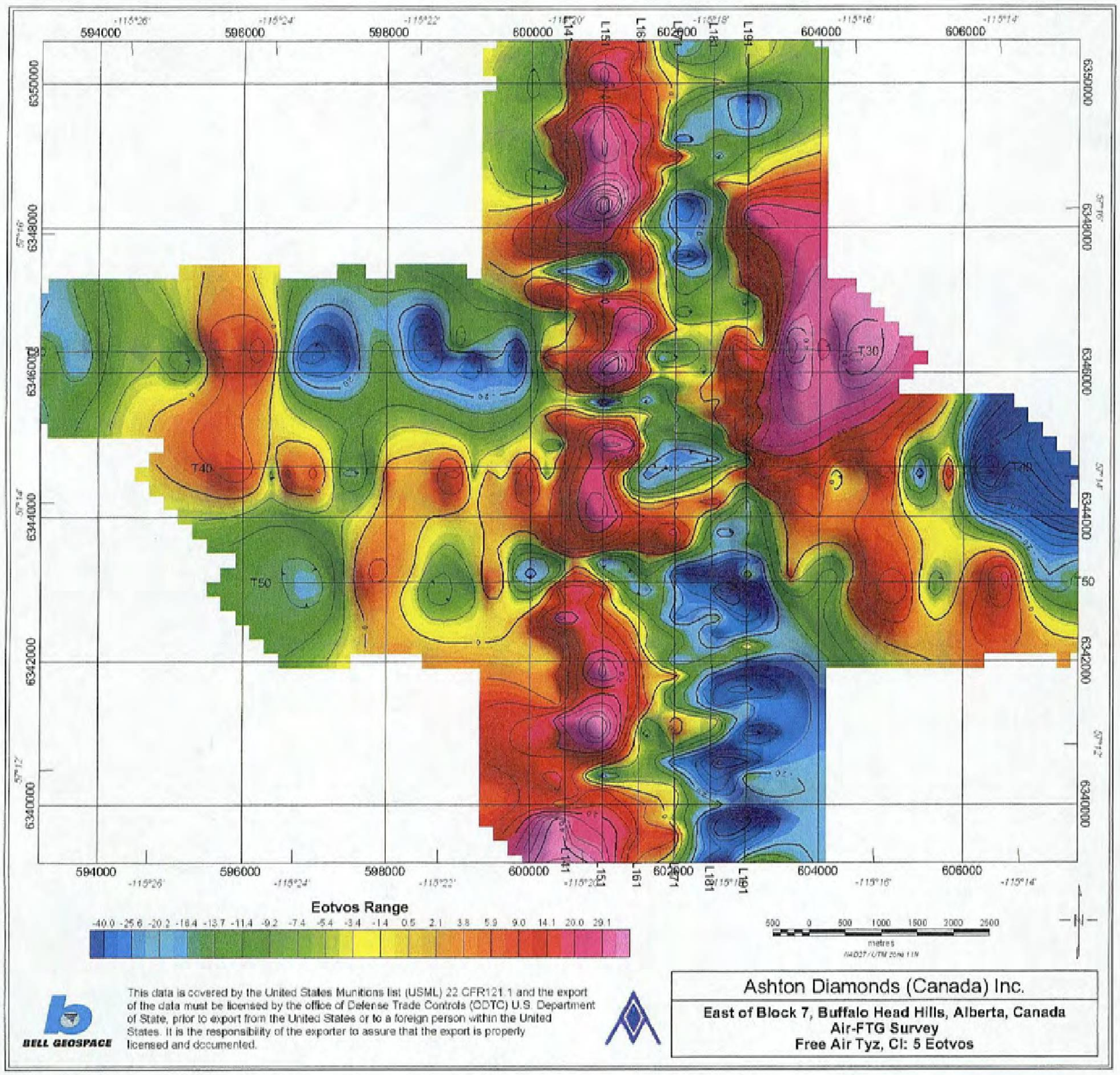
500 0 500 1000 1500 2000 2500
metres
This data is covered by the United States Munitions list (USML) 22 CFR121.1 and the export of the data must be licensed by the office of Defense Trade Controls (ODTC) U.S. Department of State, prior to export from the United States or to a foreign person within the United States. It is the responsibility of the exporter to assure that the export is properly licensed and documented
BELL GEOSPACE
Ashton Diamonds (Canada) Inc.
East of Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Txz, CI: 5 Eotvos

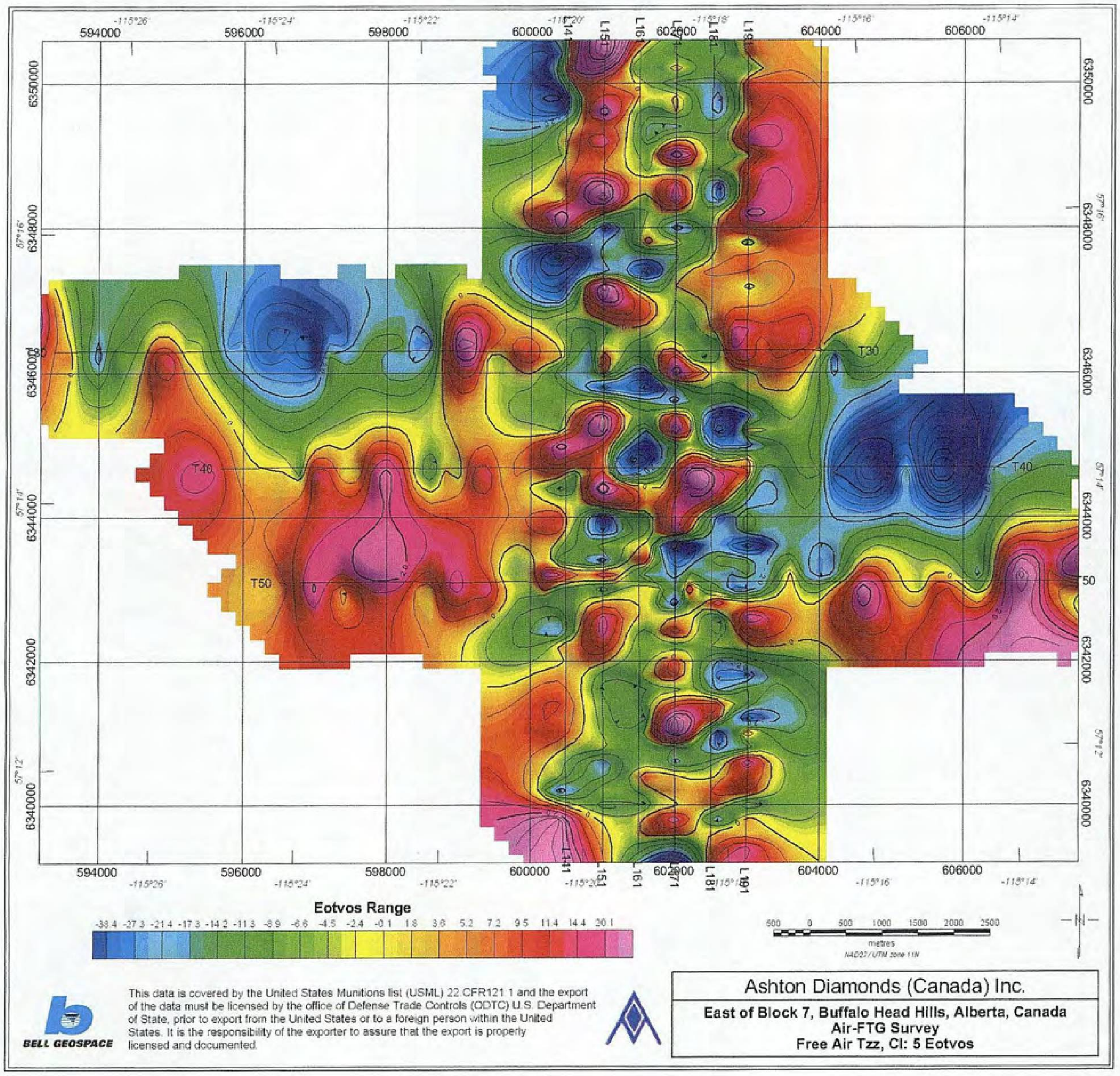
Txz Free Air


594000
596000
598000
600000
602000
604000
606000
6350000
6348000
6346000
6344000
6342000
6340000
-115°26'
-115°24'
-115°22'
-115°16'
-115°14'
T30
T40
T50
Eotvos Range
-31.4 -22.8 -17.8 -13.8 -11.0 -8.4 -6.1 -4.2 -1.7 0.3 2.4 4.5 6.8 8.6 11.1 13.7 17.0 21.8 28.6
metres
This data is covered by the United States Munitions list (USML) 22 CFR121 1 and the export of the data must be licensed by the office of Defense Trade Controls (ODTC) U.S. Department of State, prior to export from the United States or to a foreign person within the United States. It is the responsibility of the exporter to assure that the export is properly licensed and documented.
BELL GEOSPACE
Ashton Diamonds (Canada) Inc.
East of Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tyy, CI: 5 Eotvos

Tyy Free Air


594000
596000
598000
600000
602000
604000
606000
6350000
6348000
6346000
6344000
6342000
6340000
T40
T50
T30
Eotvos Range
-40.0 -25.6 -20.2 -16.4 -13.7 -11.4 -9.2 -7.4 -5.4 -3.4 -1.4 0.5 2.1 3.8 5.9 9.0 14.1 20.0 29.1
500 0 500 1000 1500 2000 2500
metres
BELL GEOSPACE
This data is covered by the United States Munitions list (USML) 22 CFR121.1 and the export of the data must be licensed by the office of Defense Trade Controls (ODTC) U.S. Department of State, prior to export from the United States or to a foreign person within the United States. It is the responsibility of the exporter to assure that the export is properly licensed and documented.
Ashton Diamonds (Canada) Inc.
East of Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tyz, CI: 5 Eotvos

Tyz Free Air


Eotvos Range
-38.4 -27.3 -21.4 -17.3 -14.2 -11.3 -8.9 -6.6 -4.5 -2.4 -0.1 1.8 3.6 5.2 7.2 9.5 11.4 14.4 20.1
This data is covered by the United States Munitions list (USML) 22 CFR121.1 and the export of the data must be licensed by the office of Defense Trade Controls (ODTC) U.S. Department of State, prior to export from the United States or to a foreign person within the United States. It is the responsibility of the exporter to assure that the export is properly licensed and documented.
BELL GEOSPACE
Ashton Diamonds (Canada) Inc.
East of Block 7, Buffalo Head Hills, Alberta, Canada
Air-FTG Survey
Free Air Tzz, CI: 5 Eotvos

Tyy Free Air

East of Buffalo Head Hills Air-FTG® Terrain Corrected Data

(These Images excluded due to MS Word Size Constraints. These images can be found on the CD, in both Oasis Map, Grids and jpeg form.)

Terrain Corrected Txx, d = 2.0 gm/cc

Terrain Corrected Tyx, d = 2.0 gm/cc

Terrain Corrected Txz, d = 2.0 gm/cc

Terrain Corrected Tyy, d = 2.0 gm/cc

Terrain Corrected Tyz, d = 2.0 gm/cc

Terrain Corrected Tzz, d = 2.0 gm/cc

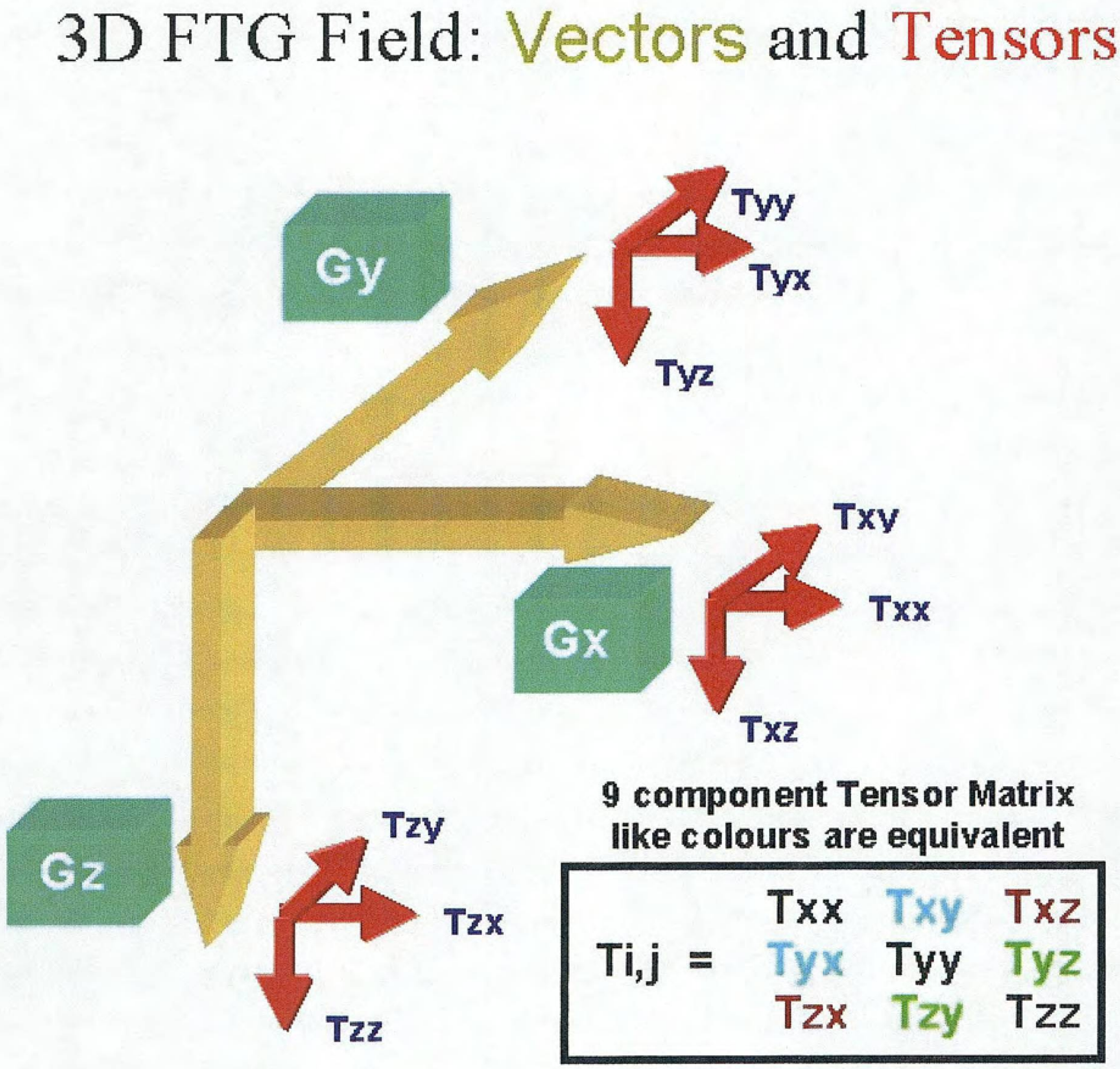
The map images were exported as jpegs from Geosoft Oasis Montaj maps. The Oasis maps were created at a scale of 1:50,000 and are packed (to contain the grids) and included on the final CD. The data were gridded using minimum curvature with an increment of 50 meters for Buffalo Head Hills and 200 meters for East of Buffalo Head Hills. There are also 300 dpi jpeg images of each Free Air and Terrain Corrected map included on the CD.

Dept. of Energy Note May 15, 2007
The CD is not part of this mineral assessment report

Appendix 4. Background Information on the Gravity Gradient Tensor

Gradiometer data differs in many aspects from conventional high-resolution gravity data. One important difference is in bandwidth that is 200m or less for gradient data and several kilometers for conventional airborne gravity. The greatly increased bandwidth allows the retention of the high frequency, short wavelength signal generated by shallow to intermediate geologic features, which are not retained in gravity data. The increased sensitivity allows for much greater resolution and is the reason gradiometer data can be successfully incorporated into the subsequent interpretation at a prospect level. Gradiometry data (a tensor) represents the first derivative of the gravity (a vector) field, and describes the spatial rate of change of the vector field components in all three directions. Although the gradient tensor consists of nine tensor components, only five are independent. The calculated diagonal element Tzz equals the negative sum of the tensor elements Txx and Tyy (Laplace Equation). Each of the independent tensor components responds uniquely to the size, shape, and thickness of density anomalies providing additional constraints during the interpretation process. All 5 independent components are used in the interpretation process to determine the centre of mass (Txz and Tyz), edges (Tyy and Txx) and corners (Txy) of the anomaly. The expression of Tzz (the vertical component) more closely resembles the conventional gravity in that the anomaly is shown in the correct position spatially and is thus more easily related to sub-surface geology.

Figure A1: Vector and Tensor relationships of the measured gradient data



Appendix 5. Digital Data Description

All digital data is supplied in a Geosoft Oasis database as well as Geosoft grids and maps for each final mapped product. Following is a list of channel names and a short description of the channel contents. Not all channel names are listed, but the contents of those not listed here can be inferred from their headings. (Filtered data were not supplied for the East of Buffalo Head Hills survey.)

Channel Name	Description
Lat	Latitude in WGS84
Lon	Longitude in WGS84
X_NAD27	Easting in NAD27/UTM Zone 11N (meters)
Y_NAD27	Northing in NAD27/UTM Zone 11N (meters)
Altitude	Survey Altitude (meters)
Terrain	Terrain Elevation (meters)

Raw Tensor components (Eotvos, raw data is in a separate database)

Txx_raw

Txz_raw

Tyx_raw

Tyy_raw

Tyz_raw

Tzz_raw

Leveled Free Air components (Eotvos)

Txx_FA

Txz_FA

Tyx_FA

Tyy_FA

Tyz_FA

Tzz_FA

Leveled Free Air components filtered for 250m (Eotvos)

Txx_FA_250mf

Txz_FA_250mf

Tyx_FA_250mf

Tyy_FA_250mf

Tyz_FA_250mf

Tzz_FA_250mf

Terrain corrections at a density of 1.00 gm/cc (Eotvos)

TC_Txx_100

TC_Tyx_100

TC_Txz_100

TC_Tyy_100

TC_Tyz_100

TC_Tzz_100

Leveled Free Air components, terrain corrected with density = 2.00 g/cc (Eotvos)

Txx_TC_200

Txz_TC_200

Tyx_TC_200

Tyy_TC_200

Tyz_TC_200

Tzz_TC_200

Leveled Components after terrain correction and filtered for 250m (Eotvos)

Txx_TC_200_250mf

Txz_TC_200_250mf

Tyx_TC_200_250mf

Tyy_TC_200_250mf

Tyz_TC_200_250mf

Tzz_TC_200_250mf

The information contained in this report is for the use of Bell Geospace and Cameco Corporation or their designated personnel only.

All information contained herein is by all intent a true and accurate representation of the facts and results as they pertain to this Air-FTG® survey.

Prepared by:

[redacted]

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USA
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ITAR Export Restrictions

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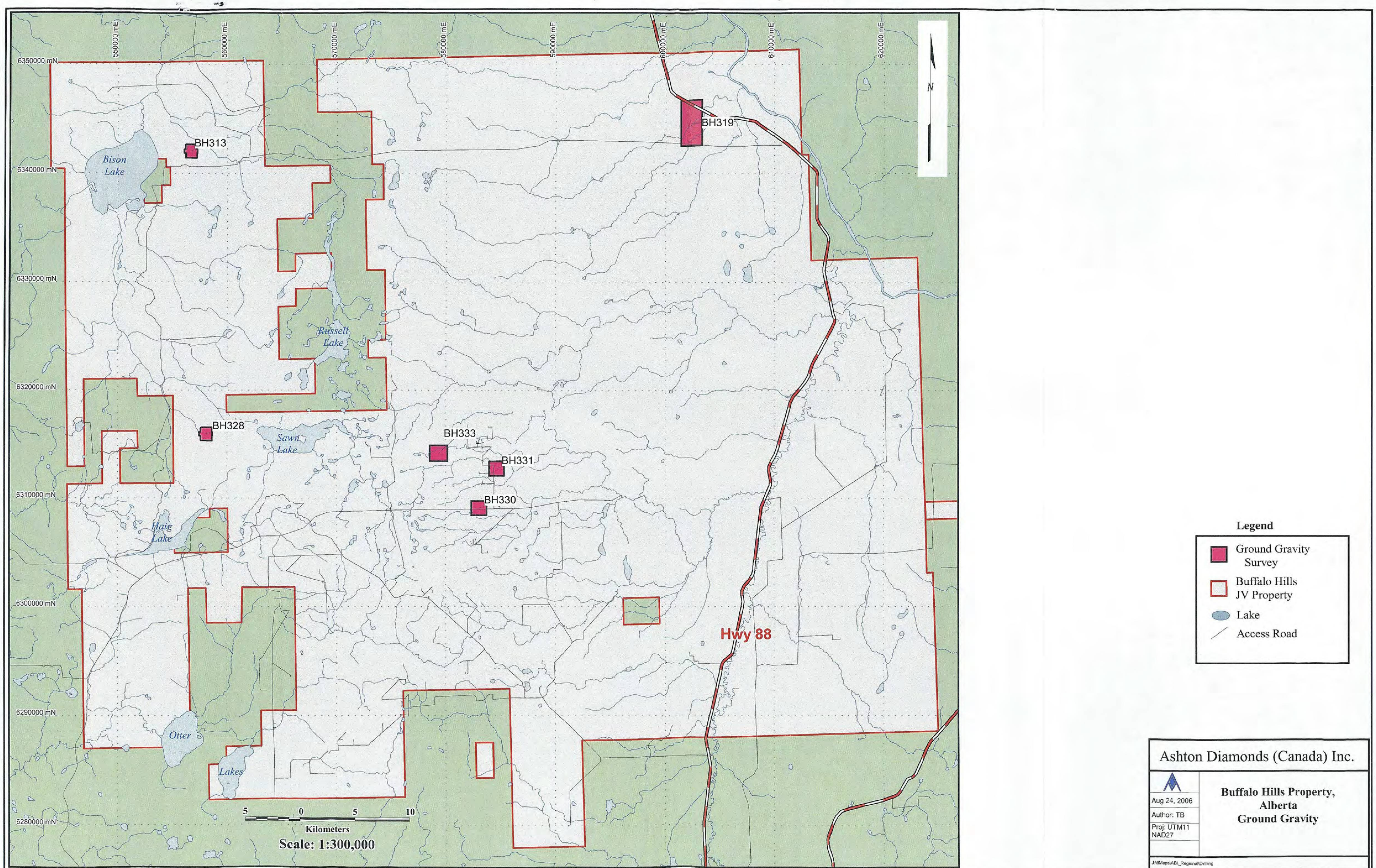
APPENDIX "B" – AIRBORNE GEOPHYSICS

- Ground Gravity Survey Location Map
- Ground Gravity Survey Plots



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620000 mE
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6340000 mN
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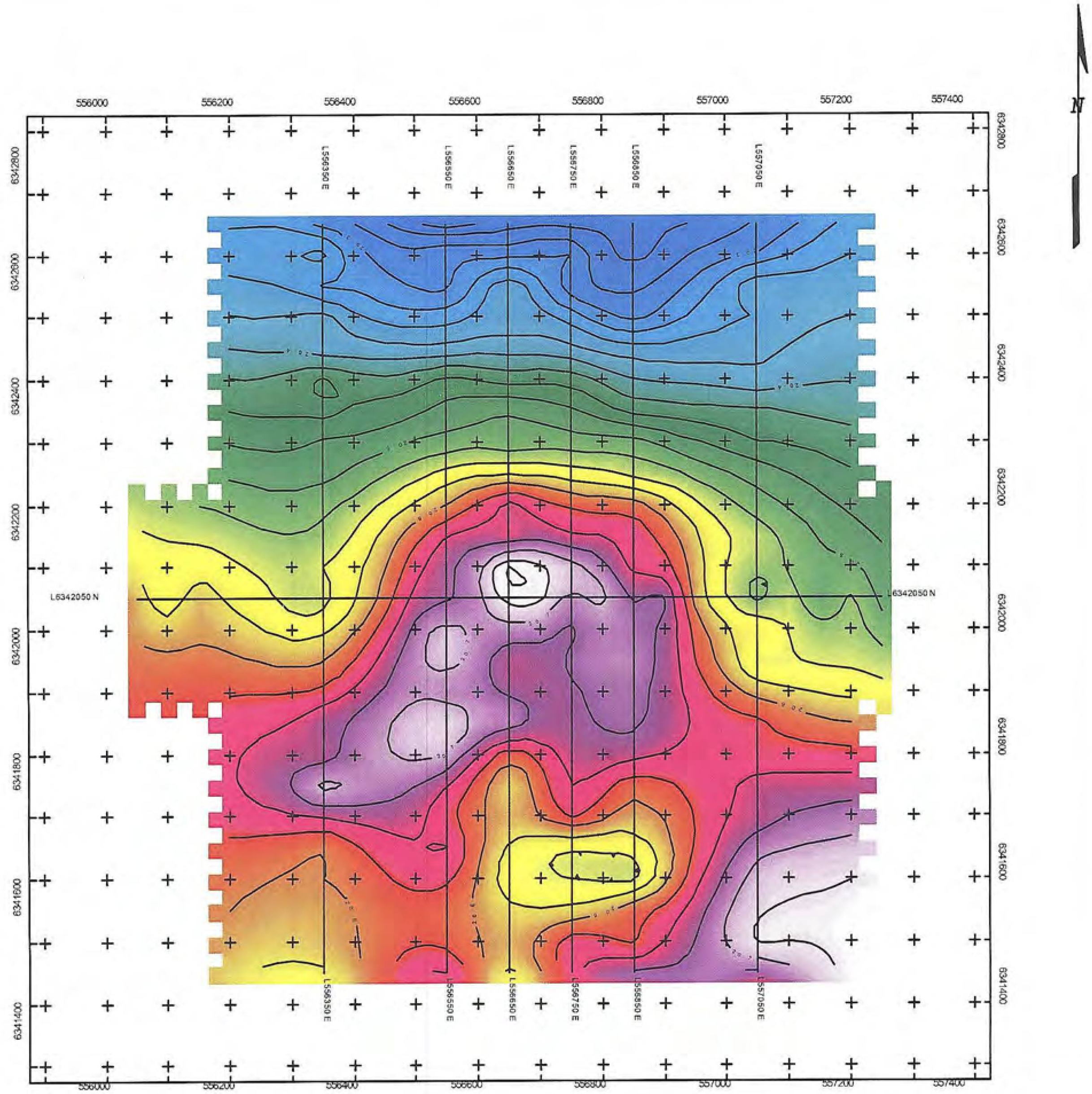
6320000 mN
6310000 mN
6300000 mN
6290000 mN
6280000 mN
N
Bison Lake
BH313
BH319
Russell Lake
BH328
Sawn Lake
BH333
BH331
BH330
Haig Lake
Otter Lakes
Hwy 88
5 0 5 10
Kilometers
Scale: 1:300,000
Legend
Ground Gravity Survey
Buffalo Hills JV Property
Lake
Access Road
Ashton Diamonds (Canada) Inc.
Aug 24, 2006
Author: TB
Proj: UTM11 NAD27
Buffalo Hills Property, Alberta
Ground Gravity



250 0 250 500

Meters

Scale: 1:10,000

Ashton Diamonds (Canada) Inc.

Aug 29, 2006

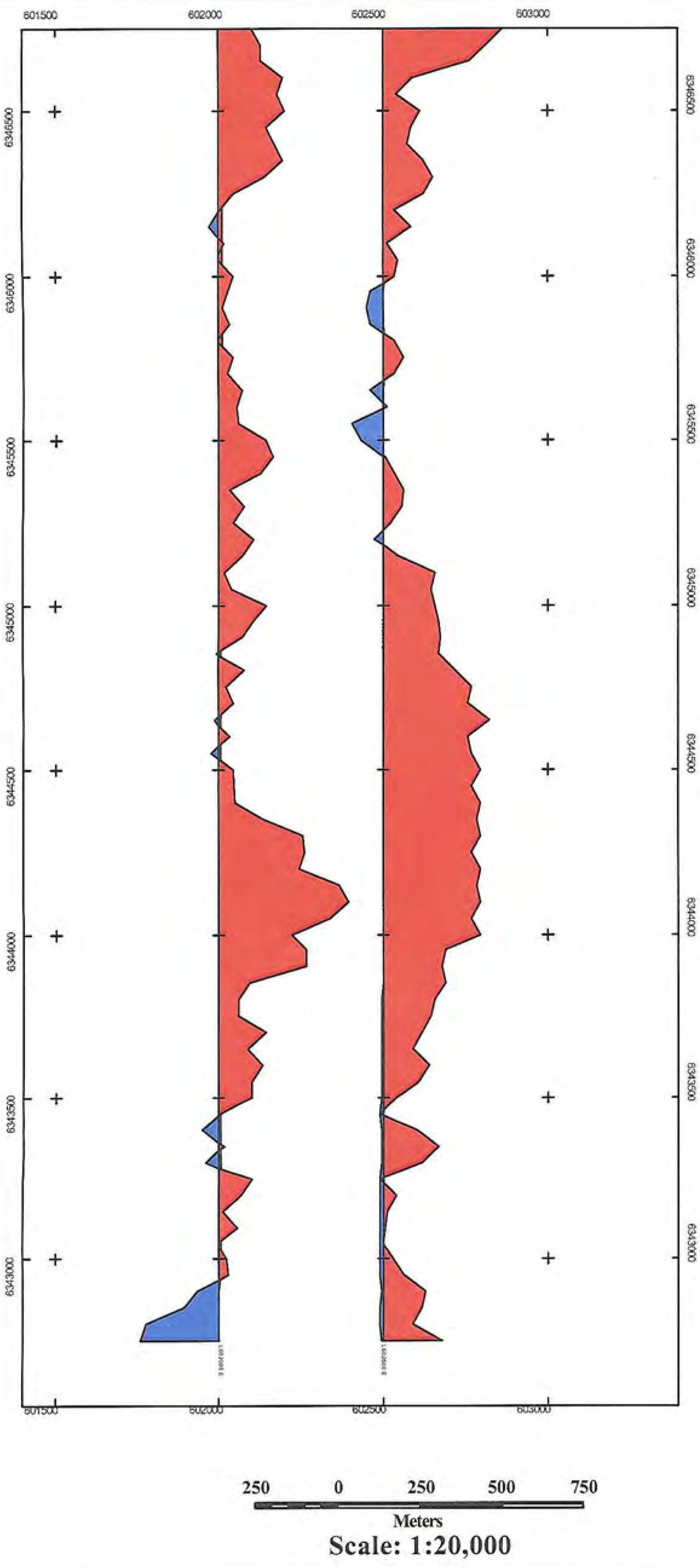
Author: TB

Proj: UTM12 NAD27

Buffalo Hills Property
Alberta
BH313 Bouguer Gravity

J:\6Maps\AB_Regional\Gravity

Bouguer Gravity Data 2.0 g/cc



Bouguer Gravity data with regional removed.

Profile Base: 0

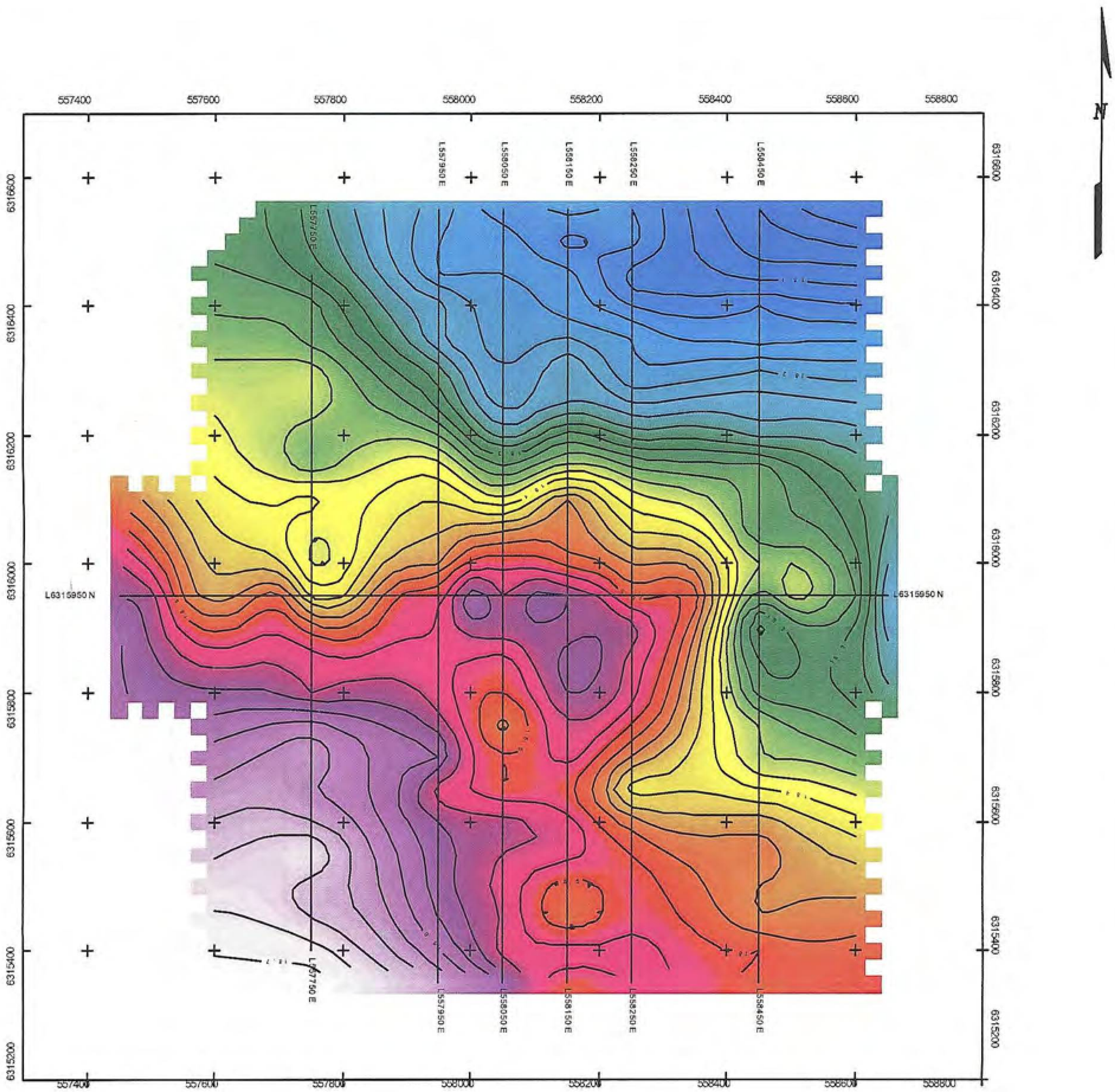
Profile Scale: 0.1 mgal/cm

Positive right

Ashton Diamonds (Canada) Inc.

Aug 29, 2006	**Buffalo Hills Property**
Author: TB	**Alberta**
Proj: UTM12 NAD27	**BH319 Bouguer Gravity**

J:\6Maps\AB_Regional\Gravity



250 0 250 500

Meters

Scale: 1:10,000

Ashton Diamonds (Canada) Inc.

Aug 29, 2006

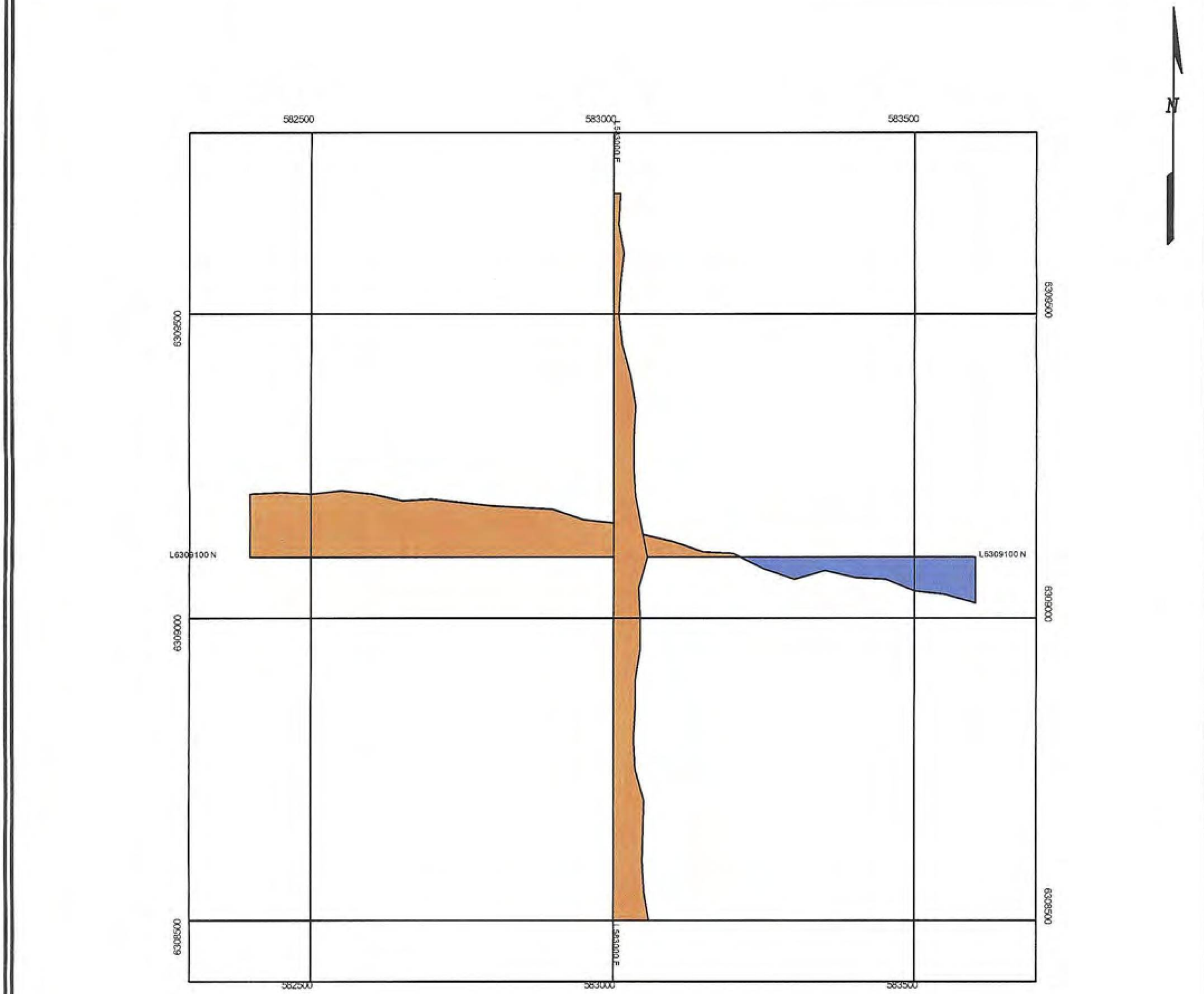
Author: TB

Proj: UTM12 NAD27

Buffalo Hills Property
Alberta
BH328 Bouguer Gravity

J:\5Maps\AB_Regional\Gravity

Bouguer Gravity Data 2.0 g/cc



250 0 250 500

Meters

Scale: 1:10,000

Bouguer Gravity Profiles

Profile base: 35.2 mgals

Profile scale: 0.1 mgal/cm

Density used: 2.0 g/cc

Ashton Diamonds (Canada) Inc.

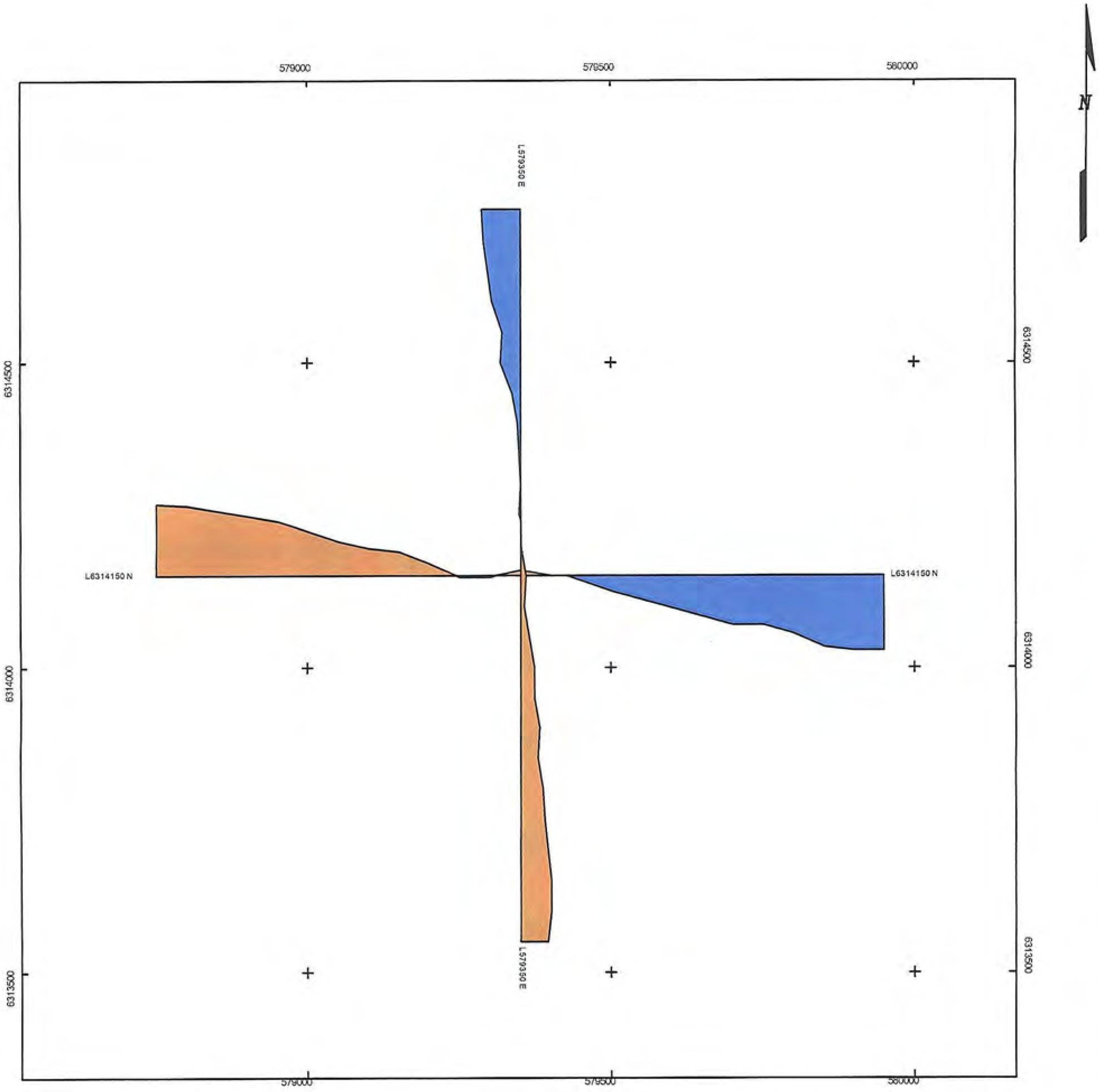
Aug 29, 2006

Author: TB

Proj: UTM12 NAD27

Buffalo Hills Property
Alberta
BH330 Bouguer Gravity

J:\6Maps\AB_Regional\Gravity



250 0 250 500

Meters

Scale: 1:10,000

Bouguer Gravity Profiles

Density: 2.0 g/cc

Profile base: 11.96 mgal

Profile scale: 0.5 mgal/cm

Ashton Diamonds (Canada) Inc.

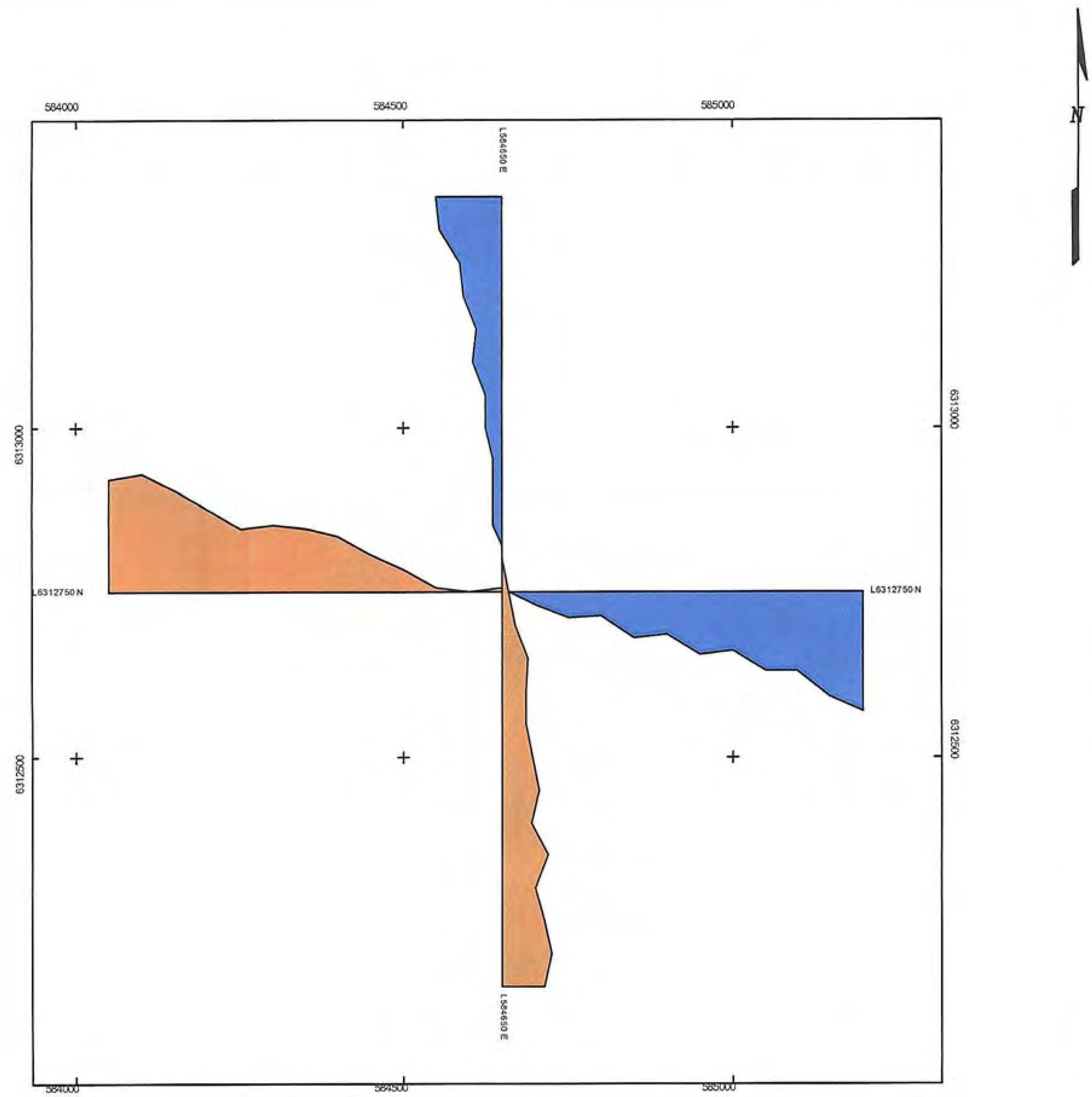
Aug 29, 2006

Author: TB

Proj: UTM12 NAD27

Buffalo Hills Property
Alberta
BH333 Bouguer Gravity

J:\6Maps\AB_Regional\Gravity



250 0 250 500

Meters

Scale: 1:10,000

Bouguer Gravity Profiles

Density: 2.0 g/cc

Profile base: 44.95 mgal

Profile scale: 0.1 mgal/cm

Ashton Diamonds (Canada) Inc.

Aug 29, 2006

Author: TB

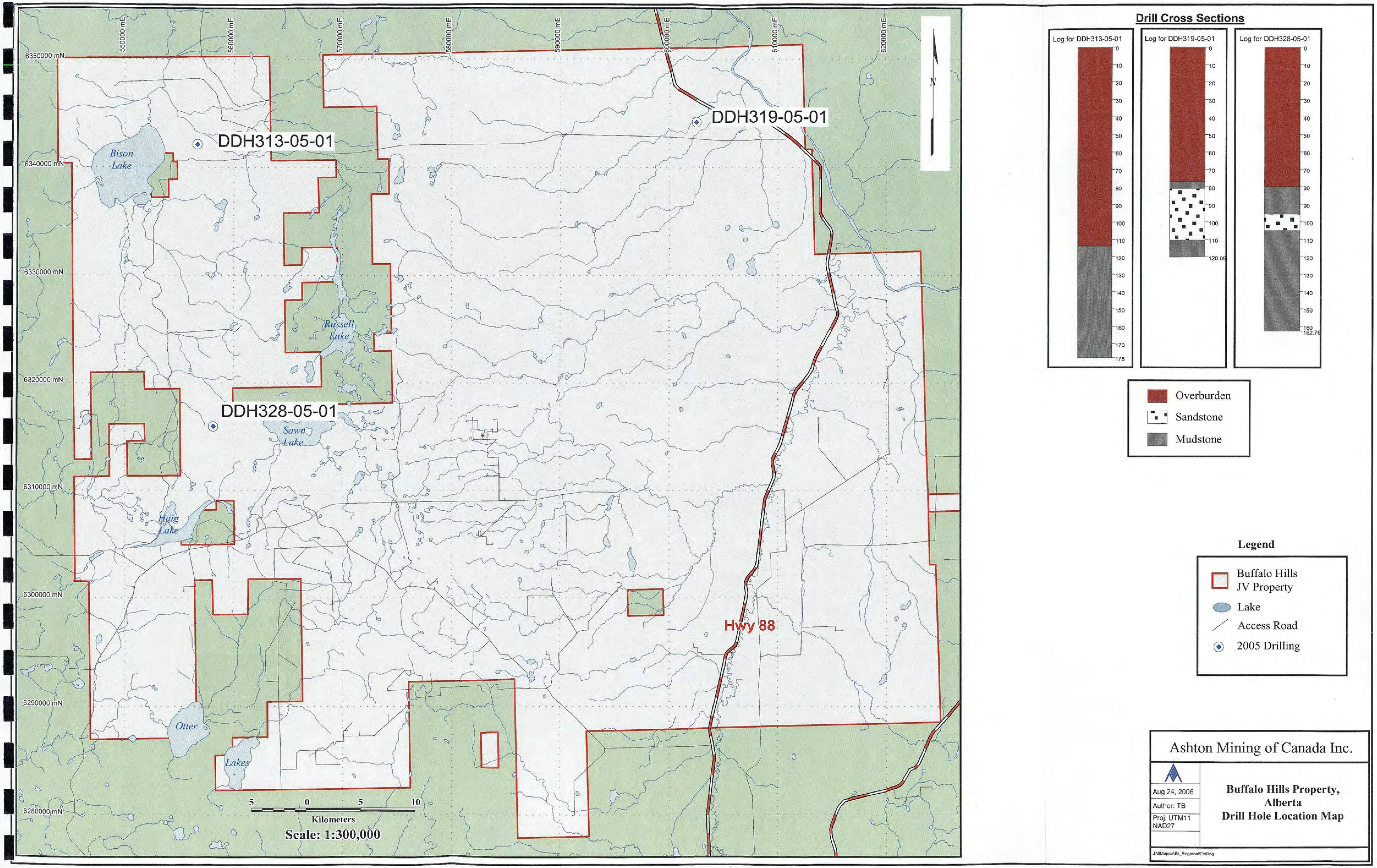
Proj: UTM12 NAD27

Buffalo Hills Property
Alberta
BH331 Bouguer Gravity

J:\6Maps\AB_Regional\Gravity

APPENDIX "C" – DRILLING

- Drill Hole Location Map with Cross Sections
- Drill Hole Summary Logs



550000 mE
560000 mE
570000 mE
580000 mE
590000 mE
600000 mE
610000 mE
620000 mE
6350000 mN
6340000 mN
6330000 mN
6320000 mN
6310000 mN
6300000 mN
6290000 mN
6280000 mN
N
DDH313-05-01
DDH319-05-01
DDH328-05-01
Bison Lake
Russell Lake
Sawn Lake
Haig Lake
Otter Lakes
Hwy 88
5 0 5 10
Kilometers
Scale: 1:300,000
Drill Cross Sections
Log for DDH313-05-01
Log for DDH319-05-01
Log for DDH328-05-01
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
178
120.09
162.76
Overburden
Sandstone
Mudstone
Legend
Buffalo Hills JV Property
Lake
Access Road
2005 Drilling
Ashton Mining of Canada Inc.
Aug 24, 2006
Author: TB
Proj: UTM11 NAD27
Buffalo Hills Property, Alberta
Drill Hole Location Map

Ashton Mining of Canada Inc.
Diamond Drill Hole Summary Log for DDH313-05-01

HOLE-ID	**DDH313-05-01**	*Start Date*	13-Sep-05	*Contractor*	Connors Drilling
Anomaly	BH313	*End Date*	17-Sep-05	*JV*	ACA/AEC/PUG
Property	BUFFALO HILLS	*Length (m)*	178	*Wk Permit*	MME- 050004
Easting	556639	*Azimuth*	0	*District*	NW3 Peace
Northing	6342127	*Dip*	-90	*Legal Desc.*	NE - 5 -95 - 13 - 5
Elevation		*Core Size*	NQ2	*MIM Permit*	9396969984
UTM Zone	11	*Geologist*	V. Zhuk	*Date Logged*	17-Sep-05
Mapsheet	84F01			*Logged by*	V. Zhuk

Purpose Test coincident gravity and electromagnetic target BH313.

Comments Drill site centre at ground geophysical grid coordinate 556650mE and 6342075mN. Drill hole was moved 15m north along the survey line to accommodate helicopter landing. Lorance GPS readings: 8 satelites, 5-10 min.
Box. 1-13 and 17-26 at site; 14-16 to V.

Interval	*Rock Type*	*Description*
0 to 113.6	**OB**	**Overburden**
113.6 to 178	**MUDST**	**Mudstone**
178	**EOH (m)**	

Ashton Mining of Canada Inc.
Diamond Drill Hole Summary Log for DDH319-05-01

HOLE-ID	**DDH319-05-01**	*Start Date*	28-Sep-05	*Contractor*	Connors Drilling
Anomaly	BH319	*End Date*	01-Oct-05	*JV*	ACA/AEC/PUG
Property	BUFFALO HILLS	*Length (m)*	120.09	*Wk Permit*	MME-050004
Easting	602500	*Azimuth*	0	*District*	NW2 Lesser Slav
Northing	6344270	*Dip*	-90	*Legal Desc.*	NE - 12 -95 - 9 - 5
Elevation		*Core Size*	NQ2	*MIM Permit*	9396060080
UTM Zone	11	*Geologist*	V. Zhuk	*Date Logged*	01-Oct-05
Mapsheet	84G03			*Logged by*	V.Zhuk

Purpose To test coincident gravity and electormagnetic target BH319.

Comments Drill site centre picked at ground geophysical grid coordinate 602500mE and 6344250mN. Drill hole was moved 20m north along the survey line to accommodate helicopter landing.
GPS coordinates estimated.
Boxes 1-4, 9-14 at site; 5-8 to Vancouver.

Interval	*Rock Type*	*Description*
0 to 76.68	**OB**	**Overburden**
76.68 to 81.08	**MUDST**	**Mudstone**
81.08 to 110.3	**SANDST**	**Sandstone**
110.3 to 120.1	**MUDST**	**Mudstone**
120.09	**EOH (m)**	

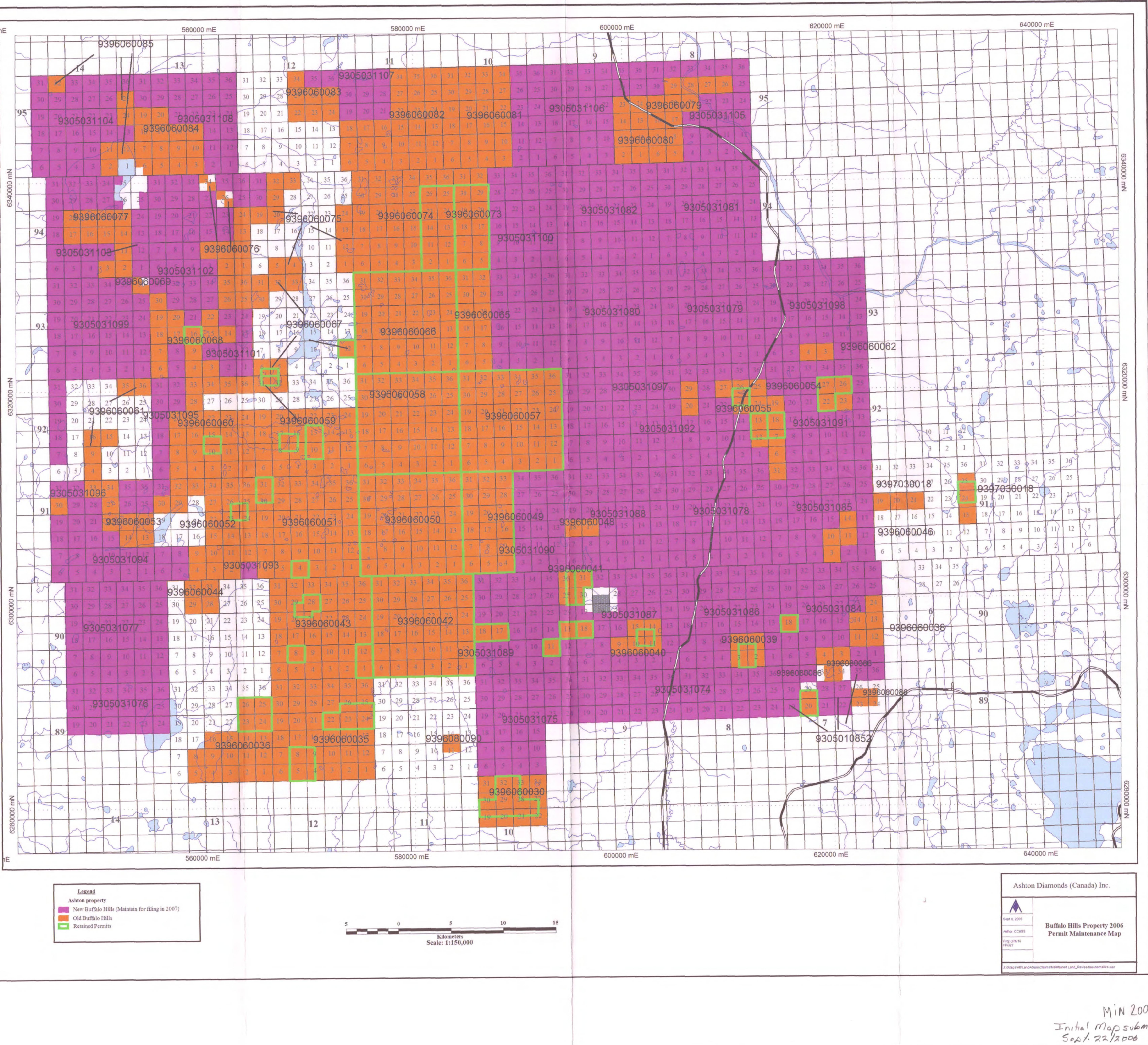
Ashton Mining of Canada Inc.
Diamond Drill Hole Summary Log for DDH328-05-01

HOLE-ID	**DDH328-05-01**	*Start Date*	19-Sep-05	*Contractor*	Connors Drilling
Anomaly	BH328	*End Date*	24-Sep-05	*JV*	ACA/AEC/PUG
Property	BUFFALO HILLS	*Length (m)*	162.76	*Wk Permit*	MME-050004
Easting	558148	*Azimuth*	0	*District*	NW3 Peace
Northing	6315954	*Dip*	-90	*Legal Desc.*	NE - 17 -92 - 13 - 5
Elevation		*Core Size*	NQ2	*MIM Permit*	9396060060
UTM Zone	11	*Geologist*	V. Zhuk	*Date Logged*	24-Sep-05
Mapsheet	84C16			*Logged by*	V. Zhuk

Purpose To test coincident gravity and electromagnetic anomaly BH328.

Comments Drill site centre picked at grid coordinate 558150mE and 6315950mN. Drill hole was moved 15m north along the survey line to accommodate helicopter landing.
Lorance GPS readings: 9 satellites, 5-10 min.
Boxes 1-5, 9-20 at site; 6-8 to Vancouver.

Interval	*Rock Type*	*Description*
0 to 79.72	**OB**	**Overburden**
79.72 to 95.71	**MUDST**	**Mudstone**
95.71 to 104.9	**SANDST**	**Sandstone**
104.9 to 162.8	**MUDST**	**Mudstone**
162.76	**EOH (m)**	



MIN 2006 0018
Initial Map submitted with
Sept. 22/2006 report

2006 0018

Ashton Mining of Canada Inc.
Diamond Drill Hole Summary Log for DDH313-05-01

HOLE-ID	**DDH313-05-01**	*Start Date*	13-Sep-05	*Contractor*	Connors Drilling
Anomaly	BH313	*End Date*	17-Sep-05	*JV*	ACA/AEC/PUG
Property	BUFFALO HILLS	*Length (m)*	178.0	*Wk Permit*	MME- 050004
Easting	556639	*Azimuth*	0	*District*	NW3 Peace
Northing	6342127	*Dip*	-90	*Legal Desc.*	NE - 5 -95 - 13 - 5
Elevation	605	*Core Size*	NQ2	*MIM Permit*	9396969984
UTM Zone	11	*Geologist*	V. Zhuk	*Date Logged*	17-Sep-05
Mapsheet	84F01			*Logged by*	V. Zhuk

Purpose Test coincident gravity and electromagnetic target BH313.

Comments Drill site centre at ground geophysical grid coordinate 556650mE and 6342075mN. Drill hole was moved 15m north along the survey line to accommodate helicopter landing. Lorance GPS readings: 8 satelites, 5-10 min.
Box. 1-13 and 17-26 at site; 14-16 to V.

Interval | *Description*

0 to 113.6 OB

0-15.24 m
Triconed. No Recovery. Some boulders when drilled through.

15.24-113.63m
Dark grey/brownish sandy clay till. Abudance of clasts and a large variety of clast sizes. Mostly clay size particles. Also, pebble and boulder size: sanstone boulder with carbonate cement at 15.4-16.5m. Clay till with increased coarse sand-size particles; rare gravel size at 57.7-59.1m and 65.5-95.1m.
Clasts are sub-angular to rounded, sand-size particles mostly quartz and feldspar. Larger clasts consist of light-grey sandstone, granite, limestone, mudstone, rare black shale fragments. Generally, till is poorly sorted. Color is more brownish with increase of sand-size particle componenet. Core recovery is up to 100%, with overall recovery 90%, and occasional washouts, i.e. 17.22-19.51m, 69.19-70.25m, 74.07-76.50m.

113.6 to 178 MUDST

Alternating fine sandy mudstone and unconsolidated sand. Colour of mudstone is more brownish than ovelaying till. Bedding is perpendicular to core axes (TCA). The rock becomes very sticky through the mudstone sections. At contact, mudstone was broken due to drilling problem.

113.63-134.90m
Grey-brownish (contrasting to overlaying grey till) mudstone/siltstone. Generally, bedding is at 90 degrees TCA, but occsionally rock appears massive due to increase of silt/sand component (129.24-147.83m). This interval lacks fossil content too, even it appears to have a few percents of organic matter. There is a 5mm gypsum vein at 124.05 on bedding surface.

134.90-135.23m
Brecciated zone: light brown angular up to 3cm in size siderite-rich(?) siltstone particles in the same as above matrix of mudstone/siltstone.

135.23-139.65m
Black friable mudstone, bedding consistent at 90 degrees TCA. Gradational change to black soft sand, which alternates with siltstone/mudstone.

139.65-168.86m
Mudstone becomes increasingly fissle; bedding is consistent at 85-90 degrees TCA. Beds of hard siltstone up to 6cm occasionally occur: 145.16m, 147.60m, 148.36m, 163.07m, 166.91m. Small patches of pyrite occur through the interval.

168.86-174.96m
More sandy intervals, with poor (less than 50%) recovery due to wash-out. Sand is not lithified and poorly sorted.

174.96-178.00m
Mudstone is blocky and solid; 100% recovery. Bedding is at 90 degrees TCA.

178 EOH (m)

Dec/19,/2006

20060018

Ashton Mining of Canada Inc.
Diamond Drill Hole Summary Log for DDH319-05-01

HOLE-ID	**DDH319-05-01**	*Start Date*	28-Sep-05	*Contractor*	Connors Drilling
Anomaly	BH319	*End Date*	01-Oct-05	*JV*	ACA/AEC/PUG
Property	BUFFALO HILLS	*Length (m)*	120.1	*Wk Permit*	MME-050004
Easting	602500	*Azimuth*	0	*District*	NW2 Lesser Slav
Northing	6344270	*Dip*	-90	*Legal Desc.*	NE - 12 -95 - 9 - 5
Elevation	475	*Core Size*	NQ2	*MIM Permit*	9396060080
UTM Zone	11	*Geologist*	V. Zhuk	*Date Logged*	01-Oct-05
Mapsheet	84G03			*Logged by*	V.Zhuk

Purpose To test coincident gravity and electormagnetic target BH319.

Comments Drill site centre picked at ground geophysical grid coordinate 602500mE and 6344250mN. Drill hole was moved 20m north along the survey line to accommodate helicopter landing.
GPS coordinates estimated.
Boxes 1-4, 9-14 at site; 5-8 to Vancouver.

Interval	*Description*

0 to 76.68 OB

0-12.19m
Triconed; no recovery.

12.19-76.68m
Dark grey to brownish clay till with some gravel intervals. Clasts are abundant through the interval, irregular, angular to sub-rounded. Clasts are clustered at some intervals (at 50.0m). Clasts consist of light grey sandstone, mudstone, limestone, granite. Sorting of till is generally very poor. Core recovery varies through the interval from 10% to 100%; poor recovery is mostly associated with gravel/cobbles intervals.

12.19-19.51m
Clay till, dark grey. Almost lost recovery for the last three meters, where core is broken and soft clayish prior to gravel interval.

19.51-22.56m
Only 30 cm recovered. Pebbles, boulders of granitic composition, dolomite; sub-rounded to angular.

22.56-43.89m
Dark grey to dark brown silty clay till. Core recovery varies from 55% to 100% through the interval.

43.89-49.99m
Less than 15% recovery of mixed gravel and clay till. Pebbles and gravel in the interval make very difficult drilling conditions.

49.99-59.13m
Mostly clay till with some granitic cobbles/boulders.

59.13-62.23m
Only 35 cm recovered of sub-angular gravel, pebbles.

62.23-65.13m
Clay rich till.

65.13-66.78m
Similar interval (as in 59.13-62.23m), with gravel/pebbels of the same granitic and dolomite composition. Only 10-15% recovery.

66.78-76.68m
Silty clay till with clasts observed to the bottom of interval. Recovery increased up to 100%. Till is quite sandy due to small clasts.

76.68 to 81.08 MUDST

Greyish mudstone with waxy feel. No clasts observed. The upper contact is hard to recognize without a close observation, as the colour is similar greyish to overlaying till. Also, some bedding appears in mudstone after drying up, in contrast to no-bedding in a till.

81.08 to 110.3 SANDST

Sand/sandstone.

81.08-86.52m
Unconsolidated sand, coarse grained; quartz, feldspar. Very strong smell of bitumen. Recovery was poor at 15-20%.

86.52-110.34m
Lithified sandstone with gradational change to siltstone at the bottom of the interval. Bedding is perpendicular TCA. The colour is light grey or grey (wet). Sand particles consist of quartz and feldspar.

110.3 to 120.1 MUDST

Silty mudstoneof dark grey colour at the top of interval. The colour changes to almost black with depth. Bedding is well defined at 90 degrees TCA. Fine disseminated pyrite is common through the interval.

120.09 EOH (m)

Dec/19,/2006

20060018

Ashton Mining of Canada Inc.
Diamond Drill Hole Summary Log for DDH328-05-01

HOLE-ID	DDH328-05-01	Start Date	19-Sep-05	Contractor	Connors Drilling
Anomaly	BH328	End Date	24-Sep-05	JV	ACA/AEC/PUG
Property	BUFFALO HILLS	Length (m)	162.8	Wk Permit	MME-050004
Easting	558148	Azimuth	0	District	NW3 Peace
Northing	6315954	Dip	-90	Legal Desc.	NE - 17 -92 - 13 - 5
Elevation	745	Core Size	NQ2	MIM Permit	9396060060
UTM Zone	11	Geologist	V. Zhuk	Date Logged	24-Sep-05
Mapsheet	84C16			Logged by	V. Zhuk

Purpose To test coincident gravity and electromagnetic anomaly BH328.

Comments Drill site centre picked at grid coordinate 558150mE and 6315950mN. Drill hole was moved 15m north along the survey line to accommodate helicopter landing.
Lorance GPS readings: 9 satellites, 5-10 min.
Boxes 1-5, 9-20 at site; 6-8 to Vancouver.

Interval *Description*

0 to 79.72 OB

0-13.41m
Triconed: no recovery.

13.41-79.72m
Dark grey/brownish clay till with some sandy intervals. Clasts are abundant through the OB interval, irregular, aangular to rounded, up to a few centimeters. Larger clasts consist of granite and light-grey sandstone. Sorting of till is poor. The colour of till is getting more brownish with an increase of sand-size material.

13.41-25.60m
Very poor recovery with only 60cm available; unsorted sand: quartz, feldspar. In fact, mix of clay and sand due to recovery problem.

25.60-34.75m
Dark grey silty clay, clasts angular. Clasts are up to 4cm in size; granite, sandstone. Approx. 10% recovery for the interval.

34.75-46.94m
Same sandy/silty till as above, with more clasts.

46.94-68.28m
No bedding observed. Gradational change from sandy interval to almost pure clay with rare clasts. Dolomite 6cm boulder at 51.59m, quartzite 25cm boulder at 62.17m. Recovery increased up to almost 100% with depth.

68.28-77.42m
Similar sandy till as above with an increase of sand/pebble clasts. Rare clasts of black mudstone (3-4cm) present through the interval.

77.42-79.72m
More clay-rich till with minor clasts at the bottom of OB interval. Before the contact, the colour is slightly brownish.

79.72 to 95.71 MUDST

Sandy mudstone, dark grey to greyish colour. The contact is observed by disappearence of clasts, colour change, and strong presence of pyrite (FeS_2). The suface of contact is waxy, approx. 75 degrees TCA. Also, bedding appears, more obvious with dry-up. Recovery averages at 50-60% for more sandy intervals and up to 100% for finer mudstone intervals.

95.71 to 104.9 SANDST

Very fine (almost silt) sand, not lithified. Very poor recovery, as mostly washed out. Short 2cm interval of organic matter (coal?) at 102.00m. Gradational change to blocky mudstone at the end of interval. Recovery is poor (<50%); difficult to drill.

104.9 to 162.8 MUDST

104.85-123.53m

Mudstone, silty, colour pallet changes from dark grey to brownish. Beddng at 80-90 degrees TCA. At 114.95m a 10cm interval of of sandstone/siltstone, which gradationally changes from the silty mudstone at the top; light grey colour.

123.53-143.14m

Similar mudstone, as above with less sandy content. Intervals of argillite observed at 133.68- 133.78m, 137.08-137.13m; very light-greenish colour. At 141.64-143.14m poorly lithified (easy to break in hands) very fine-grained sandstone interval.

143.14-162.76m

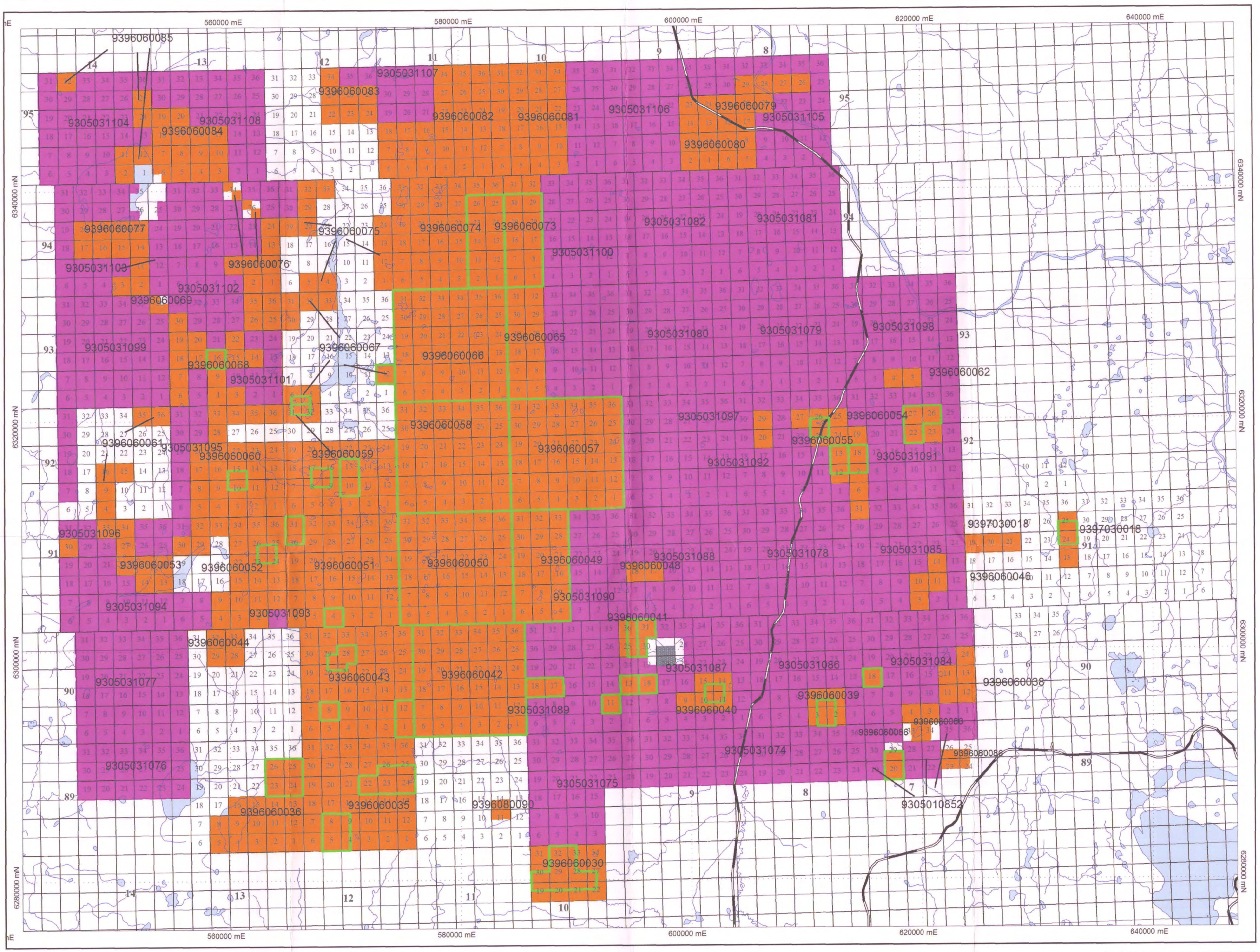
Mudstone, alternating with some sandy intervals as described above to the EOH.

162.76 EOH (m)

Dec/19,/2006

2006 0018

0.3 List of Figures



Legend

Ashton property

- New Buffalo Hills (Maintain for filing in 2007)
- Old Buffalo Hills
- Retained Permits

5 0 5 10 15
Kilometers
Scale: 1:150,000

Ashton Diamonds (Canada) Inc.

FIGURE 7

Buffalo Hills Property 2006 Permit Maintenance Map