BC Geological Survey
Coal Assessment Report
1027

COAL ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Bingay A, B and C Coal Property Report 2016 Technical Assessment Report

TOTAL COST: $475,535.85

AUTHOR(S): Ji Hong Zhou, Geologist

SIGNATURE(S): Victor Zhou

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): CX-12-4/Feb.11,2010
STATEMENT OF WORK EVENT NUMBER(S)/DATE(S): 1200056, Feb.17,2016

YEAR OF WORK: 2016

PROJECT NAME: Bingay A, B and C Area Metallurgical Coal Project

COAL LICENSE(S) AND/OR LEASES ON WHICH PHYSICAL WORK WAS DONE:
418502 (Bingay A), 418503 (Bingay B)

BC MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Kootenay Land District, Fort Steele Mining Division
NTS / BCGS: 82J02/07
LATITUDE: 50° 11' 53"
LONGITUDE: 114° 58' 37" (at Centre of work)
UTM Zone: ZONE 11 EASTING: 644385 NORTHING: 5562611

OWNER(S): Centerpoint Resources Ins.

MAILING ADDRESS: 1055-1140 West Pender Street, Vancouver BC V6E4G1

OPERATOR(S) [who paid for the work]: Centerpoint Resources Ins.

MAILING ADDRESS: 1055-1140 West Pender Street, Vancouver BC V6E4G1

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**):
Bingay Creek, Elk Valley Coalfield, Metallurgical Coal, Elk Formation, Mist Mountain Formation, Elkford, Bingay Hill syncline, parallel synoid sets, Jura-Cretaceous, Moose Mountain Sandstone

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
Bingay Creek Coal Property Assessment Report, 5 June 2006, File No. 895
Bingay Creek Coal Property Assessment Report, 2010, File No. 970
Bingay Creek Coal Property Assessment Report, 2011/2012, File No. 1011

SUMMARY OF TYPES OF WORK IN THIS REPORT		EXTENT OF WORK (in metric units)	ON WHICH TENURES
GEOLOGICAL (scale, area)			
	Ground, mapping	None	
	Photo interpretation	None	
GEOPHYSICAL (line-kilometres)			
	Ground (Specify types)	None	
	Airborne (Specify types)	None	
	Boreholes:	1 Borehole, 469.18m	418502
	Gamma, Resistivity,	yes	
	Resistivity	None	
	Caliper	yes	
	Deviation	yes	
	Dip	None	
	Others (specify):	None	
DRILLING			
	Core	6 holes, 813.4m	418502, 418503
	Non-Core		
SAMPLING AND ANALYSES			
Total Number of Samples	1 coal samples 44 geochemical samples	Coal quality Selenium/Cadmium	418502 418503
	Proximate	1	
	Ultimate	1	
	Petrographic	1	
	Vitrinite reflectance	1	
	Coking	1	
	Wash tests	1	
PROSPECTING (scale/area)		None	
PREPARATORY/PHYSICAL			
Line/grid (km)		None	
Trench (number, metres)		3, 9m	418503
Bulk sample(s)		None	

Appendix A Part 1 and Appendix B Part 5 remain confidential under the terms of the Coal Act Regulation, and have been removed from the public version.

http://www.bclaws.ca/civix/document/id/complete/statreg/251_2004

Exploration Work type	Comment	Days		
Ted Nunn/Professional			$0.00	$8,000.00
Munroe Geological/Professional			$0.00	$29,258.85
Sarah Shi/Professional			$0.00	$5,000.00
SNC/Professional			$0.00	$60,000.00
Other (specify)				
				$102,258.85
Office Studies	**List Personnel (note - Office only, do not include field days**			
Literature search			$0.00	$0.00
Database compilation			$0.00	$0.00
Computer modelling			$0.00	$2,200.00
Reprocessing of data			$0.00	
General research			$0.00	$0.00
Report preparation			$0.00	$3,000.00
Officer repair				
BC hydro				
Supply				
Other (specify)				
				$5,200.00
Airborne Exploration Surveys	**Line Kilometres / Enter total invoiced amount**			
Aeromagnetics			$0.00	$0.00
Radiometrics			$0.00	$0.00
Electromagnetics			$0.00	$0.00
Gravity			$0.00	
Digital terrain modelling			$0.00	
Other (specify)			$0.00	$0.00
				$0.00
Remote Sensing	**Area in Hectares / Enter total invoiced amount or list personnel**			
Aerial photography			$0.00	
LANDSAT			$0.00	$0.00
Other (specify)			$0.00	$0.00
				$0.00
Ground Exploration Surveys	**Area in Hectares/List Personnel**			
Geological mapping			$0.00	$1,200.00
Regional			$0.00	$0.00
Reconnaissance			$0.00	$0.00
Prospect			$0.00	$0.00
Underground			$0.00	$0.00
Air Project			$0.00	$0.00
Seismic Surveys			$0.00	$0.00
Trenches			$0.00	$0.00
Other (specify)			$0.00	$0.00
				$1,200.00

Ground geophysics	**Line Kilometres / Enter total amount invoiced list personnel**			
Radiometrics				
Magnetics				
Gravity				
Digital terrain modelling				
Electromagnetics	*note: expenditures for your crew in the field*			
SP/AP/EP	*should be captured above in Personnel*			
IP	*field expenditures above*			
AMT/CSAMT				
Resistivity				
Complex resistivity				
Seismic reflection				
Seismic refraction				
Well logging	Define by total length			$8,862.00
Geophysical interpretation				
Petrophysics				
Density				$0.00
Standby				$0.00
Log delivery				$0.00
Mic				
Other (specify)				$0.00
				$8,862.00
Geochemical Surveying	**Number of Samples**	**No.**	**Rate**	**Subtotal**
Drill (cuttings, core, etc.)			$0.00	$0.00
Measurement				$1,760.00
Sample Preparation				
Stream sediment			$0.00	$0.00
Soil	*note: This is for assays or*		$0.00	$0.00
Rock	*laboratory costs*		$0.00	$0.00
Water			$0.00	
Biogeochemistry			$0.00	$0.00
Whole rock			$0.00	$0.00
Petrology			$0.00	
Core Box				
Holes				
Other (specify)			$0.00	$0.00
				$1,760.00
Drilling	**No. of Holes, Size of Core and Metres**	**No.**	**Rate**	**Subtotal**
Diamond			$0.00	$241,425.00
Field Time			$0.00	
Hydrological drilling steel				
Dozer/Cat road maintenance				
Mis				

Reverse circulation (RC)			$0.00	
Rotary air blast (RAB)			$0.00	
Reverse circulation (RC)			$0.00	
Rotary air blast (RAB)			$0.00	
General Supplies				$17,290.00
Gas Detector				
Excavator Sumps/Moving				$15,600.00
Dozer/Cat for site Prep				
Core Shed				
Expense				
Rental				
Core Logging				
Core Boxes				$17,620.00
Stumpage				
Dip Meter Insurance				
Other stumpage				
Dilling Security				
Water truck				
Site radio				
Auto Repair				
Maintenance				
Tools				
Site Prepare				
Fuel				
Labor				$16,650.00
Pump Test for hydrological				$9,000.00
Mine Electrical Power Design				
Other (specify)			$0.00	$0.00
				$317,585.00
Other Operations	**Clarify**	**No.**	**Rate**	**Subtotal**
Trenching			$0.00	$18,000.00
Trenching sample Boxes				
Bulk sampling			$0.00	$0.00
Underground development			$0.00	$0.00
Coal quality analysis				
Sample Tags				
excavator Rental				
Coal Sample analysis				
Snowplowing				$300.00
Other (specify)			$0.00	$0.00
				$18,300.00
Reclamation	**Clarify**	**No.**	**Rate**	**Subtotal**

After drilling	Seeding/Gravel			$1,600.00
Monitoring				
Other (specify)			$0.00	$0.00
				$1,600.00
Transportation		**No.**	**Rate**	**Subtotal**
Airfare			$0.00	$0.00
Taxi			$0.00	$0.00
truck repair			$0.00	
truck Rentals			$0.00	
truck transport				
kilometers			$0.00	$0.00
Freight				$690.00
ATV			$0.00	$0.00
Helicopter (hours)			$0.00	
Fuel (litres/hour)			$0.00	
Fuel Storage				
Tank				
Venicle intransit Storage				
Other				
				$690.00
Accommodation & Food	**Rates per day**			
Hotel			$0.00	
Camp			$0.00	$6,500.00
Camp Electrical				
Camp Supplies				
Camp Security				
Camp Communication				
Camp Fuel				
Camp Cook				
Storage Rent				
labor				
Van Rental				
Meals	day rate or actual costs-specify		$0.00	$5,400.00
				$11,900.00
Miscellaneous				
Telephone			$0.00	$1,180.00
First Aid				$5,000.00
Safety First Aid				
First Aid Evacuation Link				
Other (Specify)			$0.00	$0.00
				$6,180.00
Equipment Rentals				
Field Gear (Specify)			$0.00	$0.00
Sample Prep			$0.00	

Sink/Float			$0.00	
labor				
Other (Specify)				
				$0.00
Freight, rock samples				
			$0.00	$0.00
			$0.00	$0.00
				$0.00
TOTAL Expenditures				**$475,535.85**

Bingay A, B and C Coal Project

2016 Technical Assessment Report

Kootenay Land District, Fort Steele Mining Division

British Columbia

	Bingay A	Bingay B	Bingay C
NTS:	**82J07**	**82J02**	**82J02**
Latitude:	**50°15´58¨N**	**50°10´53¨N**	**50°9´05¨N**
Longitude:	**114°57´24¨W**	**114°59´01¨W**	**114°57´18¨W**
Tenure Numbers:	**418502**	**418503**	**418504**

CenterPoint Resources Inc.

1055-1140 West Pender St.

Vancouver, B.C., Canada

V6E 4G1

Prepared By:

Ji Hong Zhou, Geologist

Centermount Coal Ltd.

15 March 2017

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1.0 Introduction

This report is intended to summarize recent exploration work that has been completed on the Bingay A and B Coal Property in the calendar year 2016 for the purposes of compiling the data into a single document that meets the requirements of the B.C. Coal Regulations regarding the filing of Assessment Report. The report presents a technical assessment of the known geological structure and coal resource base of the Bingay A and B area of southeast British Columbia, based on the exploration and technical work conducted by Centermount Coal Ltd. from the start of 2010 to the end of 2016. The main purpose of Bingay A area is to prospecting and exploring of underground coal mines; analyzing and mapping to assist in the development of mining projects and for regional development; evaluation, and survey of coal deposits around the Bingay Creek property. The work main task of Bingay B area are to the drilling and trench to be beginning the geotechnical assessment for a prospective mine dump zone for Bingay Main under Bingay B area. Meanwhile, determine if a coal resource exists and make better use of drilling to explore structure geology. The Bingay C area is not actual work in 2016.

During the March-April 2016, Bingay A and B exploration area work done by Centermount Coal Ltd. The main purpose is to evaluate the geology, structure and exploratory potential for coal around the Bingay Creek Property to drilling exploration. The nearest incorporated settlement to Bingay A and B are the Town of Elkford, whose urban core lies 27 and 21 kilometres south by road from the Bingay A and B property. The Bingay Creek Coal area is essentially a long rectangle ranging from 0.5 to 3.0 km wide running up the west side of the Elk River Valley north of Elkford, BC. Access to the property is by vehicle along the Tembec Forest Service Road starting at kilometer marker 100 at Elkford. The 4 units run from marker 112 km in the south to just past 131 km in the north. The area is broken into 4 units noted as:

Unit Name	Area (Hectares)
Bingay Main	1157
Bingay A	576
Bingay B	645
Bingay C	1501(2016 no work)

The units run south from marker 131 with Bingay A being on top, followed by Bingay Main and then Bingay B and Bingay C at the south. The total area of the 4 units is 3,879 hectares (38.79 km^2). The exploration efforts ranged from 1700 m elevation on both sides of the valley down to the river bottom at 1300 m.

The Bingay A exploration study area is in the far north of Bingay Creek Coal Property, is bounded to the west by longitude 114°58.6´ W and to the south by latitude 50°14.9´ N. the exploration study area is further bounded to the east by the west bank of the Elk River and to north by latitude 50°17.0 ´N. the Bingay A coal property was formerly known as the Bingay Creek property until 2009. Applications were then underway by Centerpoint Resources Inc. for coal licences from adjoining Bingay Main area properties. Three additional property areas are noted in this report. They are shown in Figure 3-2 below.

The Bingay A and B property lie within the Southern Rocky Mountains of south-eastern British Columbia, Canada. Bingay Main coal licence adjoins Bingay A directly to the south. Bingay B and C coal licences border Bingay Main directly to the south. Several other coal exploration properties and active coal mines (including the Greenhills and Fording Coal mine operations) are situated near to Bingay Creek Property.

These properties and mines constitute the well-known Elk Valley coalfield. The Bingay A and B property consist of one Crown coal exploration licence respectively, totalling 576 hectares, and 645 hectares, originally issued by the British Columbia Mining of Energy, Mines and Petroleum Resources to other parties, and subsequently transferred to Centerpoint Resources Inc.

During the weather ranged from hot dry summer days to wet snow and rain over the 3 month period comprising 26 field days in 2010. The study included trench mapping, drill core examination, bush work with machete, hiking and GPS traverses. Limited outcrops were encountered and exposures were limited due to the thick glacial cover in the valley. Most of the outcrops were located in the higher elevations which assisted in the regional plotting of the structure but meaningful fine element rock examination was for the most part confined to working with the drill core and rotary chips from the ongoing drilling operations by Centermount on the Bingay property. The geologist was however able to secure some old drill records for 3 diamond drill holes of 2001for the area around Bingay A that had been placed just outside or just on the edge of the property. The holes were done for the oil and gas industry and no core was available to view. Some government mapping and reports were obtained to assist in the process.

In 2001 a series of diamond drill holes were commissioned by Shell Canada etal, north, east, west and south of the Bingay area. These holes were designed to develop structural data for the oil and gas industry and general data was captured from the intersected coals in the Bingay area. This drilling did provide a basis for the coal bed evaluation and several of the major beds were subjected to further testing. The result of this work is detailed later in the report.

The reader is invited to examine the Appendixes to better understand the scope of new reporting materials available.

Objective of the 2016 Work Plan:

The format of the 2016 Technical Assessment Report is to act as a continuation of the 2010 geological exploration program. To drilling exploration, planning, developing, coordinating, and conducting theoretical and experimental studies in mine exploration, evaluation, and survey of coal deposits around the Bingay Creek property. The target for the 2016 work plan is the following:

. To drilling, analyzing and mapping geological setting, local geology under Bingay A area.
. To drilling, knowing the geological formation, structural geology and stratigraphic markers for Bingay A area.
. To determine if a coal resource exists under Bingay A area.
. Coal Sample analyzes for the Chinese market.
. To determine if a coal resource exists under Bingay B area.
. To explore structure geology under Bingay B area.
. To the drilling and trench to be beginning the geotechnical assessment for a prospective mine dump zone under Bingay B area.

2.0 Terms of Reference

At the request of Centerpoint Resources Inc., this report was prepared to present the new body of 2016 geological information to the B.C. government's Geological Services branches.

The geological mapping work was completed during the summer and autumn of 2010 by Richard Munroe, P. Geo. As a result, see "Bingay Creek Coal Property Assessment Report, 2010, File No. 970".

2.1 Project Personnel and Contactors/Consultants

The 2016 the Technical Program for Centerpoint Resources Inc.'s Bingay A and B project were led by the Mine Manager Edward (Ted) Nunn P. Eng. He also worked as the project engineer.
Charlie Zhao of Centerpoint Resources Inc. acted as Project Coordinator and the Qualified First-Aid Attendant. Victor Zhou of Centermount Coal Ltd. was responsible as the field Geologist and the Designated Mine Manager. The Structural Geological Consultant was Richard Munroe, P. Geo. from Munroe Geological Services was responsible Bingay B Area geological exploration. George Li, P. Geo. of Centerpoint Resources Ins. reviewed this technical report.
The drilling program was completed by Dorado Drilling under the direction of the owner, Matt Falkins. The surveyor for the borehole was Align Surveys Ltd. of Fernie, B.C.

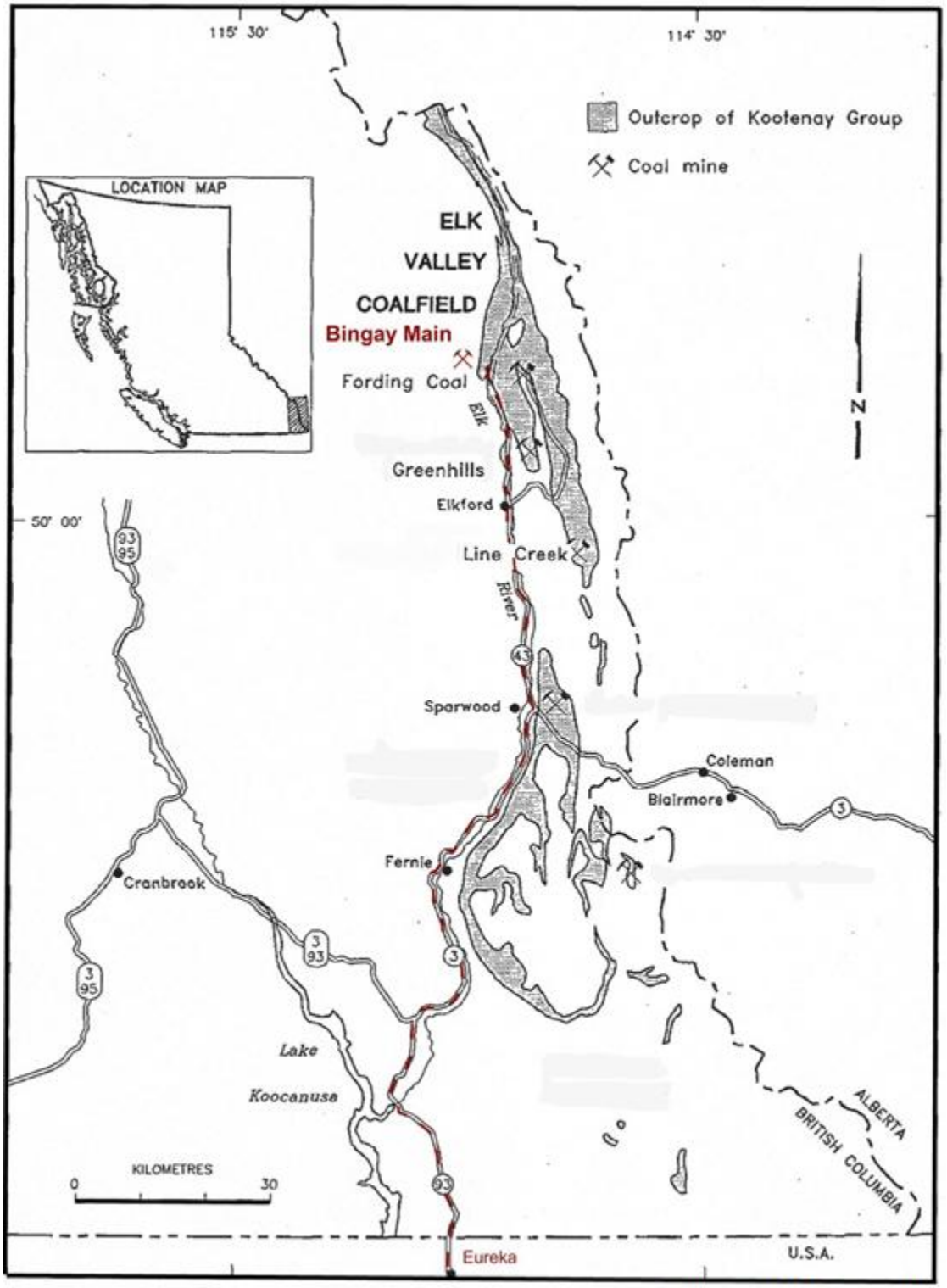
3.0 Property Description and Location

The Bingay A and B property lie within the Southern Rocky Mountains of south-eastern British Columbia, Canada (as shown on Figure 3-1: project location map). The map shows the outline of the Bingay A property, and depicts the area of licenced lands. The Bingay A and B property consist of one Crown coal exploration licence respectively, totalling 750 hectares, and 675 hectares, originally issued by the British Columbia Mining of Energy, Mines and Petroleum Resources to other parties, and subsequently transferred to Centerpoint Resources Inc. the property is bounded to the east by coal mining leases held by Teck Coal, to the south by coal licences (designated as 'Bingay Main', 'Bingay B', 'Bingay C') held by Centerpoint Resources Inc., and to the west by vacant Crown mineral lands.

The Bingay A exploration study area is in the far north of Bingay Creek Coal Property, is bounded to the west by longitude 114°58.6´ W and to the south by latitude 50°14.9´ N. the exploration study area is further bounded to the east by the west bank of the Elk River and to north by latitude 50°17.0 ´N. NTS map sheet 82J/026 covers the Bingay A area at 1:50,000 scale with topographic contours at 100-foot intervals. TRIM map sheets 082J.07D cover the area at 1:20,000 scale. The nearest incorporated settlement to Bingay A is the Town of Elkford, whose urban core lies 27 kilometers south by forest service road from the Bingay A property.

The Bingay B exploration study area is in the south of Bingay Main Coal Property, is bounded to the west by longitude 115°0.1´ W and to the south by latitude 50°10.0´ N. the exploration study area is further bounded to the east by the west bank of the Elk River and to north by latitude 50°12.0 ´N. NTS map sheet 82J/016 covers the Bingay A area at 1:50,000 scale with topographic contours at 100-foot intervals. TRIM map sheets 082J.02L 029B cover the area at 1:20,000 scales. The nearest incorporated settlement to Bingay B is the Town of Elkford, whose urban core lies 21 kilometers south by forest service road from the Bingay B property.

The Bingay A and B property comprises the coal licence listed in Table 5-1 and shown in red and yellow outline on Figure 3-2 below. The coal licence is held in good standing as noted in database maintained by the Province of British Columbia; at http://www.empr.gov.bc.ca/Titles/mineraltitles/coal/pages/search.aspx by Centerpoint Resources Inc. the coal license is contiguous, with no known in holdings of alienated coal rights.



File: bingayroadmap-3.srf
Date: 2004 Dec. 16 Revised: 2010 Dec.23
Drawn: C.G. Cathyl-Bickford, P.Geo.(BC) Lic.Geol.(WA)
Modified after Grieve, 1992, Scale: as shown

Centerpoint Resources Inc.
Bingay A, B Coal Project

Figure 3-1 Project Location Map

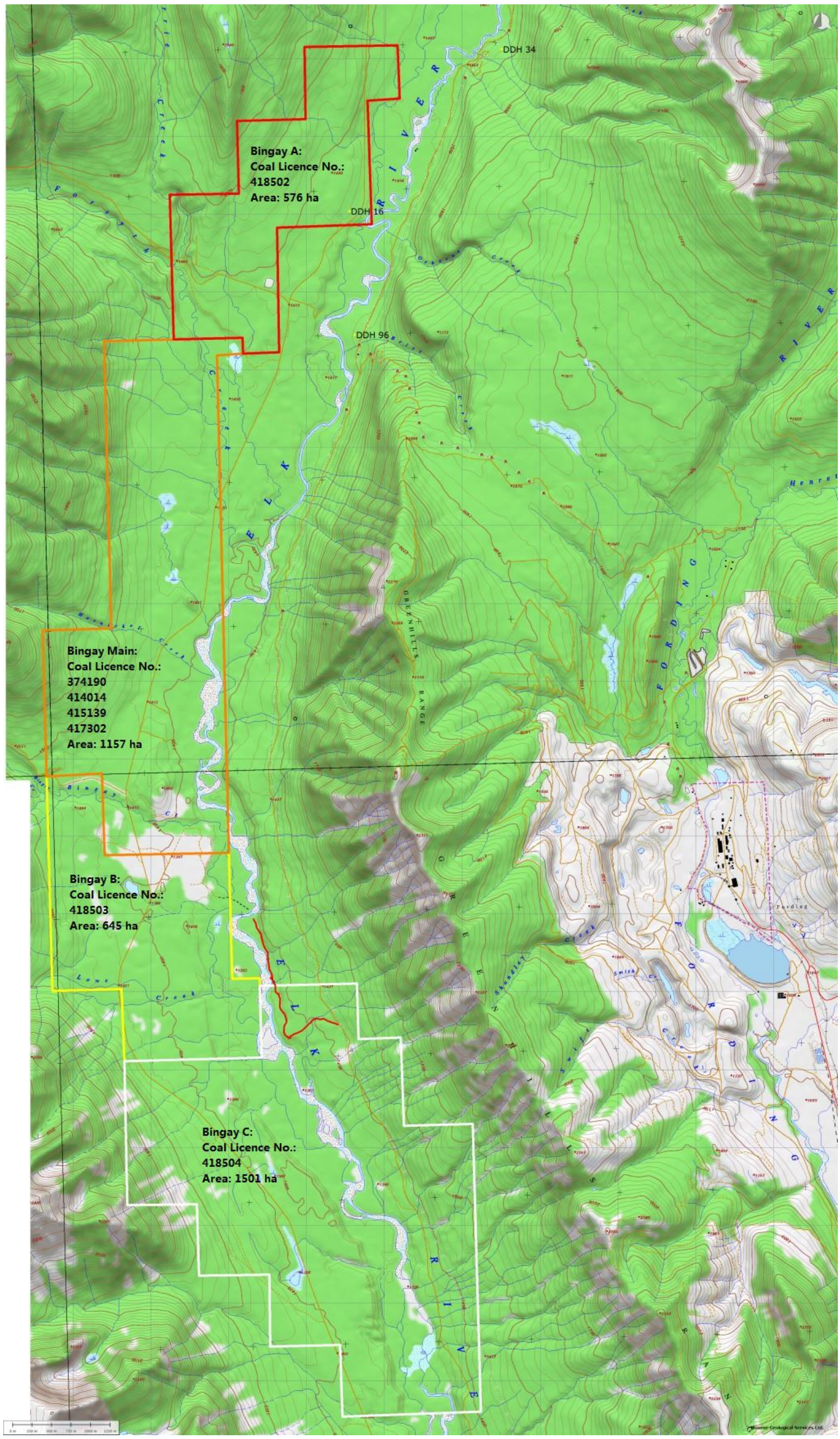


Figure 3-2 Bingay Coal Property Overview Map

Figure 3-3: Bingay A Area shown in red outline

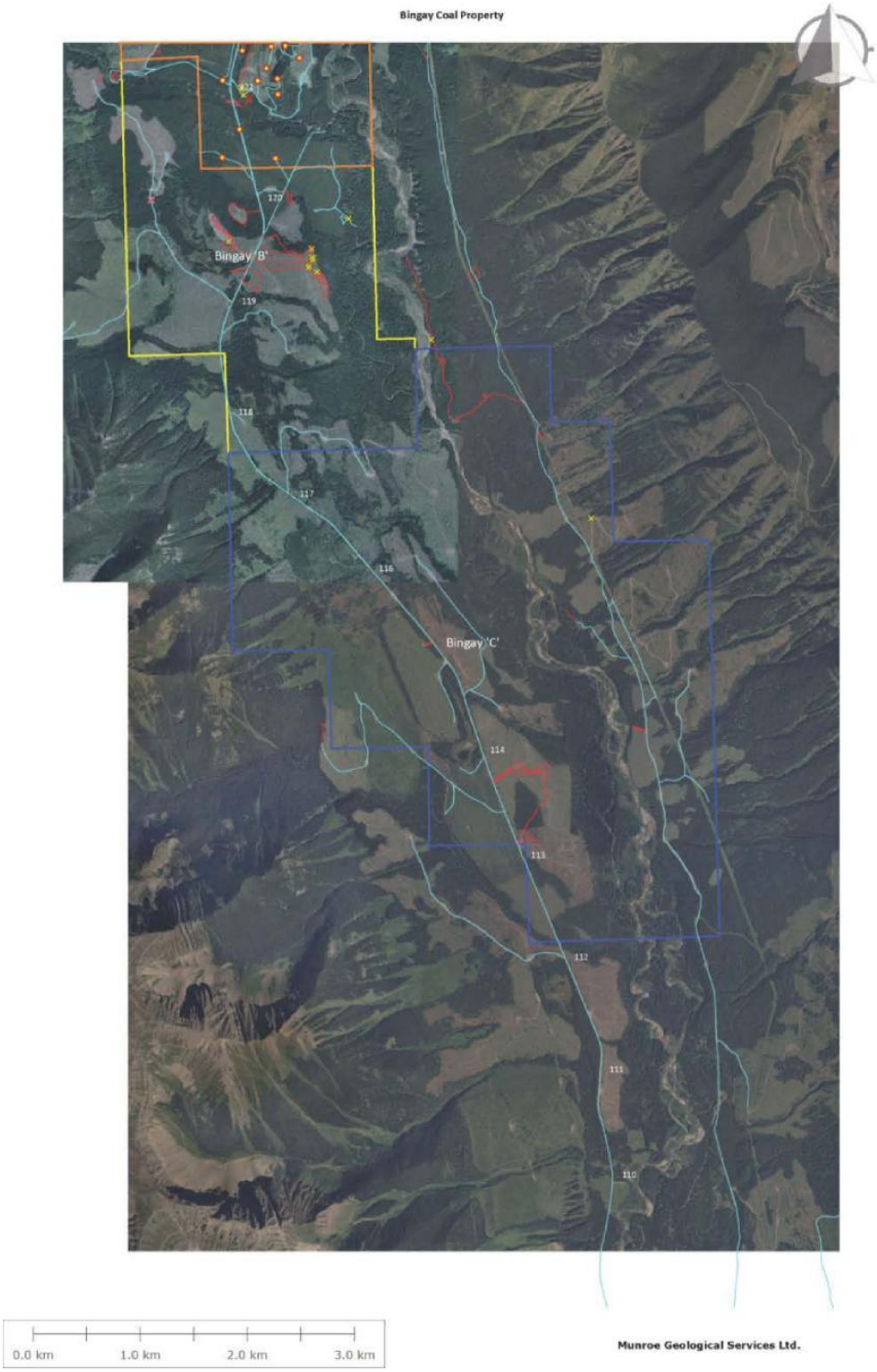


Figure 3-4: Bingay B Area shown in yellow outline

4.0 Accessibility and Infrastructure

Exploration access to Bingay A and B are fairly convenient, by virtue of its location adjacent to the all-

weather Elk River Forest Service Road, and the presence of branch roads and trails within the property.

Bingay A and B are served by the Elk River forest service road, as shown on **Figures 3-1 to 3-4.** This road is administered by the provincial Ministry of Forests as a multiple-use public road, upon which industrial and recreational traffic may travel. Local hunters, hikers and fishermen/women occasionally use the road to access recreational areas farther up the Elk River Valley.

The Elk River road is maintained by Tembec Industries Inc., who only maintained the parts of the road which they wish to use for log-haulage. During the 2010 exploration program, this has meant that the entirety of the road between the Bingay Main coal property and Elkford is occasionally graded, but it does have local potholed sections owing to heavy truck traffic. Significant time and cost was expended by Centermount to maintain and upgrade the roads in this area. The road is easily travelled by pickup trucks and heavier load vehicles. Passenger car travel is not recommended. Should the Elk River road be used in the future for coal haulage, it would require major re-surfacing. Adequate supplies of gravel are present within the Bingay Main property. The bridges on the road are of sufficient strength for logging trucks, but will require levelling or resurfacing to support more frequent high-speed use by coal trucks.

The Bingay A coal property lies at kilometre post 127 on the Elk River road, roughly 28 kilometres north of the business core of Elkford. Total driving distance from the centre of the property to Elkford is 28 to 32 kilometres, depending on the starting point within the property and the route chosen to reach the Elk River road.

The Bingay B coal property lies at kilometre post 117.5 on the Elk River road, roughly 21 kilometres north of the business core of Elkford. Total driving distance from the centre of the property to Elkford is 18 to 21 kilometres, depending on the starting point within the property and the route chosen to reach the Elk River road.

Elkford is served by paved provincial highways. Highway 43 runs northward from Sparwood, and Highway 3 connects westward to Fernie and Cranbrook, and eastward to Alberta. Driving time to Bingay from Vancouver is 14 hours from Vancouver (via the southern Trans-Provincial route along Highways 1, 3 and 43), 5 hours from Calgary (via the Black Diamond route along Highways 2, 22X, 22, 3 and 43), and 2.5 to 3 hours to Eureka, Montana.

The closest railhead to Bingay A and B are about 37 kilometres away near Elkford, on the Fording River branch of the Canadian Pacific Railway.

The Bingay A and B property lie within the dry cool subzone of the Montane Spruce continental bio-geoclimatic zone (Medinger and Pojar, 1991; Braumandl and Curran, 1992). Characteristic of this subzone is a temperate climate of continental type, with long, cold, relatively dry winters with light snowfall, and short, warm, dry summers. Minimum temperatures are -25 to -35 Celsius with reports from nearby Lower Kananaskis Lake being -52C during the winter of 1992 (Bickford). Cold temperatures are generally confined to brief 'polar outbreak' periods in January and February. Maximum normal temperatures are 33 to 38 Celsius, typically found during extended periods of clear weather in mid- to late-summer.

Snowfalls or freezing rain may occur at any time between mid-September and mid-May, with the bulk of snow falling in mid-March and early April. Snowfalls up to 40 cm are possible in a single intense mid-winter storm when cold polar air is over-ridden by moist maritime air, but these snowfalls rapidly compact and ablate, and snow cover seldom accumulates to depths greater than 60 cm.

Continuous snow cover is usually gone by the end of April, with isolated drifts remaining in sheltered and

shaded areas. In the extraordinarily warm winter of 2004-2005, snow cover was mostly gone in mid-March, and the Elk Valley had been barren of snow for much of the winter. Summers are warm and showery, with occasional afternoon thunderstorms. During dry summer weather, temperatures may exceed 30 Celsius.

Surface water supply is available from Elk River, and ample supplies of groundwater are available from the gravelled flats west of Elk River. Owing to fisheries concerns, industrial water supply will probably have to be abstracted from groundwater sources. Near-surface groundwater quality is unknown in detail, but anticipated to be acceptable for industrial use.

Timber suitable for incidental use (such as stakes, fence posts, short utility poles and cribbing) is present within the Bingay A and B property. The Elk River Valley contains an energy-transport corridor along its eastern side. This corridor is occupied by a high-voltage above-ground power line. All-weather roads extend along both sides of the river. On the west side of the river, the Elk River forest service road along the Bingay A and B coal property eastern side.

HQ diamond-drills capable of drilling to depths of 600 to 800 metres are readily available in British Columbia and Alberta. Heavy industrial and construction equipment, including excavation and road-building equipment, is available from the Crowsnest Pass area as well as from towns in southern Alberta. Drilling supplies are available from distributors in Alberta and British Columbia. Diamond drilling is the preferred method of exploration in this deposit.

Machine shops, industrial suppliers, and freight terminals are available in Elkford, Sparwood and Cranbrook. Owing to the well-established open-pit coal-mining industry in the Elk Valley, necessary equipment and supplies for mining, earth-moving and blasting can be obtained locally.

Bingay A and B have no landline telephone or internet service. Cellular-telephone and wireless Internet services are provided by Telus and by Bell Canada, from terminal sites situated atop the Greenhills Range, east of Elk River. Cellular coverage is fair to good throughout the Bingay Creek property, with the exception of topographically-isolated areas such as creek bottoms.

The Bingay A and B property lie within the Elk River valley, which traverses along the southern Canadian Rocky Mountains. The Elk River valley is one of a series of contiguous valleys extending from Michel, British Columbia to Banff, Alberta. Both sides of the valley are bounded by mountain ranges. To the west are the rugged carbonate-rock peaks of the Western Front Ranges, and to the east are the more subdued sedimentary-rock ridges of the Greenhills Range.
The Elk River itself is a broad, braided, gravel-bedded river which is choked by numerous gravel bars and bounded by beaver-dammed side-channels. Some of these side-channels are partially filled with mossy wetlands.

Elevations within the Bingay A and B property range from about 1440 to 1700 metres above mean sea level. The lowest elevations are found along the course of Elk River, and the highest elevations are found on the far north of Bingay A.

The Bingay A and B property are covered by Crown forest lands, which have been logged at various times during the past 35 years. Most of the southern half of the property was logged in the past 10 years, and it now presents easy going for cross-country traversing.

The Bingay A and B property contains an abundance of wildlife, including moose, elk, black bear, grizzly bear, wolverine, porcupine, lynx, beaver, snowshoe hare, mule deer, marten, red squirrel and deer mouse. Birds include spruce grouse, woodpecker, common raven, Canada geese, American robin, and Steller's

and gray jays. Other bird and animal species may also be present. Mosquitos and blackflies are present in the spring and summer months, although not to unbearable excess.

5.0 Coal Licence Information

The Bingay A and B coal property was formerly known as the Bingay Creek property until 2009. Applications were then underway by Centerpoint Resources Inc. for coal licences from adjoining Bingay Main area properties. The Bingay A is the north and Bingay B is the south of Bingay Main area property.

Table 5-1: Coal Licence Details

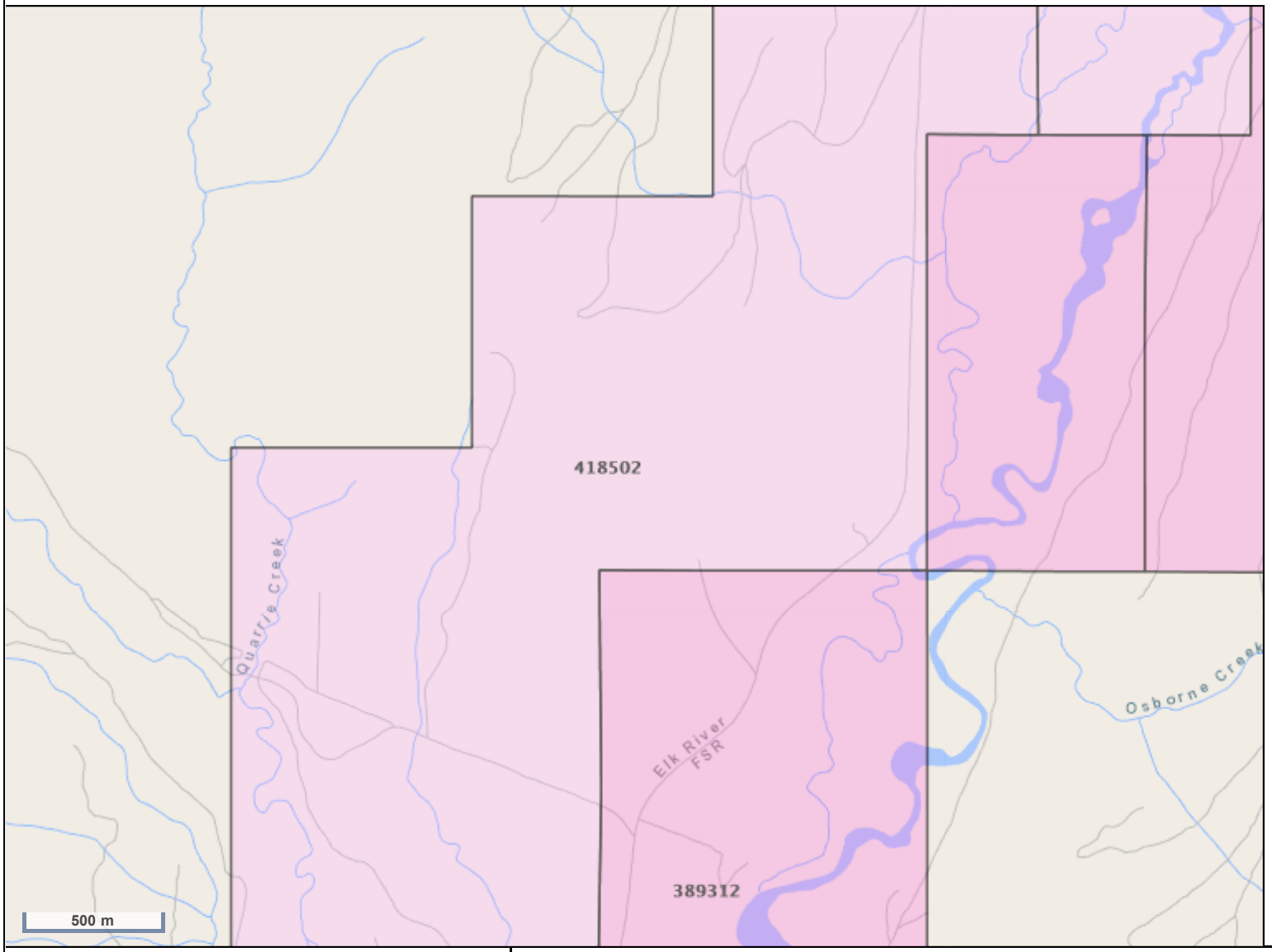
Coal Licence Number	Area (ha)	Extent of Work in 2016
418502 (Bingay A)	576	one borehole
418503 (Bingay B)	645	five boreholes
418503 (Bingay C)	1501	no actual work

Details of Bingay A and B coal property see Figure 5-1 and Figure 5-2.

6.0 History

Before 2010, geological exploration hasn't been worked in the Bingay A and B. During 2010, the weather ranged from hot dry summer days to wet snow and rain over the 3 month period comprising 26 field days. The study included trench mapping, drill core examination, bush work with machete, hiking and GPS traverses. Limited outcrops were encountered and exposures were limited due to the thick glacial cover in the valley. Most of the outcrops were located in the higher elevations which assisted in the regional plotting of the structure but meaningful fine element rock examination was for the most part confined to working with the drill core and rotary chips from the ongoing drilling operations by Centermount on the Bingay property. The geologist was however able to secure some old drill records for 3 diamond drill holes of 2001for the area around Bingay A that had been placed just outside or just on the edge of the property. The holes were done for the oil and gas industry and no core was available to view. Some government mapping and reports were obtained to assist in the process. The Province of B.C. no longer supports an air photo library or archive so no historical or current photos were available for stereo work. See Table 6-1: Bingay A and B outcrop locations.

Figure 5-1: Bingay A Coal Property



Legend

Coal Titles (MTO)

Title (current)

- Coal Lease
- Coal Licence
- Coal Licence Application

Reserves

Base Maps

Mapsheet Grid (1:20,000)

- Mapsheet Grid (1:20,000)

Mapsheet Grid (1:250,000)

- Mapsheet Grid (1:250,000)

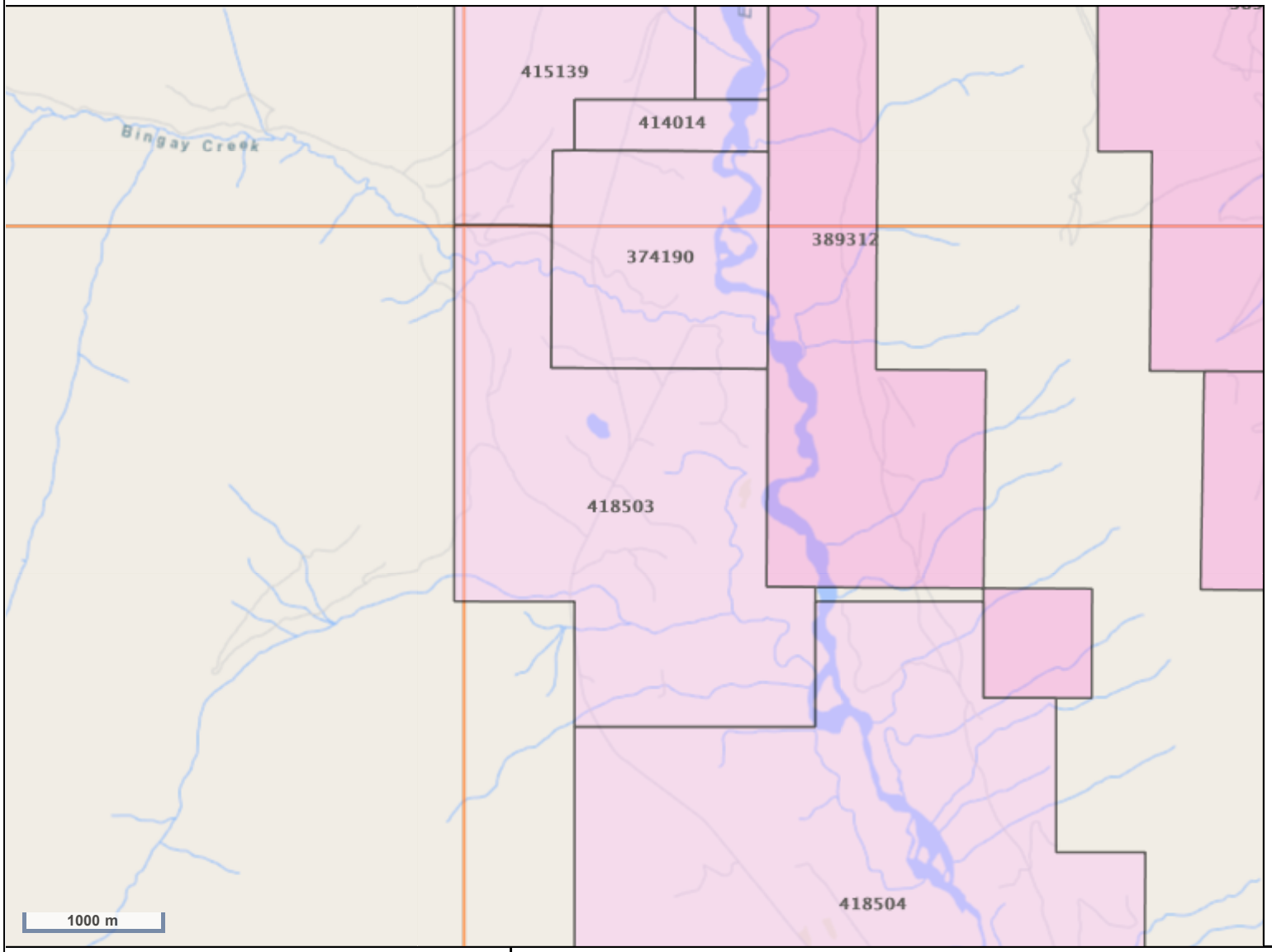
This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Printed using the Mineral Titles Online (MTO) application.

Center: 50°15'57", -114°57'18"
Scale: 1 : 33,855
SRS: EPSG:3857
UTM Zone: 11

N

Figure 5-2: Bingay B Coal Property



Legend

Coal Titles (MTO)

Title (current)

- Coal Lease
- Coal Licence
- Coal Licence Application

Reserves

Base Maps

Mapsheet Grid (1:20,000)

- Mapsheet Grid (1:20,000)

Mapsheet Grid (1:250,000)

- Mapsheet Grid (1:250,000)

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Printed using the Mineral Titles Online (MTO) application.

Center: 50°11'0", -114°58'56"
Scale: 1 : 67,710
SRS: EPSG:3857
UTM Zone: 11

N

Table 6-1: Bingay A and B outcrop locations-2010

Name	X	Y	Elevation	Notes
Bingay B Cabin Rd	644780	5561298	1374.2	2m outcrop under rd
Bingay B tree root conglomerate	644436	5561013	1379.0	at edge of steep drop
Bingay B sst	644435	5560937	1378.5	along rise
Bingay B conglomerate o/c	644451	5560927	1381.0	
Bingay B conglomerate o/c	644444	5560908	1381.1	
Bingay gully N of road	644130	5563671	1396.2	Ctr of Sandstone Outcrop 30m wide
Bingay A Conner Lk Rd Br1	645015	5569438	1502.3	In Ditch
Bingay A Conner Lk Rd Br1	645122	5569774	1536.0	On Road 2nd stop on road
Bingay A Conner Lk Rd Br1	645256	5570382	1587.1	LG SST OC ON BANK 3rd on rd
Bingay A Conner Lk Rd Br1	645284	5570485	1605.3	BR1 OC4
Bingay A Conner Lk Rd trail	644790	5569276	1498.9	SST OC IN TRAIL MASSIVE
Bingay A Conner Lk Rd	644562	5569158	1469.9	CONNER LK RD SHEAR ZONE OC on curve
Bingay A Conner Lk Rd	644562	5569169	1473.5	MIDDLE V O/C
Bingay A Conner Lk Rd	645395	5569046	1472.4	POSSIBLE OC AREA BRN SST
Bingay A S of 130 km mark	646791	5570765	1440.6	CONTOUR ON TRAIL
Bingay A S of 130 km mark	646791	5570744	1441.9	POSSIBLE OC EDGE OF BLUFF
Bingay A 200 m N of 130 km	646746	5571079	1470.5	poss. outcrop W side road
Horn 2	642933	5565258	1711.3	Hornickel Cr Rd
Horn 1	642945	5565354	1684.7	Hornickel Cr Rd
Horn 4	643065	5565032	1620.7	Hornickel Cr Rd
Horn 3	642845	5565008	1645.5	Hornickel Cr Rd
horn 5	643118	5565113	1618.1	Hornickel Cr Rd
horn 6	643161	5565255	1616.8	Hornickel Cr Rd
Horn 7	643447	5565471	1578.5	Hornickel Cr Rd
Horn 8	643643	5565316	1484.8	Hornickel Cr Rd
Horn 9	643770	5565700	1448.9	Hornickel Cr Rd
Bingay A S of 130 km mark	646788	5570740	1438.7	buried under trees
Bingay main road in	643798	5562447	1417.0	Main rd curve. Coarse mudstone
Bingay N of Main Rd dog leg	643786	5562503	1426.5	SST o/c by stump
Bingay -main road to camp	643776	5562519	1426.9	possible marine band dark mudstone
100 m N Bingay C	645549	5560168	1348.0	East shore Elk River
Bingay A -S of 131 km	646675	5571560	1518.4	SST O/C on east slope
Bingay B	643664	5561086	1408.8	O/C base of gravel pit
Bingay B	644411	5560855	1395.1	conglomerate O/C
Bingay B	644404	5560839	1394.3	peak O/C west slope of bluff
Bingay B	644484	5560801	1397.5	conglomerate O/C
Lowe Ck Rd N Branch	642940	5561470	1423.0	possible shale O/C
East Rd 116 km	647041	5558499		Greenbeds
Bingay Cin Bun entrance	643856	5563061	1420.9	SST O/C 50 m S of steel gate
Bingay Hill SE of Cin Bun	644046	5563144	1426.9	SST O/C
Bingay Cin Bun entrance	643868	5563117	1420.0	SST O/C at steel gate
Bingay N of main Rd curve	643832	5562733	1434.7	SST O/C on dog leg ridge
Bingay S of Cin Bun	643949	5563083	1430.5	SST O/C on parallel ridge to WP 472
Bingay ridge NE of Hill	643894	5562994	1434.6	SST O/C old WP 472
Elevations in Metres / Coordinates in UTM 11 NAD 83				

In 2001 a series of diamond drill holes were commissioned by Shell Canada etal, north, east, west and south of the Bingay area. These holes were designed to develop structural data for the oil and gas industry and general data was captured from the intersected coals in the Bingay area. This drilling did provide a basis for the coal bed evaluation and several of the major beds were subjected to further testing. The result of this work is detailed later in the report.

The reader is invited to examine the Appendixes to better understand the scope of new reporting materials available. Each pertinent exploration related report was placed by sequence folders for ease of locating them.

7.0 Geology

7.1 Regional Geological Setting

The Bingay A, B and C property covers the western margin of the Elk Valley coalfield. The Elk Valley coalfield is one of three structurally separate coalfields in southeastern British Columbia which together comprise the East Kootenay coalfields (Figure 3-1). The others are the Crowsnest and Flathead coalfield. The Elk Valley coalfield has also been referred to as the Upper Elk coalfield (Irvine, 1972).

Coal in southeastern British Columbia belongs mainly to the Mist Mountain Formation of the Jurassic-Cretaceous Kootenay Group (Table 7-1). The structural setting of the East Kootenay coalfields is the Front Ranges of the southern Rocky Mountains. Major structures within the Elk Valley coalfields are the Alexander Creek syncline, named for a creek at its south end, and the Greenhills syncline, named for the Greenhills Range (Figure 7-1). The two synclines are separated by the west-dipping Erickson normal fault. The northernmost one-third of the coalfield is directly bounded to the west by the west-dipping Bourgeau thrust fault (Grieve, 1993).

The coalfield is elongate, and its length within British Columbia is approximately 100 kilometres. It is widest near the Fording mine (12.5 kilometres), and otherwise generally averages 4 to 5 kilometres in which. Its south end is approximately 12 kilometres northeast of Sparwood, and its north end is north of Elk Pass on the British Columbia-Alberta border (Figure 3-1). With the exception of its southern extremity, the coalfield is continuous.

Coal-measures at Bingay Property are hosted by the Mist Mountain Formation, part of the Jurassic-Cretaceous Kootenay Group (Table 7-1). The Mist Mountain Formation is underlain by Jurassic rocks of the Morrissey and Fernie formations. At the crest of the Greenhills Range, east of the Bingay property, the Mist Mountain Formation is overlain by the younger coal-measures of the Elk Formation, also of Cretaceous age.

The area supports a thick sequence of folded and faulted sedimentary units with significant differences in the units. The coal bearing strata that of the Elk Valley coalfield is the Mist Mountain Formation. The formation abruptly and conformably overlies the Morrissey Formation and Fernie Formation. It ranges in thickness from 25 to 665 m throughout its area of occurrence (Gibson, 1979). In southeastern British Columbia coal forms between 8 to 12 percent of the total thickness of the Mist Mountain Formation, in seams ranging up to and occasional exceeding 13 metres in thickness (Grieve, 1985). The formation generally contains a carbonaceous zone near its base. This zone, referred to here as the “basal coal zone”, usually contains one or more coal seams, including, in some localities, a seam in direct contact with the Morrissey Formation (Grieve, 1993).

The Elk Formation overlies the Mist Mountain Formation at the top of the Kootenay Group. Its characteristics are similar to those of the Mist Mountain Formation, but there are several important differences. Primarily, the Elk Formation lacks coal seams of potential economic thickness, and contains sapropelic coals in addition to humic coals. Throughout the Kootenay Group’s area of occurrence the Elk Formation ranges in thickness from 28 to 590 metres, and is absent in some locations. In general it thins from west to east (Grieve, 1993).

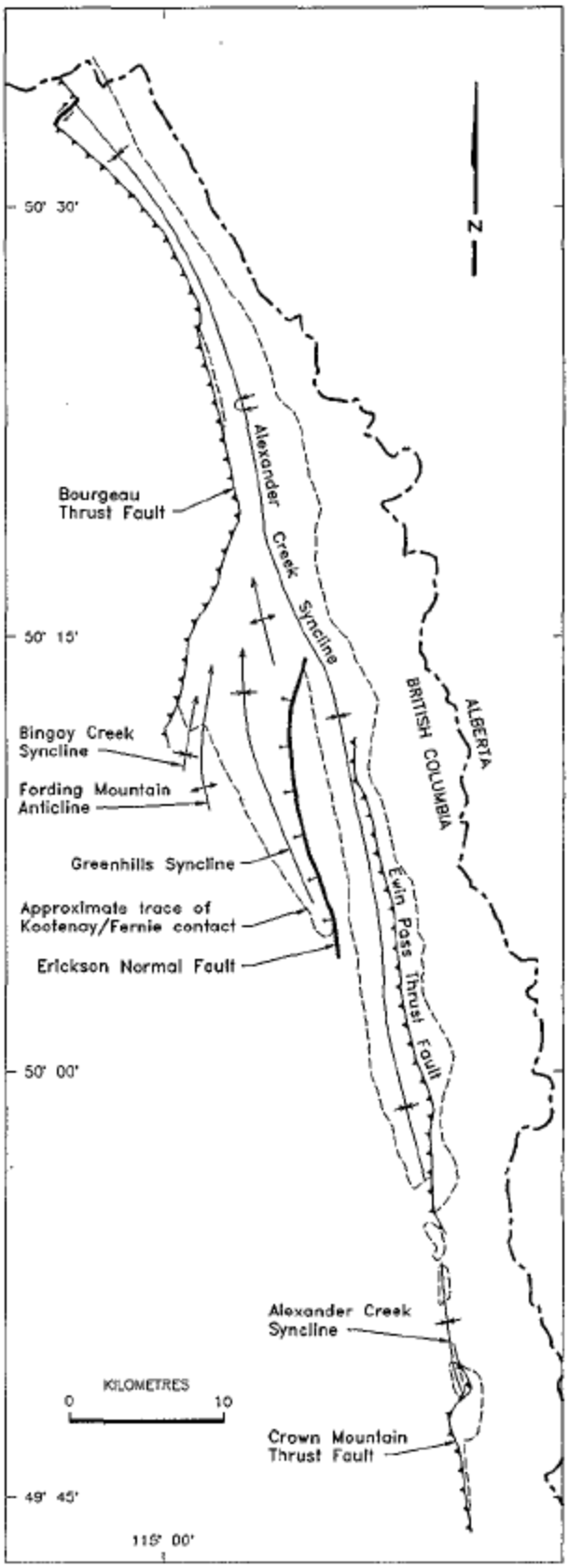


Figure 7-1: Major structural elements of the Elk Valley coalfield (from Grieve, 1993)

The following table (Table 7-1) shows the major formation sequences. The map units correspond to the geological map sequences shown in the following 1992 GSC map.

Table 7-1: Table of formations for the Bingay Property

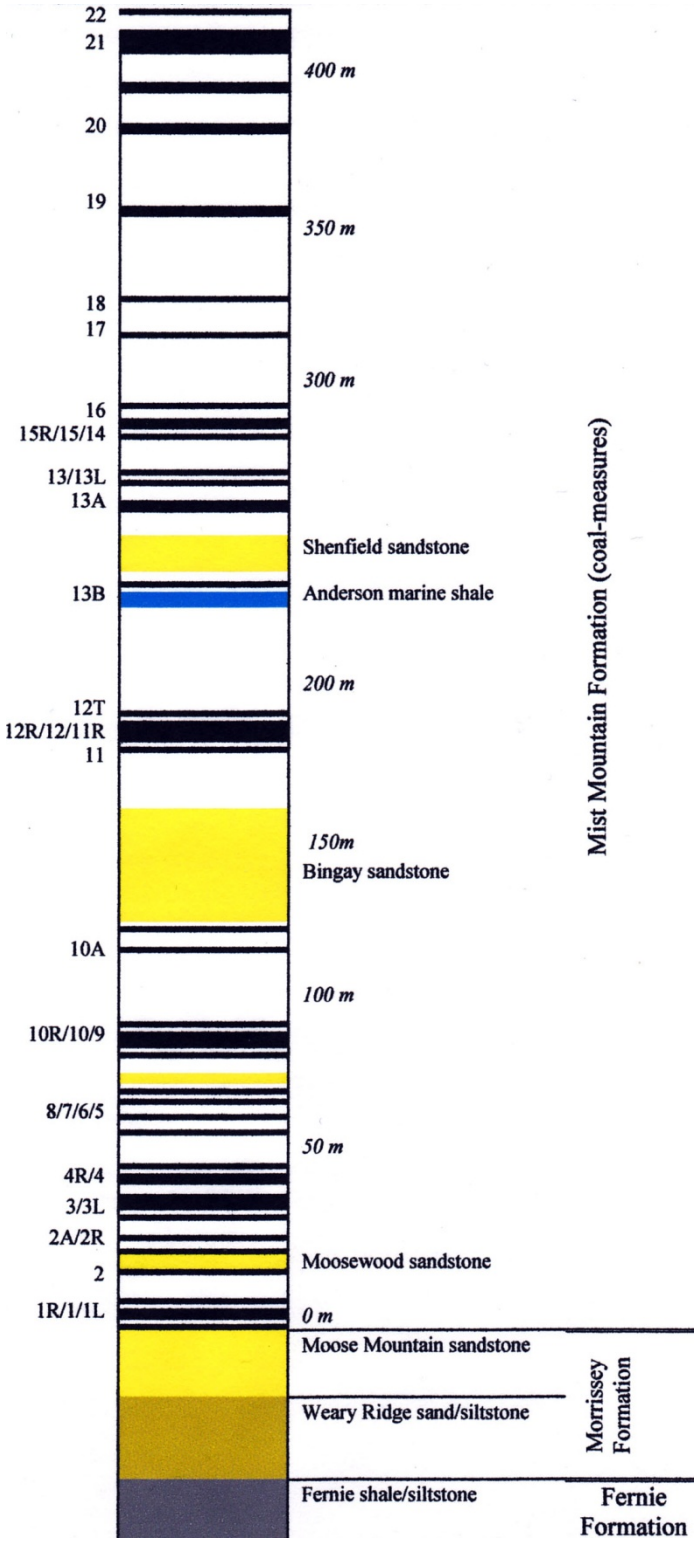
PERIOD	EPOCH/STAGE	CODE		FORMATION	LITHOLOGY
Quaternary	Pleistocene to Holocene	Qd		DRIFT:	Gravel, alluvium, talus and till; minor localised mucky peats.
Lower Cretaceous		Kca		Cadomin Formation	a prominent, massive pebble to cobble conglomerate unit. Generally forming one or more continuous cliffs or ledges.
Jurassic and Cretaceous	KOOTENAY GROUP (Jurassic-Cretaceous rocks only):				
	Tithonian to Hauterivian?	Ke		ELK FORMATION:	Sandstone, siltstone, mudstone, **coal** (including cannel coal and alginite-rich 'needle' coal); minor conglomerate
		Kmi		MIST MOUNTAIN FORMATION	Siltstone, variably-carbonaceous mudstone; channel-filling, well-sorted quartzose sandstone; **coal**; minor marlstone, ironstone and tonstein.
		Kmo	MORRISSEY FORMATION:		Sandstone and minor siltstone.
			Kmo1	MOOSE MOUNTAIN MEMBER	Quartzose sandstone containing minor amounts of rock fragments; minor siltstone and gritstone; very resistant to erosion.
			Kmo2	WEARY RIDGE MEMBER	Silty sandstone composed of quartz and rock fragments, with interbeds of siltstone; softer than overlying beds.
Jurassic	Oxfordian to Tithonian?	JF		FERNIE FORMATION	Interbedded siltstone and feldspar-rich silty sandstone; minor silty mudstone.
Triassic and older	ROCKY MOUNTAIN SUPERGROUP AND SPRAY RIVER GROUP (UNDIVIDED)				
	Stephanian to Rhaetian?	Pre-JF			Quartzitic and dolomitic sandstone, limestone and dolomite, mudstone and siltstone

Within the Elk Valley coalfield, total preserved basin fill over the Precambrian cratonic rocks of North America is on the order of 10 kilometres, including sedimentary and volcanic rocks of Cambrian through Jurassic ages which together form economic basement beneath the Kootenay coal-measures. Detailed study of these older rocks is mostly irrelevant to coal exploration, except insofar as they are overthrust over the western margin of the coalfield.

The coal-measures of the Elk Valley coalfield were deposited in a rapidly-subsiding foreland basin, which lay along the north-eastern margin of the Columbian orogenic highlands. Rapid subsidence of the basin is evidenced by the abundance of detrital organic matter within the coal-measures, and the general scarcity of oxidised sediments

The Columbian highlands must have included active volcanic vents, since tonsteins (altered volcanic-ash bands) are present within the coal-measures. The Bingay Property area was either quite remote from these volcanoes, or at an unfavourable position *vis-à-vis* prevailing winds during late Jurassic and early Cretaceous time, because the tonsteins are relatively thin (generally less than 5 cm thick).

The following stratigraphic column (Table 7-2) was developed by the Bingay Project head geologist, C.G. Cathyl-Bickford. It clearly shows the significant coal bearing strata that she is in the process of drilling off in the Bingay lease. This work will be reported upon in her report. It is important to recall that no drilling or trenching can be done on any of the other properties until permits are in place. This forces us to rely on theoretical structural conceptual models without the benefit of confirmatory drilling until a later date.



Drawn: C.G. Cathyl-Bickford P.Geo. Lic.Geol., 2010 December 20. Scale: approximate, as shown

Table 7-2: Stratigraphic Column for Bingay Property

In 2001 a series of diamond drill holes were commissioned by Shell Canada etal, north, east, west and south of the Bingay area. These holes were designed to develop structural data for the oil and gas industry and general data was captured from the intersected coals in the Bingay area. This drilling did provide a basis for the coal bed evaluation and several of the major beds were subjected to further testing. The result of this work is detailed later in the report during the structural evaluation of Bingay A.

The following cross section (Figure 7-2) was obtained from the same data set and it depicts the general conceptual model from that time period. The Jurassic Kootenay unit is shown as a valley fills and suggests the coal bearing Mist Mountain formations are found deep in the valley basin. Indeed, the deep drilling along the Elk River did show that this was occurring but further work was not done to define the structures.

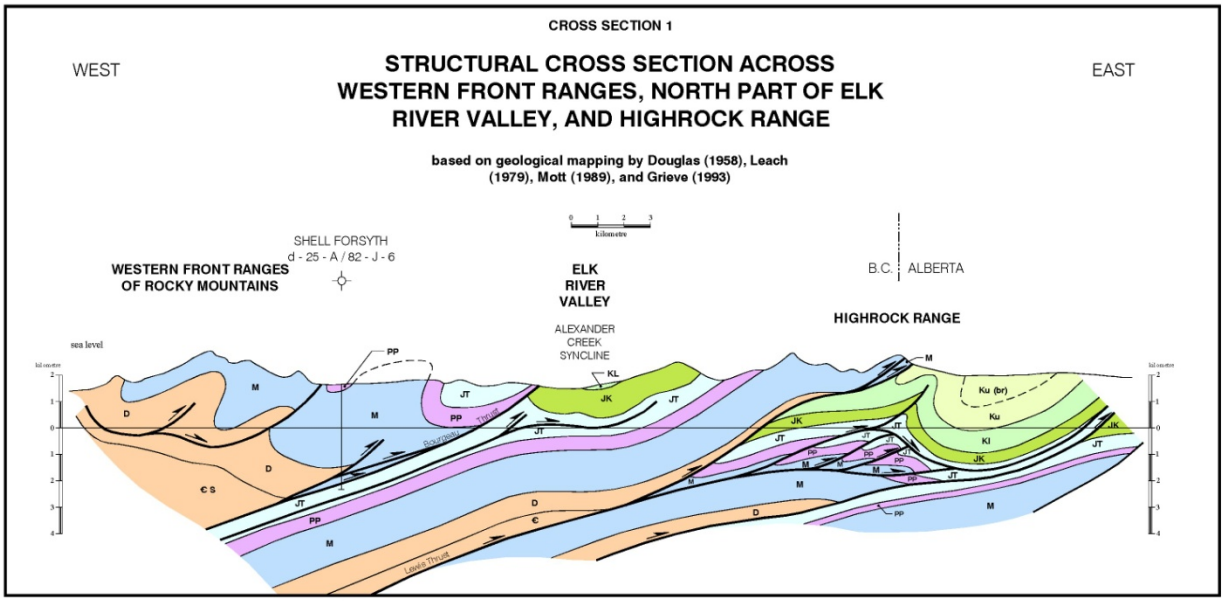


Figure 7-2: Overall Regional Structural Cross Section

The Bourgeau Thrust is clearly shown as the main engine for lateral movement across the Elk Valley and it, along with several other sub thrusts all contribute to the formation of the main syncline. However, additional north south movements and resistive elements such as the base of the Greenhills Range, conspire to form compression wedges that produce additional E/W and N/S movement in the valley. As will be seen in the remaining parts of this report it is being suggested that several parallel synform nodes may have been produced by the simple lateral compression of the strata in the valley floor. In addition, opposing fault lines movements may have also formed wedge and block elements in this highly broken basin. Muted surficial features observed in the till cover appear to indicate several block boundaries.

The blocks may also be edges of hidden flat thrusts that have produced block over block thickening of some of the resistant basal strata. The softer coal bearing strata could therefore be found in a host of orientations and would have been prone to erosional forces over time. This movement of the coal was observed in several locations on Bingay hill as apparent seams within the till layers. This scouring and washing out of the soft coal should be an expected factor in determining the nature of coal bedding in this valley.

Locating elements of the premium coal strata bearing Mist Mountain formation was a key operational concern in this study. Any located outcrops were used to assist in trying to determine local placement of bedrock within the overall sequences. This proved to be very difficult due to the poor exposures and limited structural relationships visible under the till. The table 6-1 shows the location and descriptions of the outcrops.

7.2 Local Geology

The general geology map of the Bingay Property area is presented as Figure 7-3(Bingay A area), and Figure 7-4(Bingay B and C area) based on bulletin 82 in 1993, by D.A.Grieve, from Mineral Resources Division, BC.

The stratigraphic column of rocks found in the ELK valley coalfield is illustrated by Table 7-1. The only coal-bearing rocks belong to the Jurassic-Cretaceous Kootenay Group. The Kootenay Group was first defined by Gibson (1979) and its regional stratigraphy and sedimentology are described by the same author (Gibson, 1985). The Kootenay Group consists of three formations, known in ascending order as the Morrissey (Kmo), Mist Mountain (Kmi) and Elk (Ke) formation.

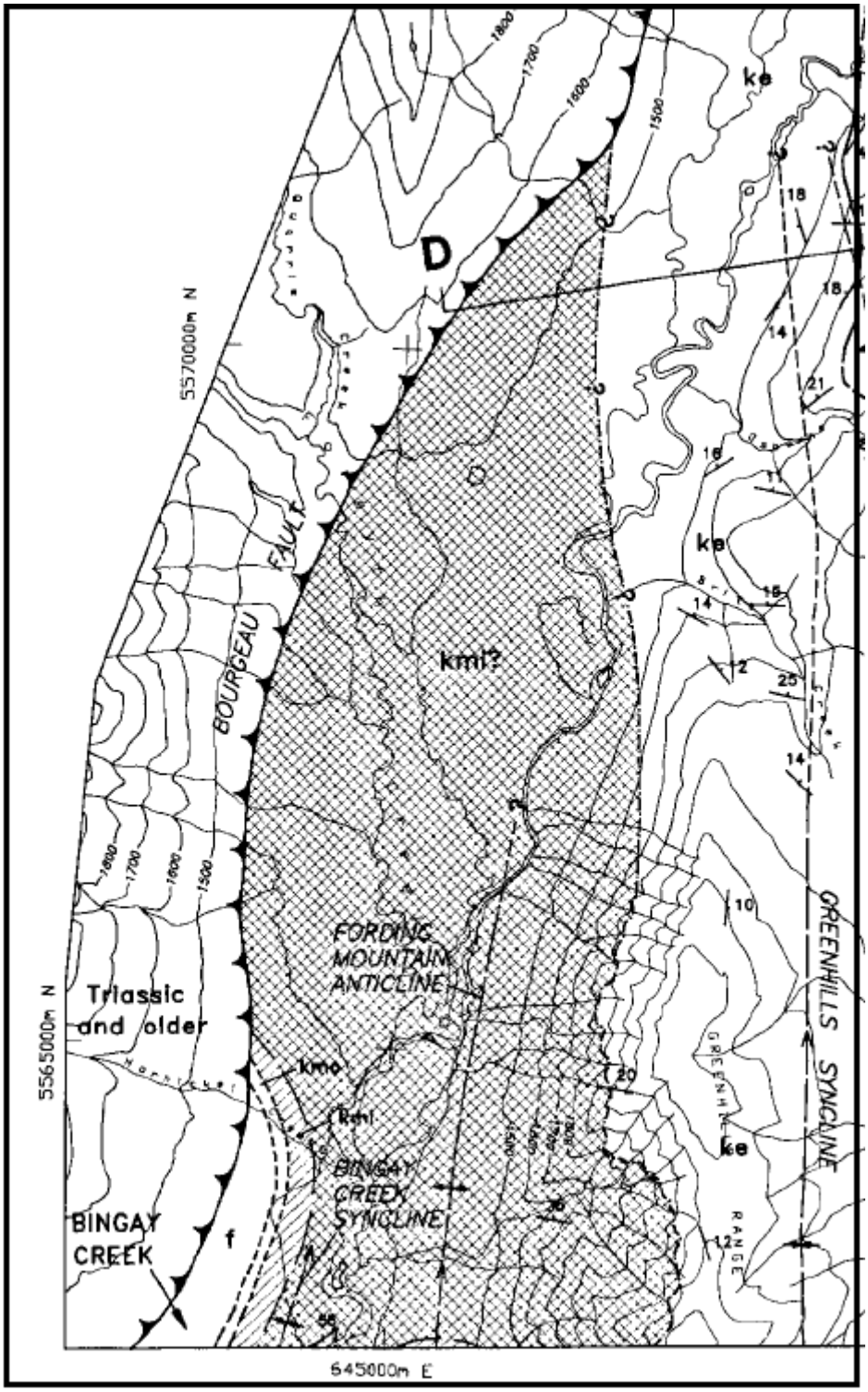


Figure 7-3: Property-Scale geology map, Bingay A and Main area. (from bulletin 82. No Scale)

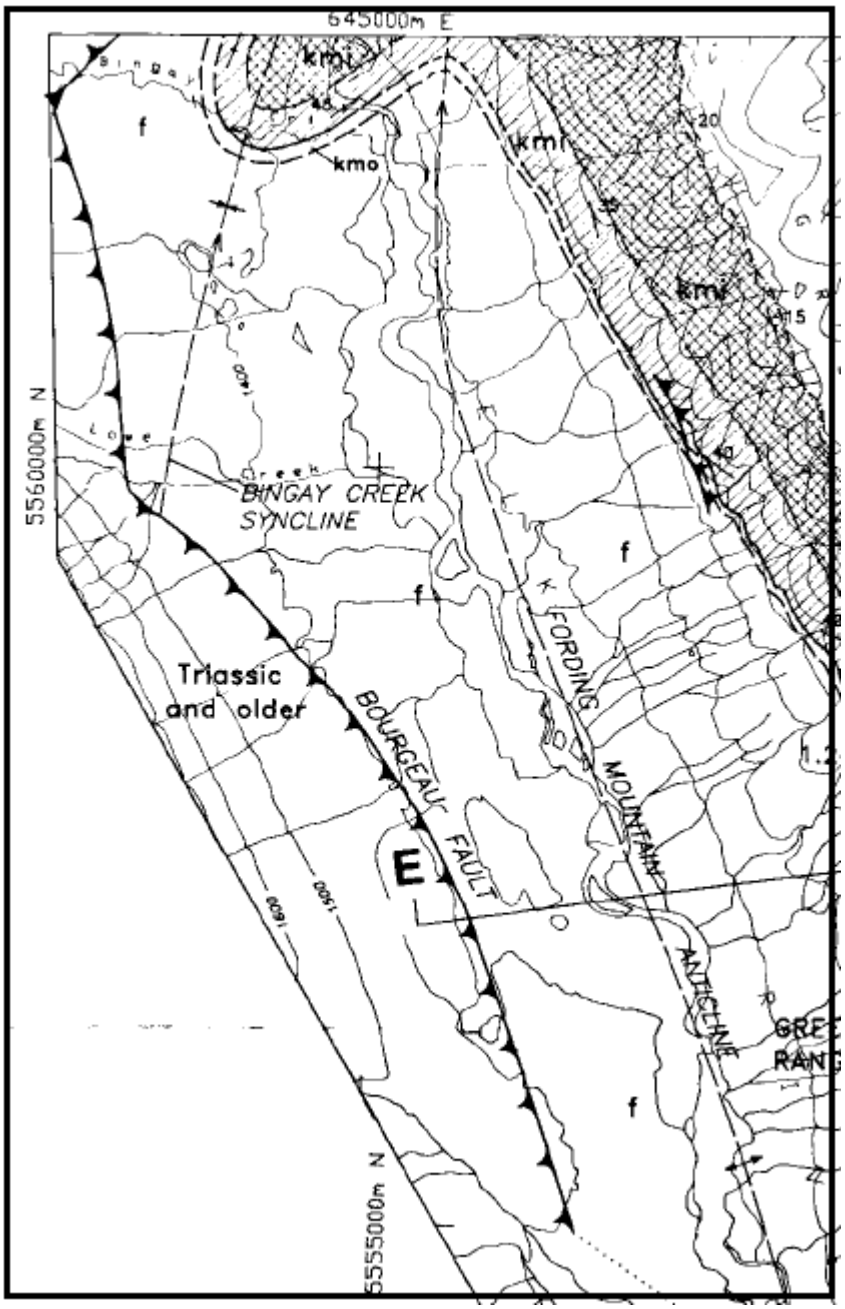


Figure 7-4: Property –Scale geology map, Bingay B and C area (from bulletin 82. No Scale)

A regional structural map that will have to be correlated with the data set obtained from the current exploration drilling at Bingay Hill. This regional map is centered on a possible but un-reported main north/ south fault system that trace a line from the NNE to the SSW along the frontal base of the Greenhill Range to the east of Elk River. Corresponding "drag" features from the movement along this line appear to run the width of the Elk River Valley but are lost under the over thrusting Bourgeau Thrust fault on the west flank. The N/S fault and the Bourgeau conspire to result in a constriction zone with its apex at the core of the steep, north dipping Bingay Hill syncline.

The following map (Figure 7-5) depicts the overall collage of theoretical structural elements at play in the valley study area. Each fault trace represents a separate set of vectors that work in concert with the larger system. However, each also results in the potential for subduction, flat over thrusting and block rotation as the entire valley system is examined. In general terms the main forces in the valley appear to be the eastward compression from the Bourgeau Thrust along the entire western side of the valley. Indeed, the literature indicates that the entire range to the west is the direct result on this ramp thrust moving over the valley as it moves up the arm of the large anticline. The other main element referred to earlier as the proposed vertical Main North-South fault running parallel with the base of the Greenhills Range.

However, there are distinct ``pinch points`` along the thrust that appear to be evidence of shear elements perpendicular to the Bourgeau. The three main points of interest are the Hornickel, Bingay and Lowe Creek valleys. Either perpendicular or EW/SE movement is indicated at these junctures. This is however, in keeping with the expected change in direction of the force vectors as there is deflection point right at Bingay Creek where the North - South fault appears to deviate to the SSW in the order of 10 to 15 degrees. (Noted as I and J on the map). This deflection meets the intersection of the Bourgeau and perpendicular Lowe Creek fault. (Noted as K on the map).

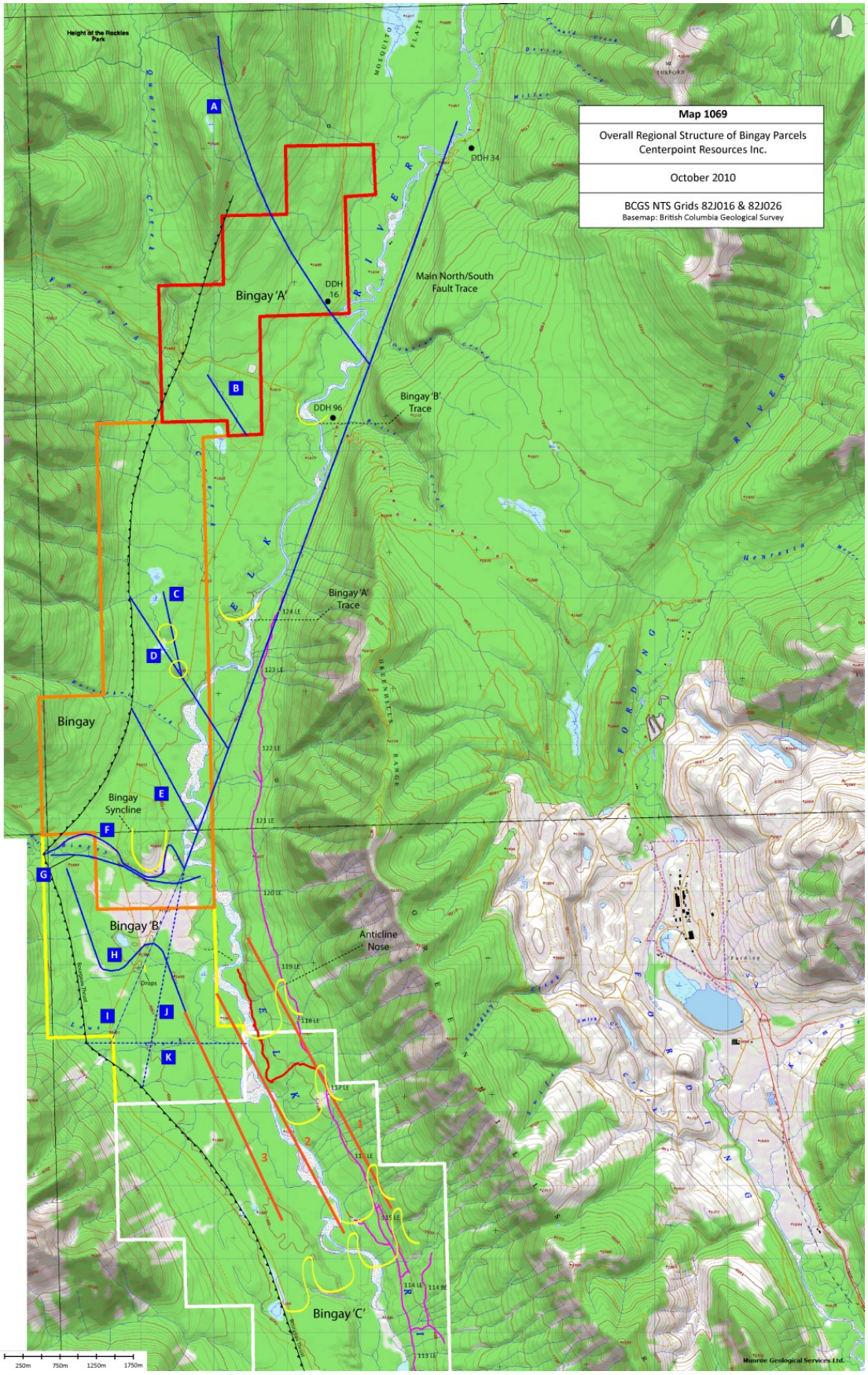


Figure 7-5: Overall Bingay Property Regional Structure

South of Bingay Hill is the proposed surface trace of the E/W trending Bingay Creek Fault that controls the orientation of its thalweg and may be responsible for a thrust fault that elevated the northern section of the Bingay syncline. There may actually be at least 2 sub parallel fault traces north of the creek, with resistant layers of the folded strata that form the major elevated syncline core that is known as Bingay Hill. Sharp shear line traces, apparent drag folding and clockwise bed rotation is noted in the outcrops and trenches on the east flank of this hill. The rough orientations of the effects are sub parallel with the main N/S Trench some 250 m to the east.

North of the Hill the syncline appears to plunge deeply to the north. However at two locations along the Elk River muted course changes indicate that possibly obscured synform elements are trying to come to surface. These elements could be continuations of the Bingay syncline that have been cross faulted and block dropped. In addition to these muted features there are four NNW to SSE possible fault traces that have their western edges covered by the Bourgeau over thrust and the eastern ends truncate at the main N/S fault. One of these fault trace lines bifurcates right at the location of possibly 2 thrust up blocks that follow the trace of the bifurcation wedge. These blocks rise roughly 15 metres above the flat valley floor and can be seen as mounts from kilometers away.

South of Bingay Creek there are additional possible structural elements that are hidden under the till cover. The trace of the main N/S fault line deflects slightly to the south at the Bingay cross fault (s) and crosses the eastern apex of one of two opposing synoidal loops roughly one kilometer south of the Creek. The western arm of the twin loop structure truncates at the Bourgeau Thrust while the parallel eastern arm (NW/SE) descends to the south along the valley also parallel to the Elk River trace.

It should be noted that the averaged thalweg trace of the Elk River parallels the trace of the main N/S fault north of Bingay Creek. The river course then turns N/S at the intersection of the Bingay Creek fault and the main N/S fault. It remains on the N/S flow as it passes the constriction point east of Bingay Hill and runs roughly parallel with the observed N/S shear zone traces in strata on the east side of the Hill.

The river then turns to the SSE just below the Bingay Creek intersection and parallels the trace of the eastern arm of the synoidal loop for several kilometers down the valley. This also mirrors the changes in the Western flank of the Greenhills Range.

If a line is drawn SSE from the eastern end of the synoidal loop for roughly 3 kilometers it would generally parallel the western bank of the Elk River trace. Using this line as an axis trace (NW/SE -approximately 330 degrees AZ) other corresponding features can be seen. On the eastern flank of the Elk River roughly following the centerline of the hydro line, 2 kilometers south of Bingay Hill, a steep anticline fold nose overturned to the east was mapped in the early part of the century by explorers following the Greenhills coal measures on the east valley wall. The nose also displayed float coals in the till cover. Green beds were also located in outcrop roughly 150 m above the nose elevation which indicate coal measures should be found slightly higher in the stratigraphic column.

Following the trace of the anticline down to the east side of the river additional coal float was found in the till cover between the east road and the river. At the eastern bank of the river, Fernie Formation beds are noted to dip sharply (60-68 degrees) to the east while the Green beds found some 200 m above the river dip 70 to 80 degrees to the west. This configuration has to indicate that a sharply folded syncline exists in the 750 m between the river and the green bed outcrop. With a sharply overturned anticline axis above the green beds falling to the east an over thrusting stress is most likely coming from the west (Bourgeau Thrust) and sharply folding the strata into a series of roughly parallel synclinal troughs as the anticline arches would have been eroded off by glacial and fluvial action in the valley floor.

Using a simple replication of the fold energy needed to develop the east side syncline during the compression from the west, 3 synclinal, north south trending troughs with an axis of roughly 330 degrees AZ could have been formed. The western limb of the most westerly syncline would essentially end near the foot of the Bourgeau Thrust line. This configuration would account for the coal float found on the east side of Bingay C on the trail named Bill's Road (shown in red for the road builder and locator of the float decades ago, Bill Shenfield). Possible muted sub crops seen on imagery in the area also tend to match the configuration and positioning of possible near surface bedrock formations under the till.

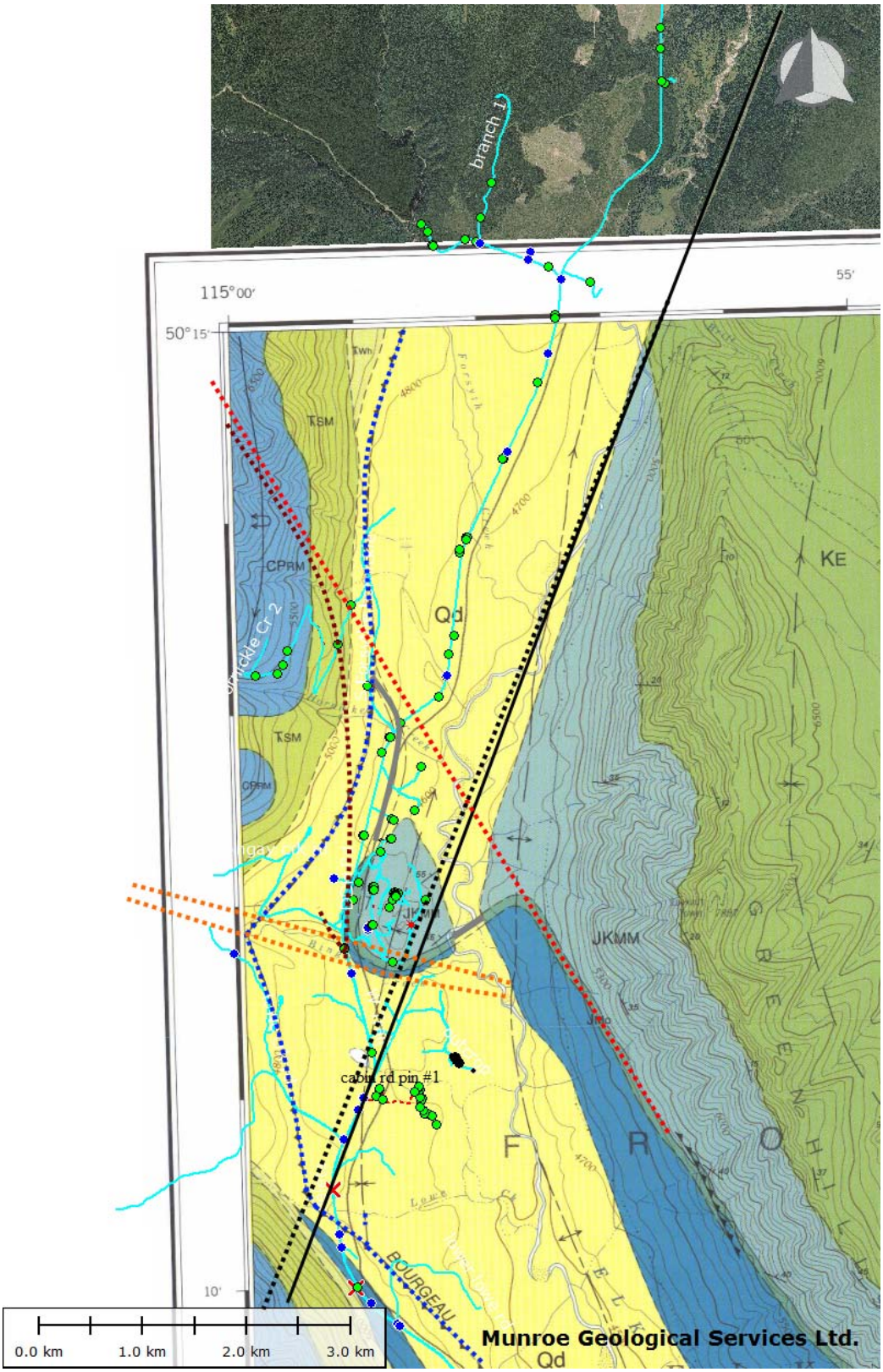
This compression model also fits the positioning of the possible sunken coal workings located 1.5 kilometers south of Bingay Creek. This area is noted as the ``drops`` on the preceding main map. However an excavator will have to be used to prove the location of coal measures in that location. Should they be found, additional near vertical coal measures should be replicated both east and west from that point along the axis to the south. We currently have no drill or excavation data on Bingay B or C to support any of this theory but several target areas can easily be reached in 2017 with proper permitting in place.

The presence of any uniform stratigraphic sections north of this point is problematic as the effects of possible over thrusting from the north parallel to the Bingay Creek fault system (s) mixed with the synoidal fold axis and a stress related re-orientation of the strike of the main N/S fault all meet between the slumped areas and Bingay Creek to the north. Drilling in this section will be difficult at best to properly orient any encountered strata. This was apparently the case with three rotary holes placed at the southern end of Bingay by Centermount Coal Ltd. in 2010.

Another important element to this model is found in the 1992 Geological Survey of Canada map # 1824A (Fording River) by D.A. Grieve. To determined that this general/ regional work was the most current understanding of that part of the valley. However, the sharp fold of the Morrissey Formation on the east side of the valley base, the stratigraphic folding of the bed shown wrapping around the base of Bingay Hill and continuing north to under the Bourgeau Thrust at Hornickel Creek is all accurately plotted. The configuration of this strata outline is almost a replica of the orientation of the twinned synoidal loop structural elements noted in the satellite and elevation imagery of Bingay B to assist in the development of this model.

This currently understood regional geological map series provides a guide to assist developing the model of how the synclinal structures were formed. The following map series attempts to provide a conceptual plan for that development.

The three following images (Map 1, 2 and 3) are the same base with changes in the structural framework as an overlay. The first shows the main intersections of the force vectors surrounding the Bingay Hill area. The NW to SE red dotted line follows what should have been the trace of the Morrissey Bed that runs along the base of Greenhills Range to the SE of Bingay Hill. The grey line on the map indicates the placement of the identified Morrissey beds in the field by D.A.Grieve, etal. The black dotted and solid line shows the approximate trace of the proposed North-South fault. The twin orange lines show the EW orientation of the two Bingay Creek fault traces south of Bingay Hill. The Bourgeau Thrust is shown as the dotted blue line. The brown dotted line attempts to follow the track of movement that resulted in the meeting of these fault systems.

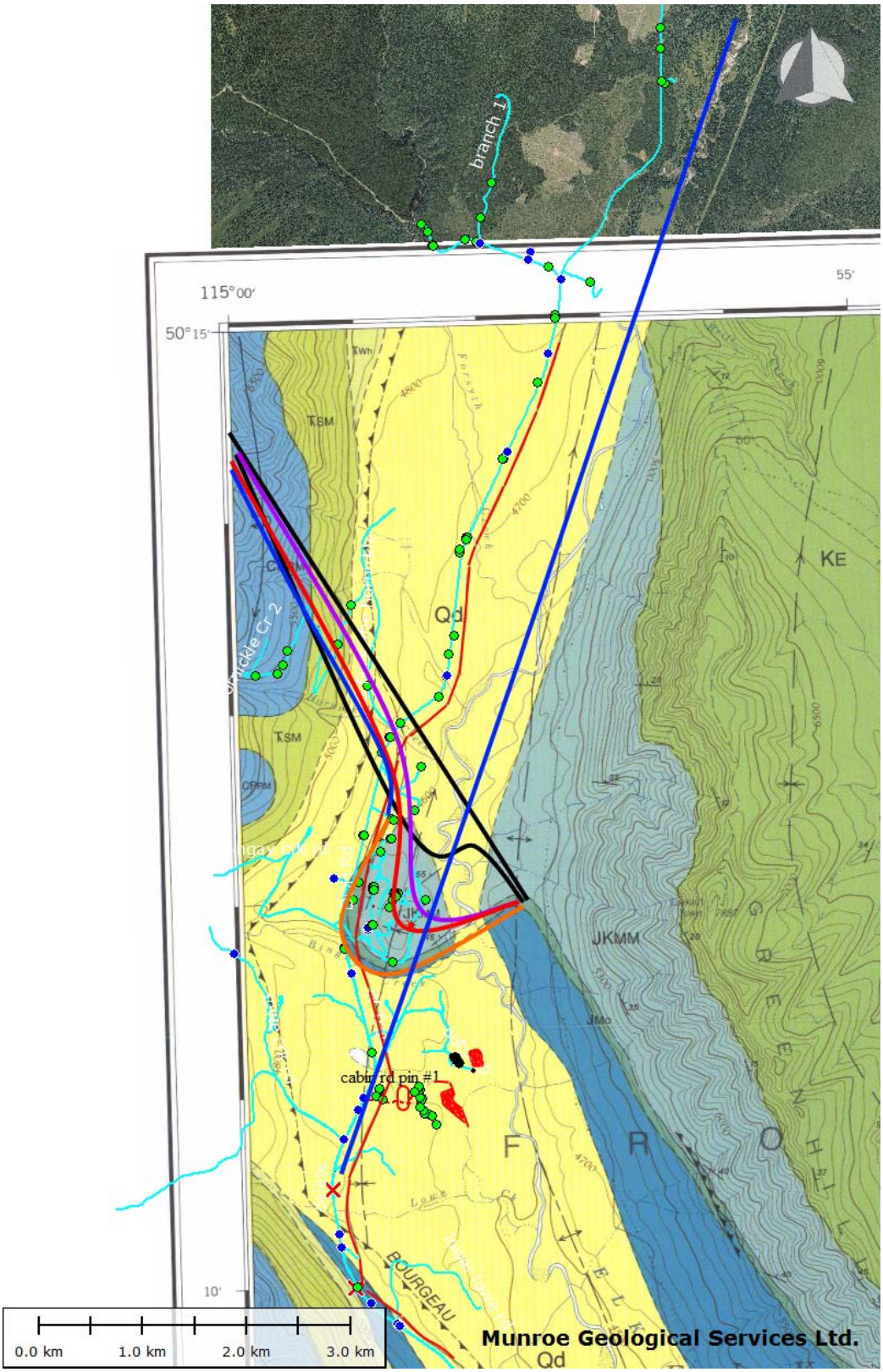


Map 1: Force Vector Intersections

The following map shows the theoretical movement of the Morrissey bed marker as the strata became folded into the syncline and the ground west of the main North-South fault was forced south. The Bourgeau would have continued to exert eastward forces into the strata north of the Hill but then vectors would have changed between Bingay and Lowe

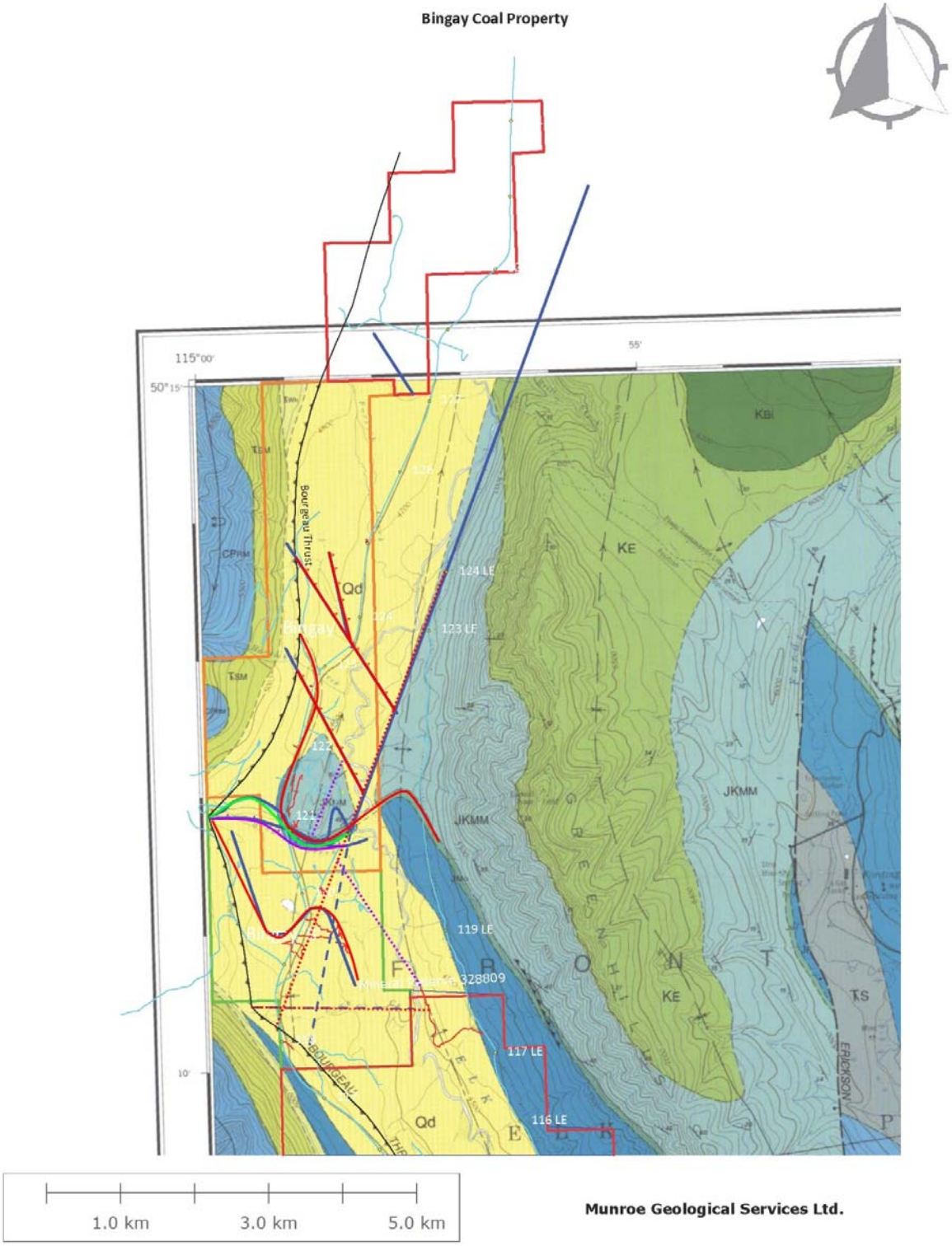
Creek. The Bourgeau would have then changed its push slightly to the NE past the southern end of the North-South fault.

The black lines indicate the first and second positions of the fold. As the compression continued the movement would have been to the purple line, then to the red and finally to the orange line position where it is seen today.



Map2: Morrissey Bed Marker

The following map shows the proposed current state of the structural elements around the Bingay Hill area with the geological map base as a reference. It is followed by a second map showing the refined structures on the topographic map base. Again it must be stressed that a considerable amount of drilling and trenching will be required to verify any of these elements.



Map 3: Current Structural Overview

The following maps and diagrams (Figure 7-6) depict how the stress forces also potentially affected the areas to the north (Bingay A) and to the south (Bingay B and C). The first in the series is an orthophoto showing the outline of the Bingay Main property in orange. Bingay A is partially seen in red to the north and Bingay B is noted in yellow. The blue spider lines indicate the roads and trails in the mapping of this region. The red lines depict some of the foot traverses done to define selected areas. Not all the tracks are shown as they are only meant as a reference and if plotted would obscure too much of the photo detail. The yellow and red dots are the locations of drill holes either completed or proposed by Centermount in 2010. The yellow X`s are outcrop locations. They are noted in the chart in Table 6-1.

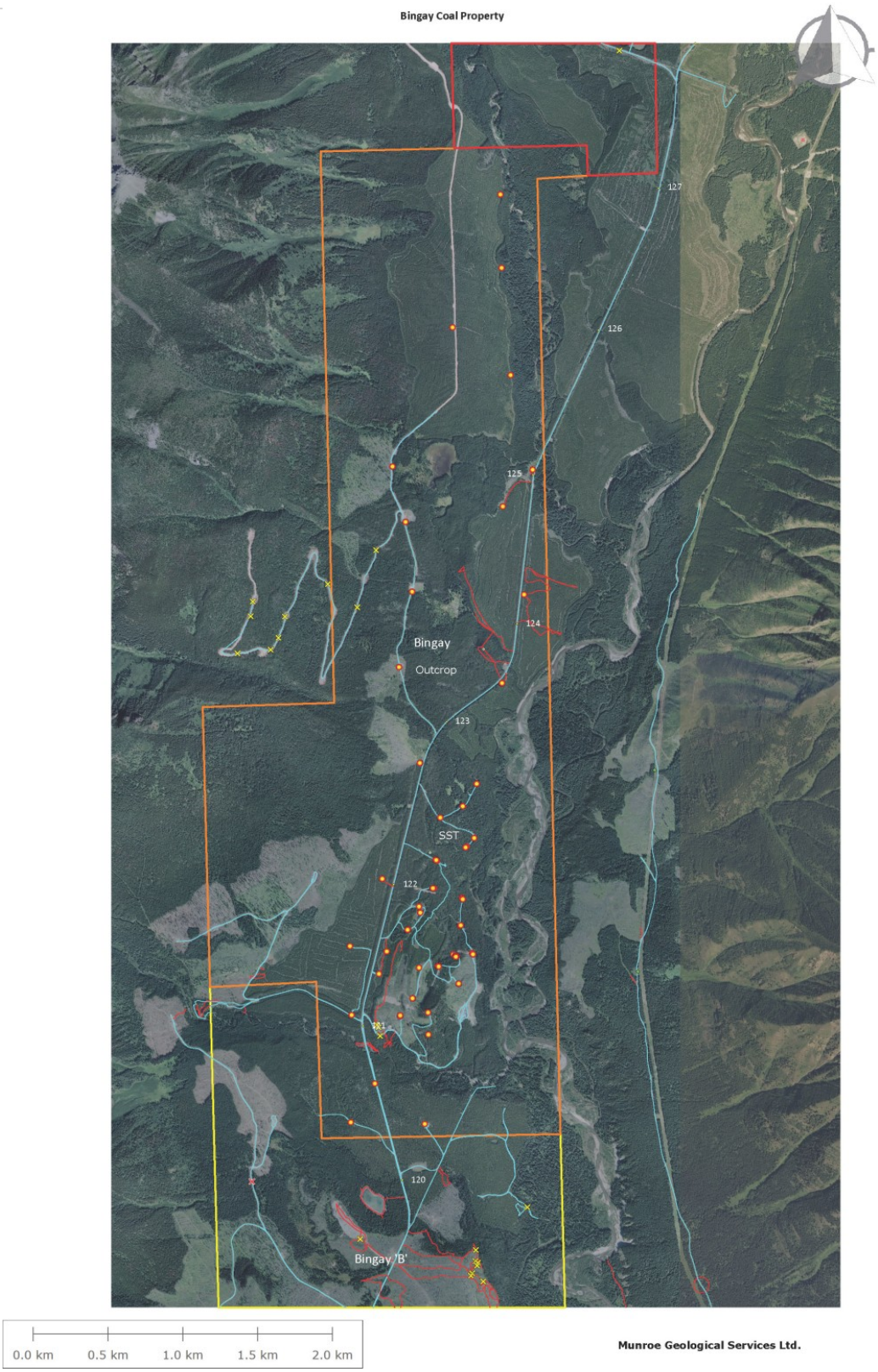


Figure 7-6: Bingay Roads, Trails and Drill Holes (Red-A area; Yellow-B area)

7.3 Bingay A area structural overview

The following topographic map (Figure 7-7) shows the outline of Bingay A in red. The blue lines are the traces of the proposed NW-SE fault lines that run between the Bourgeau Thrust (in black) and the North-South fault. The pink lines show the road and trail traces. The Bingay Main property to the south is shown in orange.

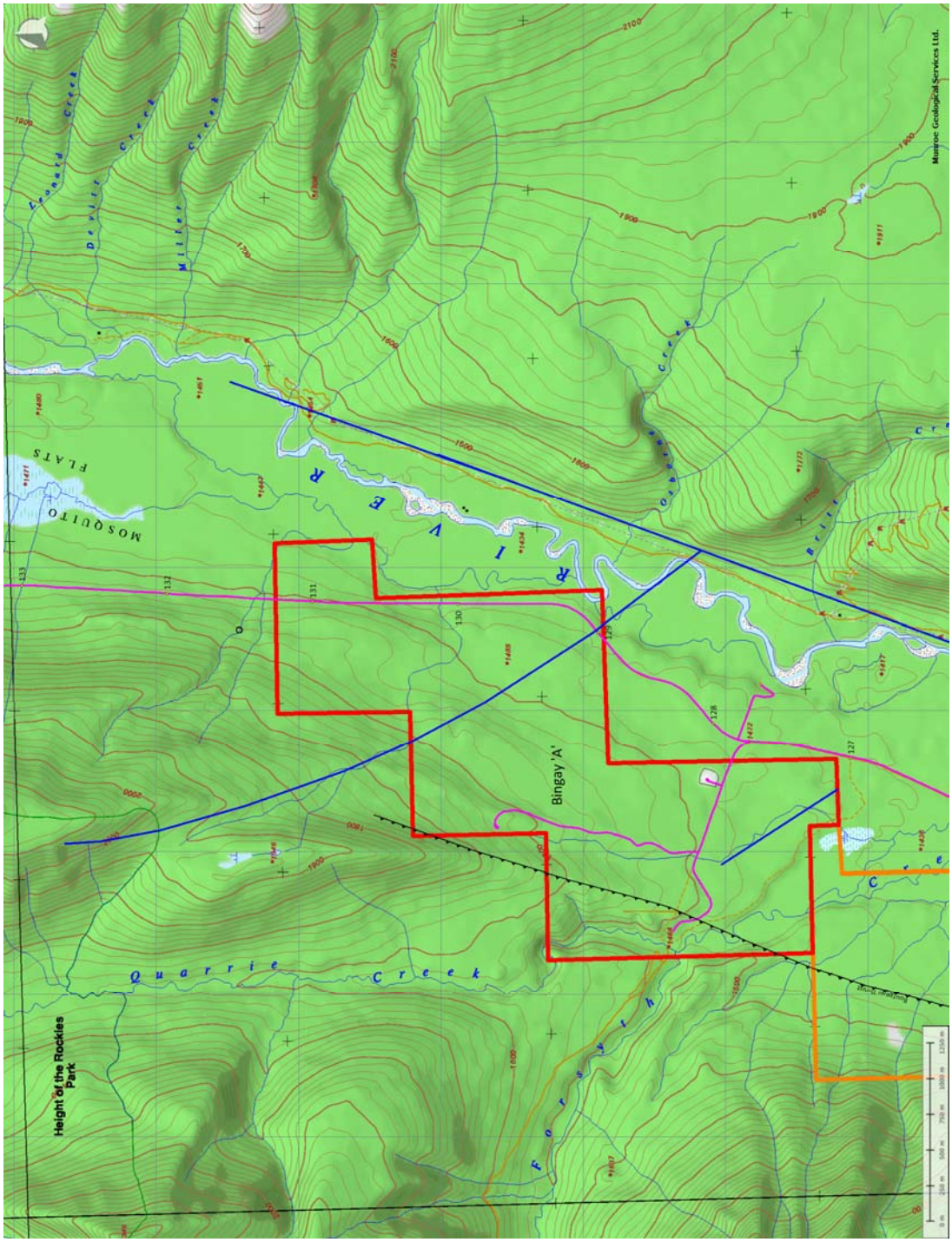


Figure 7-7: Bingay A Structural Overview

The following map (Figure 7-8) shows Bingay A and its relationship to three of the 2001 series drill holes noted earlier in the report. It should be noted that these three holes are all collared at low elevations in and around the Elk River valley floor. As a result the following diagrams have a great impact on the potential presence of coal measures to the west of these holes as full thicknesses of coal beds were intersected in holes D-34-D and D-96-L. Hole D-34-D intersected 96 m of coal seams greater than 1m thick. In that sequence it also hit 11 major coal seams greater than 3 m thick. Hole D-34-D is approximately 2 km due east of the eastern edge of Bingay A at the same elevation as the drill collar.

The second hole of interest is D-96-L which intersected 14 coal beds (4 major) before it was stopped only due to technical problems with the drill. This hole is less than a kilometer east of the eastern edge of Bingay A and the northern tip of Bingay. The third hole (D-16-D) was drilled right on the corner of what is now Bingay A. However for reasons to be explained, the hole did not reach much depth.

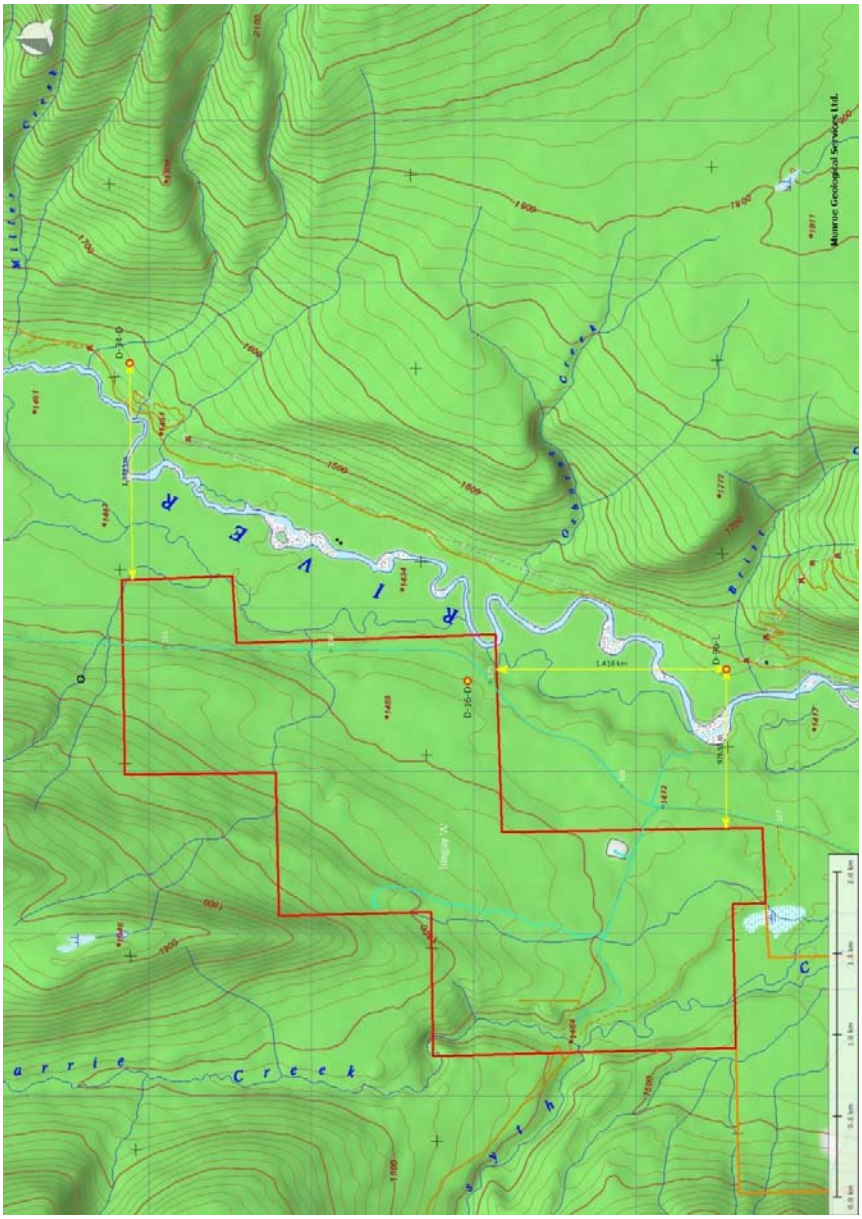


Figure 7-8: Bingay A 2001-Series Drill Holes

The following diagrams, Figure 7-9 show the general positioning of the coal beds within the Misty Mountain formation and their relation to the underlying marker beds (green beds)

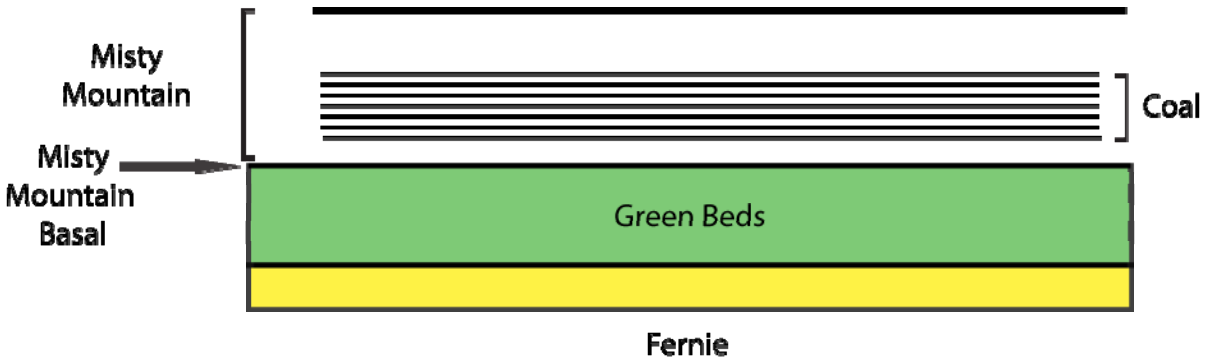
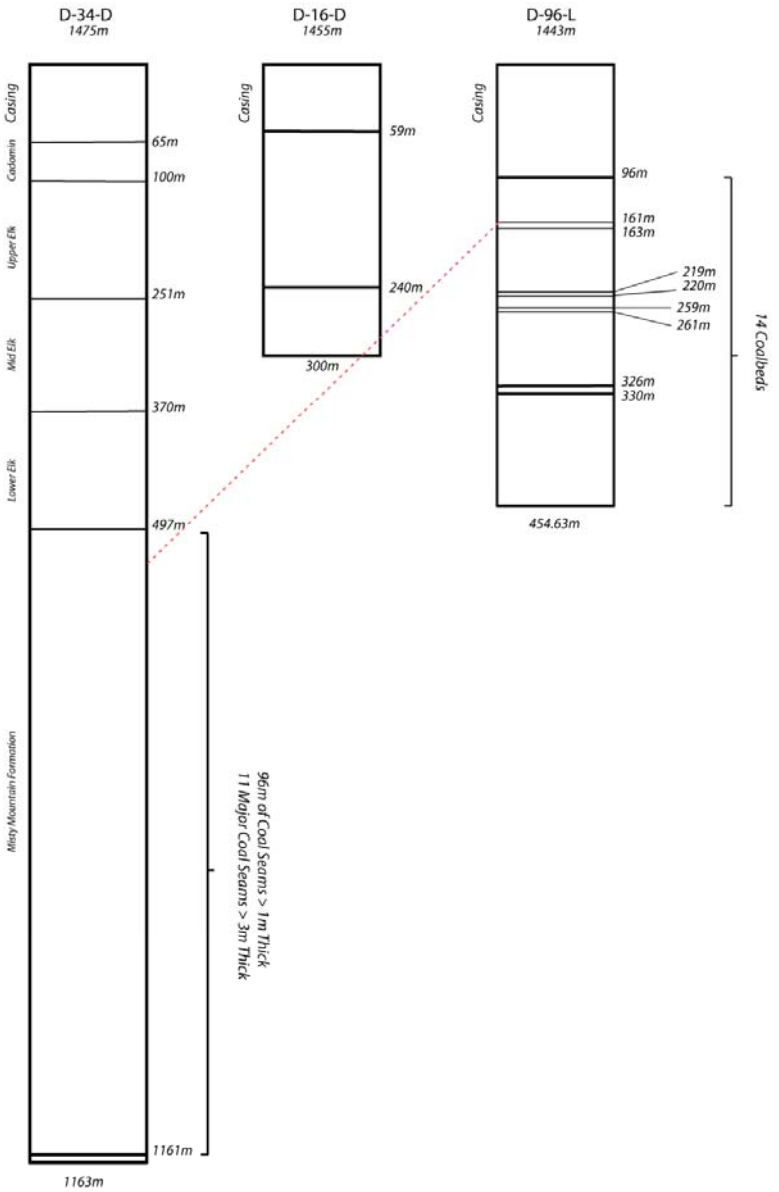


Figure 7-9: Misty Mountain Formation Coal Beds

The following chart (Figure 7-10) details the drill results of the three old holes. It should be noted that hole D-34-D intersected a full thickness of the Mist Mountain formation at depth and hole D-96-L was well into the formation when the drill broke down. Since finding coal was not the thrust of that program, the hole was Abandoned and the drill moved to another site.

Hole D-16-D intersected no coal measures but a review of the placement of the hole shows that it was drilled directly into one of the NW-SE faults noted on the maps. As a result the differing results are expected. Had the hole been placed off the fault zone the results would probably have been much different.

Lithology of Drill Holes



Bingay 'A' Property	
Bore Hole Lithology Diagram D-34-D D-16-D D-96-L	October 1, 2010
Munroe Geological Services Ltd.	

Figure 7-10: Three Boreholes Lithology Correlation (No Scale)

The following cross section (Figure 7-11) shows how the trace of the tops of the Misty Mountain beds were defined with the red line. The green portions of the cross section show the postioning of the coal bearing zones. There is no vertical exageration in this section. Of special note is the fact that hole D-16-D was stopped just short of the trace of the coal bearing beds. Should this hole be deepened, the potential of finding coal on Bingay A is high.

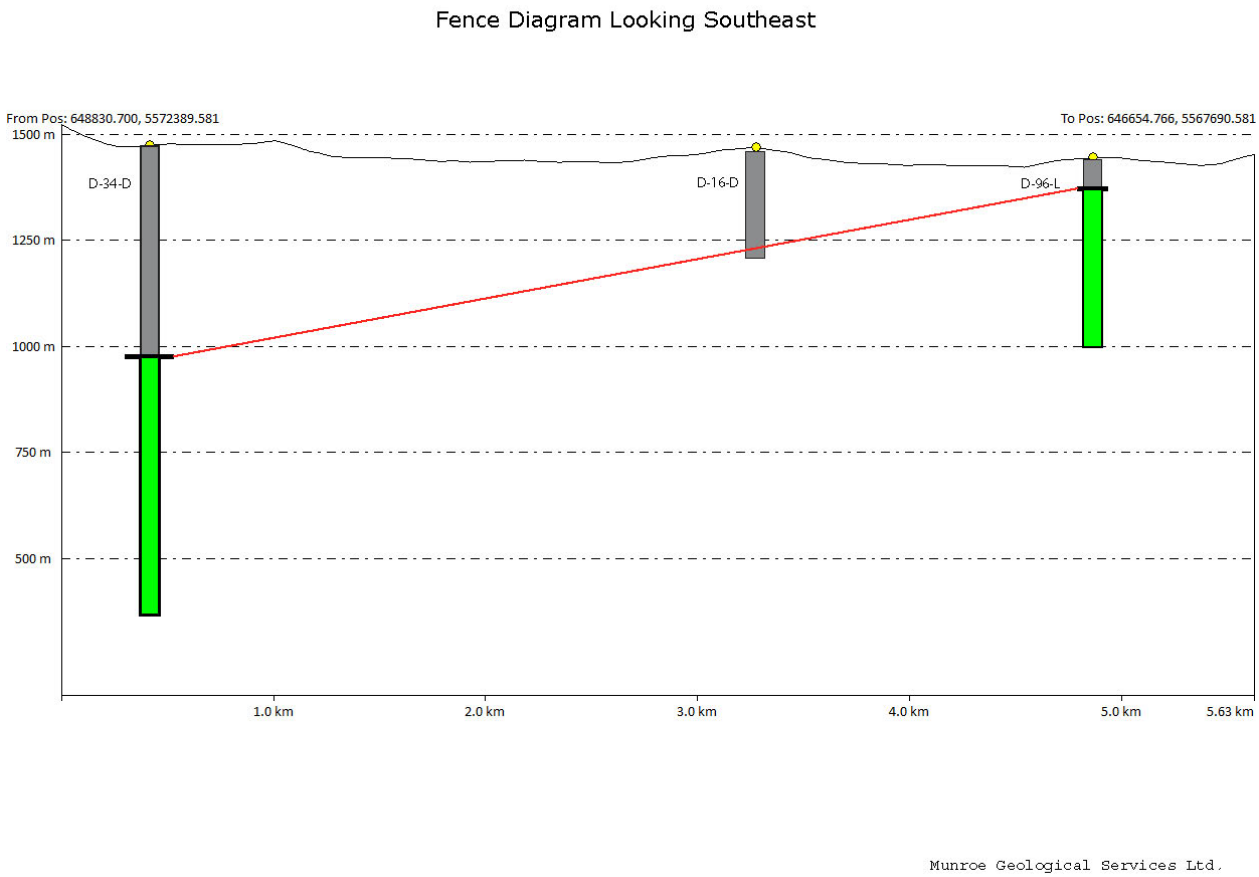


Figure 7-11: 2001 Series Drill Holes Cross Section

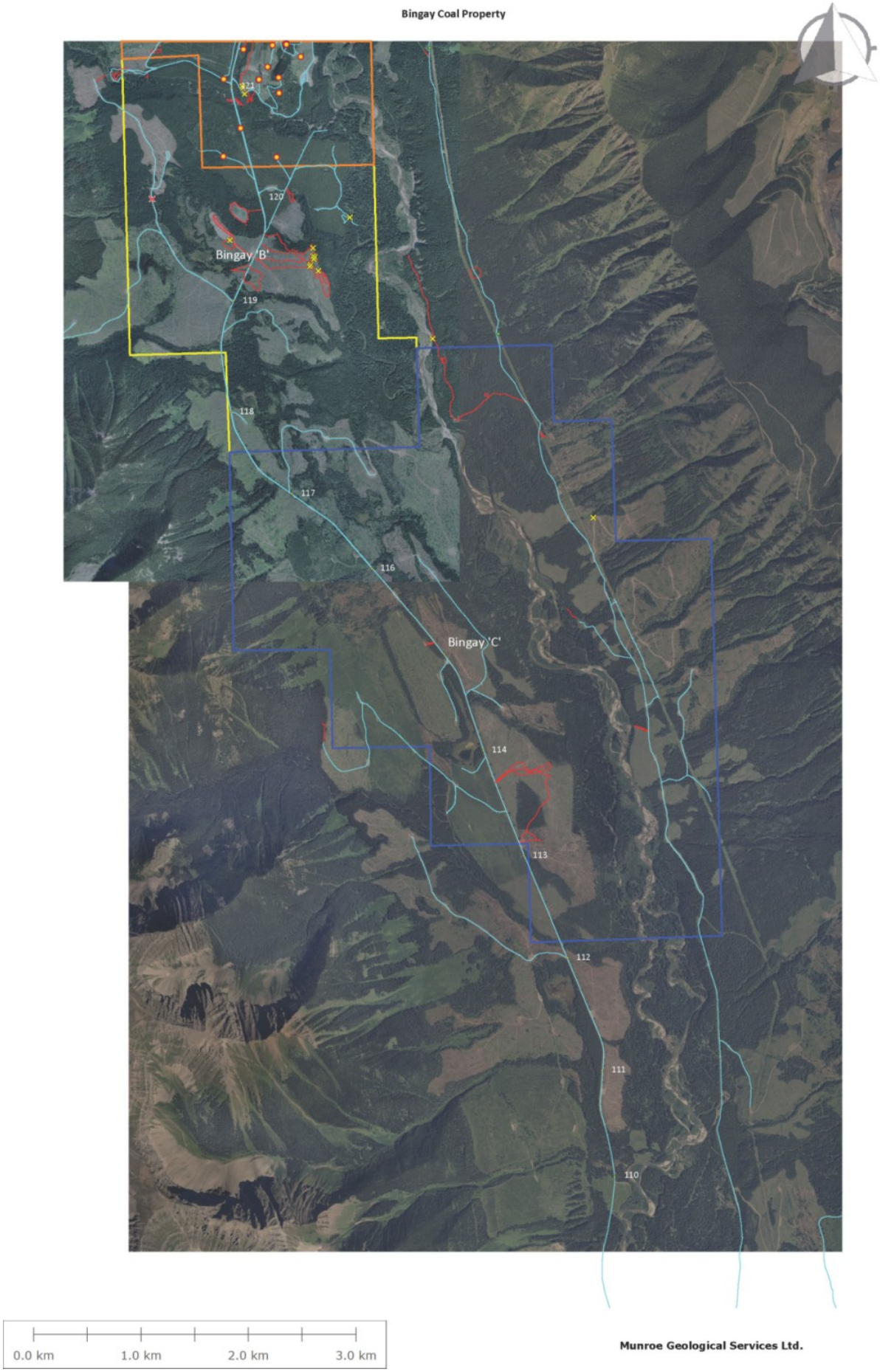


Figure 7-12: **Bingay B & C Overview**

7.4 Bingay B and C area structural overview

The orthophoto Figure 7-12 depicts the area of Bingay B (in yellow) and C (in purple). The extensive drilling program underway around Bingay Hill is shown above the orange in at the top of the map. The light blue spider lines again show the roads and trails and therefore drill rigs could be moved down them with limited difficulty. The red trail shown on the east side of Elk River just east of the joining of Bingay B and C is Bill`s Road. This area is the subject of the enlargement which follows this map.

This enlargement of the Bill`s Road area (Figure 7-13) depicts several important findings. Along the road between kilometer markers 118 and 119 a red circle has been placed. This demarks a location where numerous coal folat parting were collected along the sandy clay road base. In areas where water has ponded, coal was noted to collect into small pockets along the edge. The only other locations where coal partings were located in a similar manner are along Bill`s Road at the two other red circle locations. The area to the north west along that road near the yellow X was dug out with a shovel and a fair quantity of small coad parting were recovered in the virgin bank form above the Elk River below.

The yellow X by the river was a 30 m x 14 m outcrop of what appear to be Fernie Formation strata with a sharp dip of 60 to 68 degrees to the east, striking 325 degreess AZ. At the lower right of the map is a second yellow X. It is the location of Greenbed outcrop above the Fernie dipping sharply to the west at 70 to 80 degrees. This tight orientaion suggests that coal beds may be sharply folded into a deep tight syncline between the greenbed location and the river. The cartoon cross section following the map (Figure 7-14) shows the possible lay out of the bedding at this location. Note the sharply overturned axis to the east of the green bed location.

In the field the original prospectors were able to locate areas just north of the coal area located on the main road that showed sharp over thrusting of the axis. This type of symetry is suspected to follow right across the valley to the west.

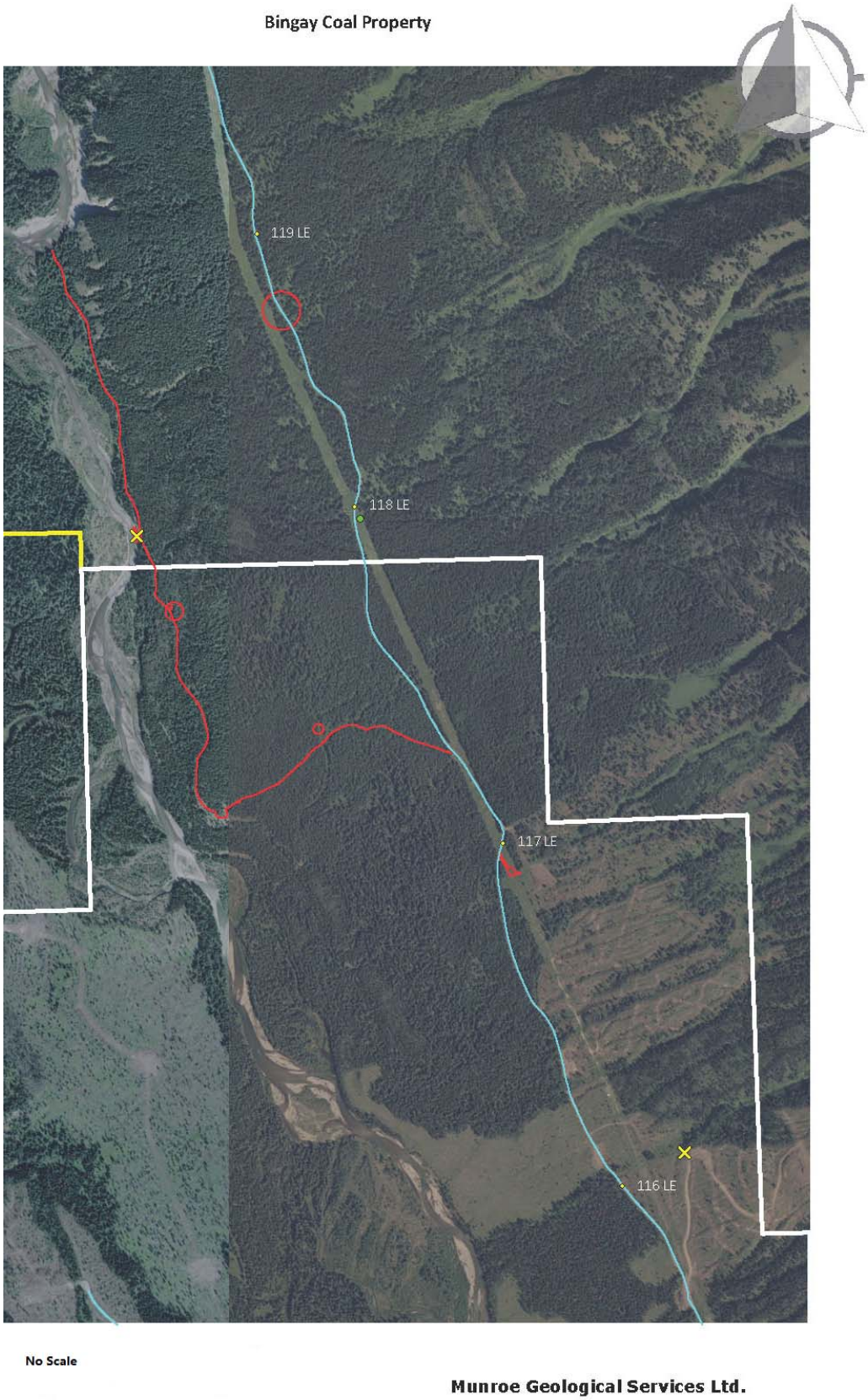


Figure 7-13: 'Bill's Road' Enlargement (near Bingay C area)

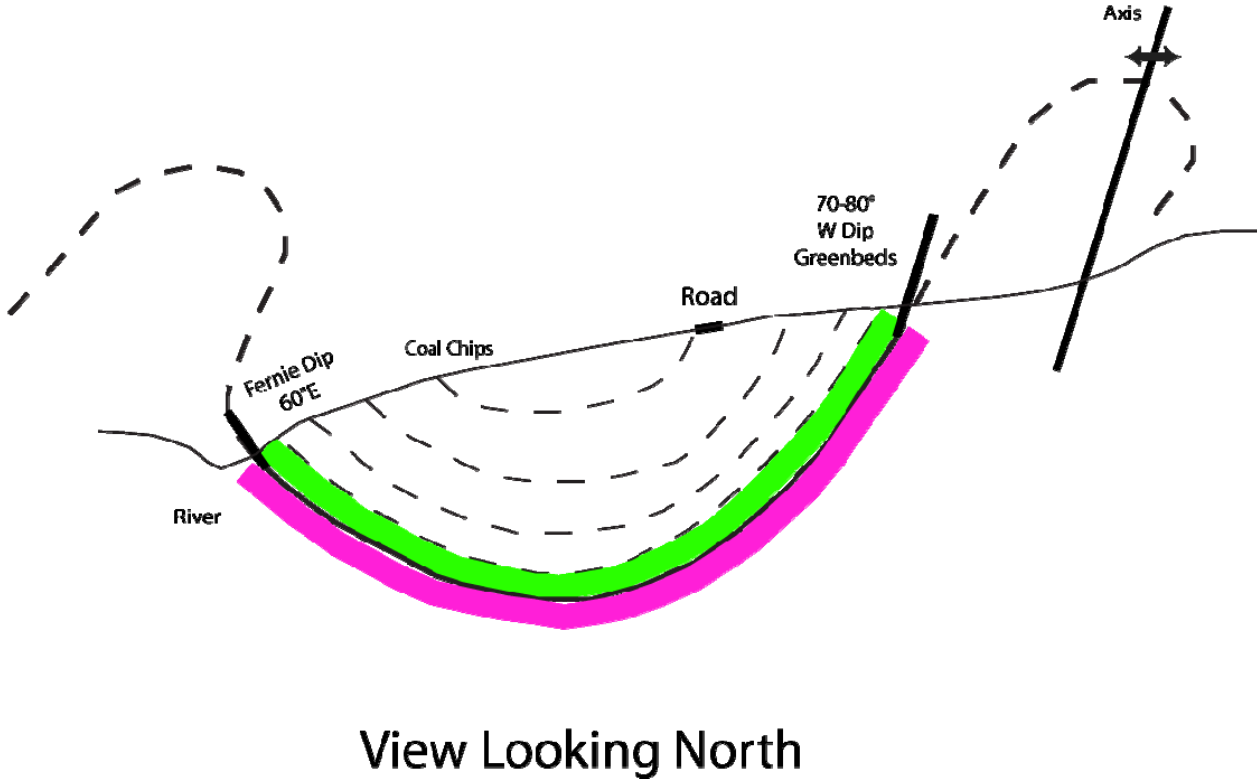


Figure 7-14: West to East Cross Section

The following cross section (Figure 7-15) shows the Elk Valley with vertical exageration. The diagram (Figure 7-14) above showed sharp over thrusting of the axis points to the possible crests. This drawing (Figure 7-15) was produced as a simply synoidal series of parallel beds lost to the east under the mountain and truncated on the west by the North-South fault. The purple line on the west edge of the diagram shows the Bourgeau Thrust. Given the width of the valley floor and assuming an equal pressure regime from the Bourgeau a series of rolling synoidal anticline-syncline sets has to be considered.

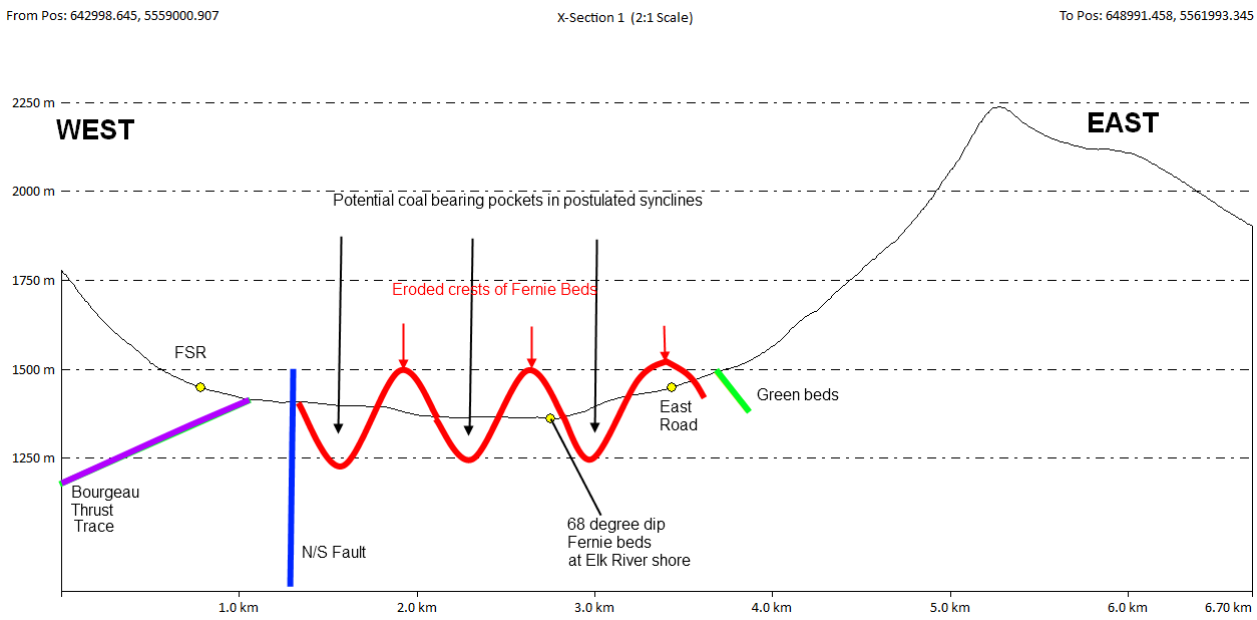


Figure 7-15: Elk Valley Structural Cross Section

Figure 7-16 shows the trace of the parallel synoid sets in plan view. Bingay C is shown within the white line outlines. Bingay B is to the north within the yellow solid lines. The location of Bill`s Road is shown in red to assist in orientering the reader. The black line is the trace of the Bourgeau Thrust. Special note should be made of the correlation of the red anticline peak to the tip and east arm of the blue synoid structure to the north. The yellow dotted lines depict the trough locations where coal prospecting should take place in future once permitting is secured.

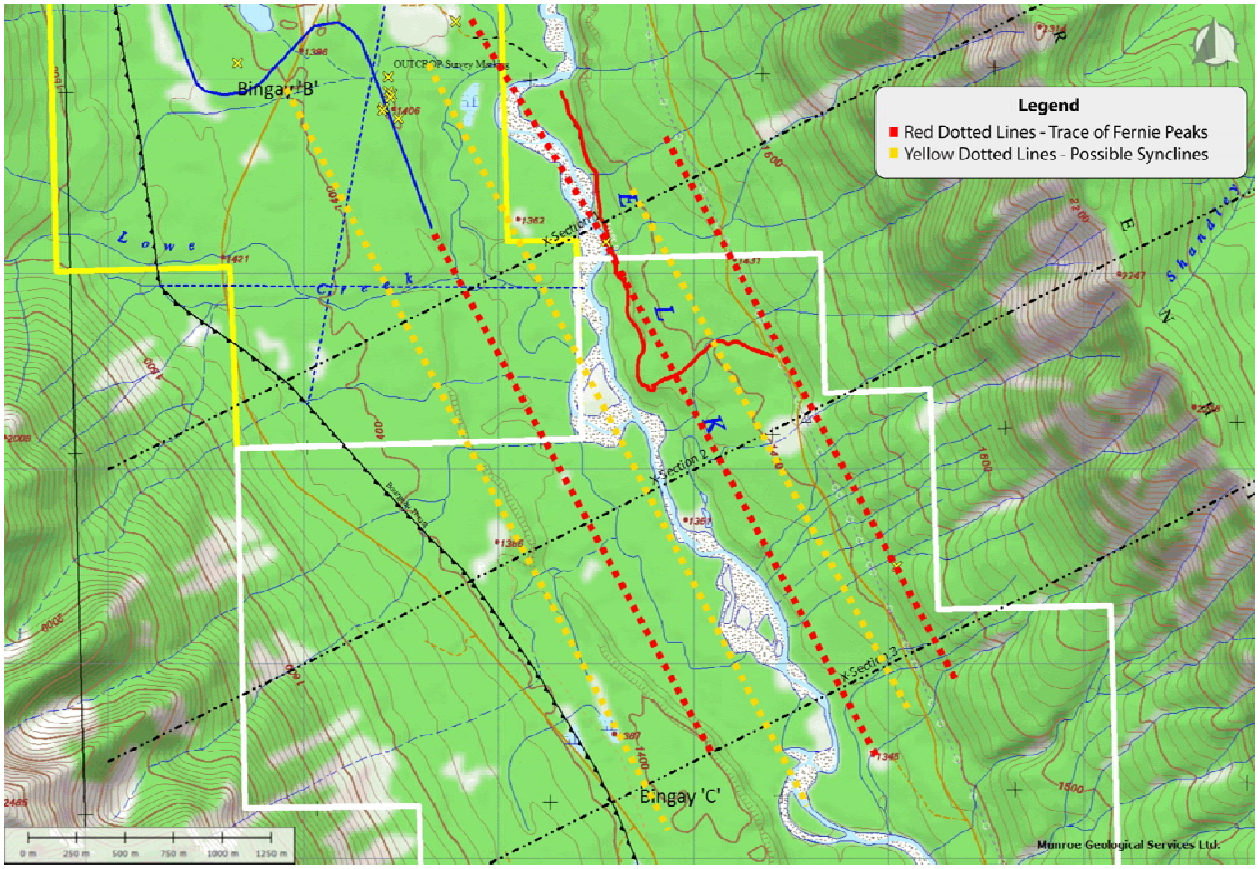


Figure 7-16: Parallel Synoid Sets

8.0 Exploration - Current Drilling programme

During the year-2016 exploration programme at Bingay A and B Area, Centermount Coal Ltd. employed two drilling rigs, supplied and crewed by Dorado Drilling Company. Boreholes were drilled by skid-mounted diamond-drill. At the beginning of the drilling programme, Dorado commenced work with just one large diamond-drill. The diamond-drill was equipment such as skid-mounted 'sloops' (stake-trailers) for carrying drill rods and casing. Diamond-drilling was done at one diameter: HQ_3 for deeper sections of long holes. Dorado drilling company provided their own crew-transport vehicles and other support vehicles.

The drilling programme was supported by a temporary trailer camp. Centermount elected to provide its own on-site catering and first-aid services. Centermount also erected a temporary fuel-storage and refuelling facility, consisting of a large stock truck for Diesel fuel and a smaller stock-tank for motor gasoline, both of which were equipped with electrically-driven pumps akin to those seen at vehicular service stations. Electrical power supply was by means of a portable generator, from which partially-buried cables fed power to the trailers and other buildings.

Drill core was examined and stored in sea-containers of standard ’40-foot’ size, fitted with windows and doors. The drill core box was stacked into the containers on-site camp.

Coal core sampling was done following a somewhat more detailed methodology than had been applied by previous workers. Sample intervals were selected on the basis of geophysical log response, with due consideration given to interpreted zones of core loss.

Sample was collected with the aid of a hammer and chisel (to split cores along bedding-planes at the top and base of the desired sampling interval) and a square-bottomed plastic scoop (to ensure that fine coal particles were not left unsampled in the bottoms of the core boxes). Sample was placed in numbered plastic bags, within which a corresponding numbered sample tag was placed. Sample tag numbers were recorded in core logs, as well as in the sample inventory file that was used as the basis for compiling.

In the course of logging and sampling diamond-drill cores, liner recovery of the cores was measured, so that length of recovered cores could be compared with the total length of each coring run. Linear recovery is reported as a percentage of each sample interval.

Upon completion, drill hole of Bingay A was logged with downhole geophysical tools. A standard suite of coal-exploration tools was employed, comprising natural gamma, caliper, density and deviation tools, and neutron tools were also used by Century Wireless Services.

A geophysical log was interpreted on-site, as a means of assessing the extent of lost core within coal zones. The gamma and density logs were particularly useful in reconciling partially-recovered core of coal zones, so that the correct assignment of coal and rock partings could be made.

2016 Bingay A and B Area Borehole Drilling Location sees Figure 8-1and Figure 8-1’.

Figure 8-1 2016 Bingay A Area Borehole Location

NOTES:

ALL COORDINATES PROVIDED ARE BASED ON CONTROL POINT COORDINATES PROVIDED BY CENTERPOINT RESOURCES INC,

0 100 200 300 400 500 1000 1500m

ALIGN Surveys Ltd.

Client:

CENTERPOINT RESOURCES INC.

Surveyed By:	M.B.
Drawn By:	M.B.
Checked By:	A.W.
Approved By:	A.W.
Scale:	1 :15,000 @ A3

Project: **BINGAY MINE**

Title: PLOT PLAN WITH AERIAL PHOTOGRAPHY OF 2016 DRILL HOLES SURVEY CONDUCTED BY ALIGN SURVEYS LTD. ON 2016-07-21

Job No. :	
CAD File:	2016-07-21 BINGAY MINE
Date:	2016-07-28
Drawing No. :	001
Sheet No. :	1 OF 1

8.1 Binagy A Area Drilling:

One borehole was drilled at Bingay A Area, its Hole 16-BA02, HQ_3 size. The following table shows 16-BA02 borehole location. A borehole core detail is in the Appendix A.

Table 8-1: 2016 Bingay A Area Borehole Information

Borehole ID	Easting	Northing	Elevation (m)	Azimuth/Dip	Depth (m)
16-BA02	646722	5570235	1442.9	NW340°/80°	469.18

Hole 16-BA02, geological exploration borehole, near Hole D-16-D, it intersected few coal measures but a review of the placement of the hole shows that it was drilled directly into one of the NW-SE faults noted on the maps.

The core lithology of this hole is mainly Elk Formation. The Elk Formation is entirely nonmarine and is generally considered to be Early Cretaceous in Age (Gibson, 1985; Ricketts and Sweet, 1986), although it may be as old as Late Jurassic in some locations. (Gibson, 1985). The Elk is coal bearing, but it contains mainly very thin coal seams and has contributed in only a minor way to coal production in southeastern, B.C. it conformably overlies the Mist Mountain Formation, the major economic coal-bearing unit of the East Kootenary district and adjacent portions of Alberta. The Elk Formation is an entirely nonmarine succession of interbedded sandstone, siltstone, mudstone, coal, and locally, conglomerate. The formation varies in measured thickness from 28m to 590m (by D.A.Grieve and N.C. Ollerenshaw, 1989). the hole shows that it was drilled directly into one of the NW-SE faults, so the bedding place is almost vertical, 60°-70° degree, rock core very broken, brecciated and decomposed, see picture 8-1, 8-2 and 8-3. Had the hole been placed off the fault zone the results would probably have been much different, would have a great impact on the potential presence of coal measures. The details see Appendix A: 16-BA02 drill hole core lithology description.

16-BA02 core lithology log:

0-46m, overburden;

46-411m, Lower Elk Formation; minor coal seams.

411-469.18m, Mist Mountain Formation. At 462.3-465.1m, 2.8m coal seam (wireline log).

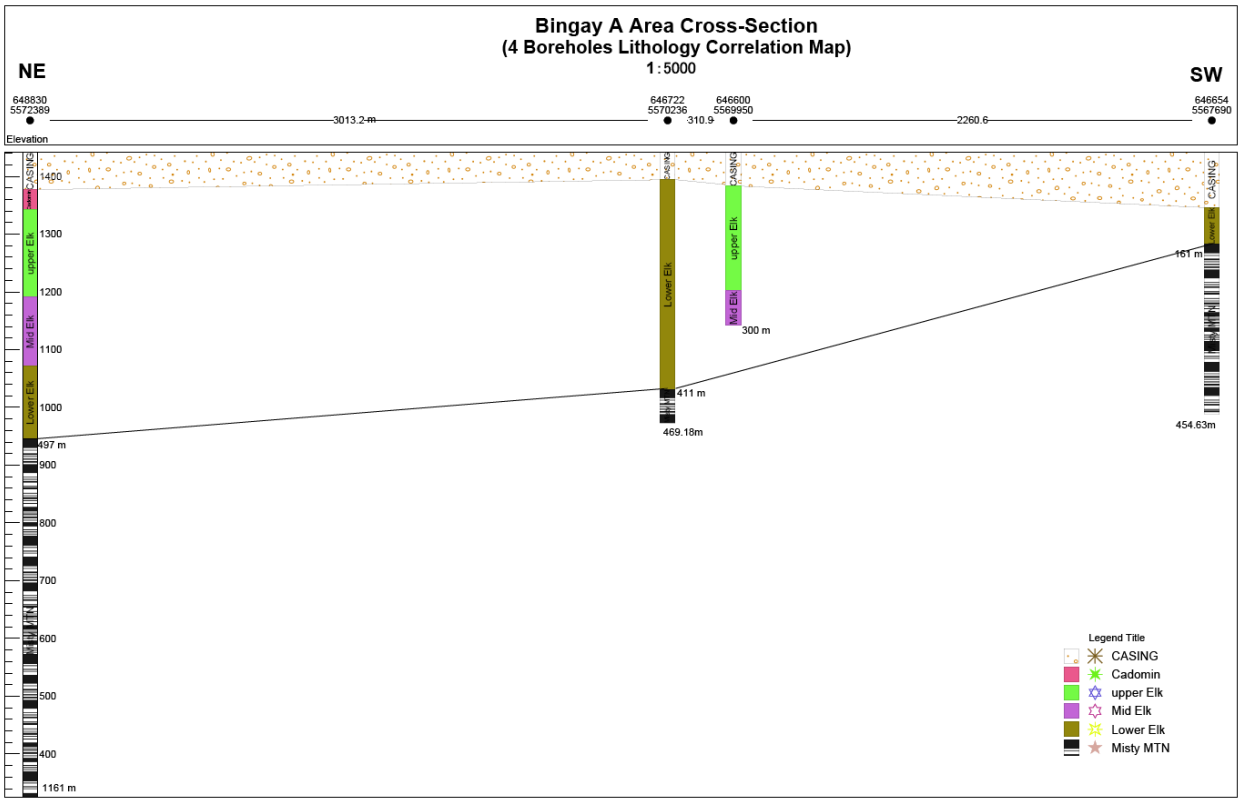


Figure 8-2: Four Boreholes Lithology Correlation Map-2016

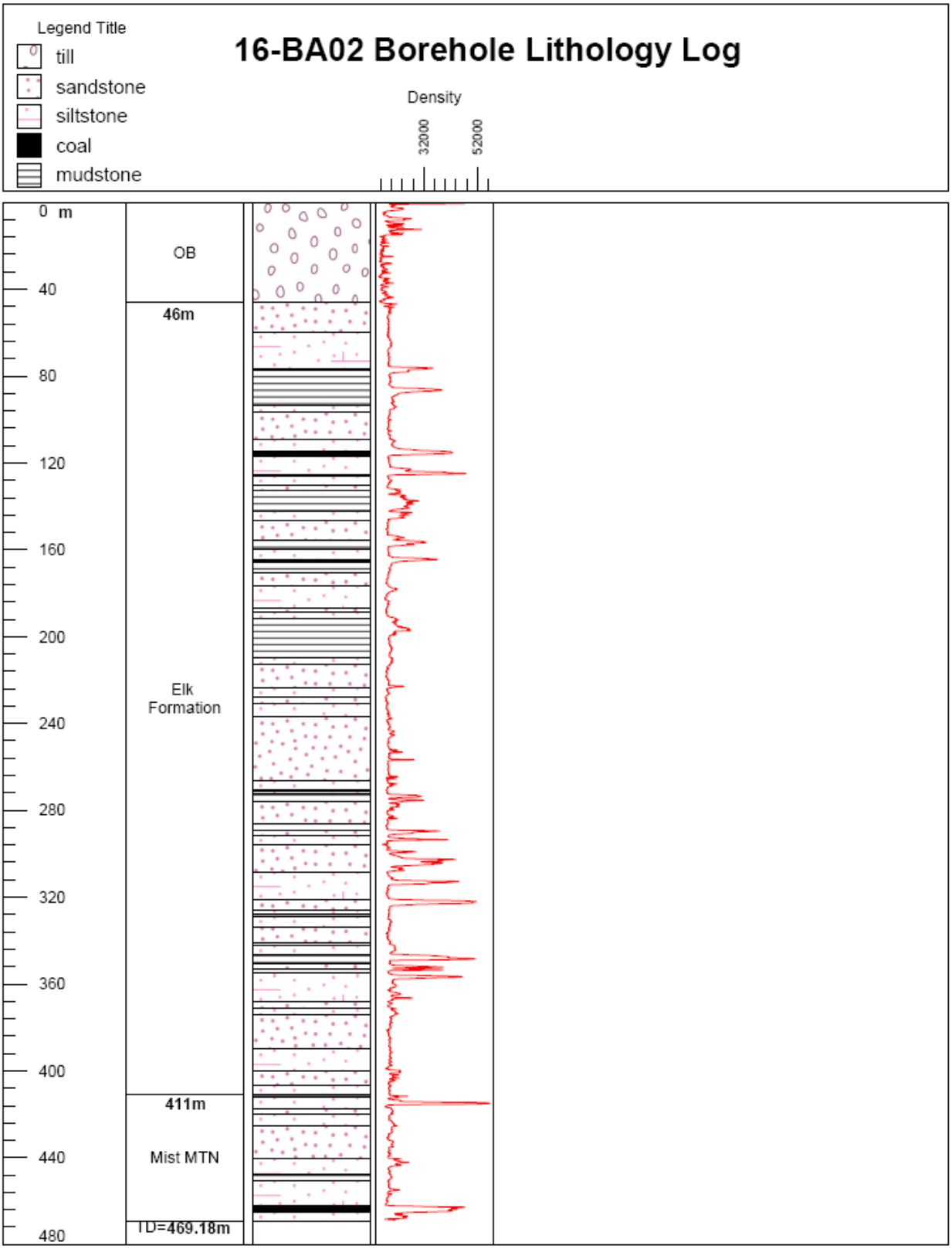


Figure 8-3: 16-BA02 Borehole Lithology Log

Picture 8-1: 16-BA02 Rock Core (Broken Siltstone)

Picture 8-2 16-BA02 Rock Core (Fault Gauge)

Picture 8-3: 16-BA02 Rock Core (Broken Sandstone)

Picture 8-4: coal seam: 462.3-465.1m, 2.8m. (TD=469.18m)

8.2 Bingay B Area Drilling:

Five boreholes were drilled at Bingay B Area, HQ_3 size. The following table shows five boreholes location. All boreholes core details are in the Appendix B. the main targets are the geotechnical assessment for a prospective mine dump zone under Bingay B area.

Table 8-2: 2016 Bingay B Area Borehole Information

Borehole ID	Easting	Northing	Elevation (m)	Azimuth/Dip	Depth (m)
16-BBDH1	644175	5561546	1396.0	90°	92.50
16-BBDH2	644016	5560889	1395.0	90°	50.00
16-BBDH2A	644024	5560885	1394.5	W270°/50°	25.00
16-BBDH3	644082	5560316	1403.2	90°	26.00
16-BMD02	644640	5561742	1384.8	NW300°/80°	150.40

The first drill hole to be done on Bingay B was identified as 16-BBDH1.

Hole 16-BBDH1 was collared at an elevation of 1396.0 m in the middle of the north/south road, east of the Elk FSR and leading to the south shore of Bingay Creek. The vertical drill hole was placed about 10 m south of the intersection of the N/S- E/W "Y" in the road system.

The hole has its sump dug on the east side of the road next to the hole. All the sumps in this program were competed with an excavator using safe and clean methods. The excavated material from the sump was stockpiled next to the hole and eventually pushed back into the sumps upon completion of the drilling.

Percolation testing was done by the writer using photographic records and time delays at each hole in the program. All of the holes in Bingay B provided excellent drainage results. There was a bit of ponded water in hole one due to the heavy glacial till content at surface but drain water still drained into the sump easily.

After the drill program was completed the core examined it was decided that the designation of "till" (while a valid term in the global textural sense) should be changed to glaciofluvial cover. The entire base of the Elk River has been re-worked many times during the deglaciation stages. While some outliers of solid alpine till are found in the valley a lot of the cover is better described as an imbricated to slightly imbricated glaciofluvial cover.

The process of deglaciation is very complex and leads to a variety of changes locally in surface presentation. However, the area covered by Bingay B is much more loose in compaction at depth. Deep zones of bedded and cross bedded layers were encountered in the drilling program.

This suggests that most of the area will present hydrologically as a glaciofluvial complex with intermittent harder till zone blocks and well consolidated bank edges from old kame terrace and scour zones.

The excavator bucket was used to compact the till stockpiled from the 2 m deep sump. When the flat part of the bucket was depressed against the loose till there was about a one -foot drop at the surface but the basal two feet below the top compressed layer did not move. It was also jumped on by Ted Nunn with no compression. These simple field tests indicate that the clayey till in that area will hold roughly 6 tonnes per square foot in service life. To develop a more complete compression analysis would require a full geotechnical program with specialized equipment.

The surface sump pit was monitored over a 24-hour period. Initially it was observed to have a percolation rate of roughly 0.5 inches per minute but once the area was saturated it held relatively steady and dropped to a rate of around 0.25 inches per minute.

Drilling was begun at 14:00 hrs. on March 9 but was stopped due to motor problems on the drill. This was later fixed by 18:00 hrs. and drilling continued on a 24- hour basis.

Hole 16-BBDH1 reached a total depth of 92.5 m at 19:30 hrs. on March 12, and produced 22 boxes of drill core and collected regolith from the surface cover. Bedrock was hit at 40m into the hole and varied glacial till cover layers were intersected. This is a very firm till cover above the bedrock and appears competent for mine dump purposes. Additional engineering testing should be done to confirm those visual observations. There was a slight odor of sulphur noted coming from hole 16-BBDH1. This is probably due to the fact that it was essentially found to have been driven into an existing near vertical shear zone in the bedrock.

A careful study of the drill log will provide a reader with a good sense of the till banding and silt/water zones. Some zones such as the 13-16 m zone carried a great deal of water and appeared very unstable. However, when confined between the till layers this zone may remain as a firm but wet zone.

The 16 m steel grey sticky rock flour/ silt zone presented only a slight grit between the teeth. However, it was very “sticky” and remained like soft taffy with each hit needed to get it out of the core barrel. Each hit moved only ½” to 1” of clay out of the barrel, but it still remained cohesive.

From 22-23.5 m we only recovered about 18” of material with a full drill hydraulic push and no water or rotation. From 23.5-25 m the conditions changed totally and a full recovery was obtained. Each of the holes drilled in the entire Bingay program required a high level of skill from all the drill crews. Each drill platform visited during the program was well manned and maintained by very capable and experienced drillers.

Recovery changed by the restriction in use of drill water but there are many variations at depth in the surface till cover. From 33-34 m it felt like the stem was hitting boulders but in fact it was only “water grab” friction in the clays. Rock from the fault was not reached until 15:00 hrs. on March 10. Fault gouged black mudstone was recovered at the 40 m mark and from time to time down the hole. Slickensides and mylonization effects were noted in the recovered core right down to the 92.5 m TD.

By March 10, at 18:15 hrs. The drill was only down in till at the 49 m mark. What was of note was the array of different (non-local) sandstone and conglomerate pieces noted in the core. This is also consistent with the glaciofluvial nature of the strata.

As the drilling deepened it became evident that the hole was driven right into a vertical fault zone containing a significant amount of rotated and gouged blocks. Additional drilling at other locations or angled drilling from this pad will be required to better determine the true bedrock conditions.

Past regional mapping suggests that the fault is running essentially N/S and is sub-parallel to the main Elk River shear fault line. Looking north from the drill collar location, there is a distinct and sharp drop in

elevation of about 5 m to the north. The drop crosses the road perpendicularly and runs or considerable distances to the east and west.

This drop in contour is thought to be a relic meander scar cut into the surficial tills along the valley bottom. They would have been cut during de-glaciation times and subsequent changes in the Elk River thalweg over time. The drop/ scar do not appear to be fault controlled.

The RQD calculations obtained from the core logging are a full range of values. Recovery ranged generally from 25% to 100% in this hole which was expected. The faulted materials were noted in the core boxes.

At 13:00 hrs. March 12, 2016, the vertical drill hole 16-BBDH2 was started. A percolation test at the hole sump during set up was done at 11:15 hrs. on March 11. We tried to flood the clean dry hole with 15 imp. Gallons per minute of clean water. After 20 min there was still only about 12" of water in it. We shut off the water and after only 15 min it was bone dry. The observed rate of percolation was noted as 1.25 inches/minute. This qualifies as good percolation.

By 22:00 hrs. on March 12 the drill was still in sand and gravel. This glaciofluvial stratum proved to be very difficult drilling with lots of stuck rod situations due to very loose gravel and sand. Drill water was constantly being lost at depth.

At 17:20 hrs. on March 13 a switch was made to use bentonite to try and control the water loss. By 30 m a switch was also made to a smaller core (NQ) to just try and reach bedrock. Bedrock was hit at 33.5 m. The hole was terminated at 50.0 m with 10 core boxes recovered. The black massive and badly fractured mudstones returned RQD values from 25% to 100%. It appeared significant faulting acting was also present under the sandy/gravel/till surficial cover. Original thoughts were that the mudstone was Fernie Formation but the writer is still not convinced. At the top of the bedrock encountered it looked like coarse grey/ pink sandstone attached to a metre of black mud stone. This is not the Fernie Contact lithology.

It was also noted that once the bentonite was used in hole 16-BBDH2 the water began to pond. Drill water from 00:10 hrs on March 12 held its position as a constant when observed again at 14:00 hrs. on March 13. Obviously water was till passing the bentonite barrier constantly into the sand and gravel layers, but some perching of the micro water table occurred with the bentonite.

The decision was made to try and cross over the suspected fault under 16-BBDH2 by moving the dip of the drill to 50 degrees West at the same collar location. The hole was drilled to 25 m and recovered 25m of gravel into 4 core boxes.

Both 16-BBDH2 and 16-BBDH2A were located on very sandy gravel strata in close proximity to major depressions called the DROPS. These three clusters of deep (+20 m deep in places) “craters” were hoped to be old collapsed coal mine traces but appear to be deep surface fault expressions of ancient sinkholes in the bedrock. Some of the “craters” could have been formed by weathering out of expanded fractures in the rock and/or by vertical water percolation during and after the alpine glaciation events. Other such drops/craters will probably be encountered across the valley floor but may be filled and sealed with till like materials.

East drops line (west side of depressions) .elevation 1392m, 644050, 5560938;

West drops line (West side of depressions). Elevation 1395m, 644004, 5560935

They run essentially N/S and E/W depending on how you plot their axis. In any eve, they were thought to be too deep and geo-technically unstable to try and dig them out. There was a great ear that there may be caverns below and could therefore pose a problem for a heavy equipment operator.

With at least 50 m of sand and gravel capping the bed rock at this location, the overall ground was felt to be generally stable but another look at those DROPS will have to be made prior to the ground being used as a dump.

On March 15, the 16-BBDH3, vertical drill hole started. By Wednesday March 16 the hole had only advanced to 16 m on sandy/gravelly till. A sump pit had been dug to roughly 2m depth and remained dry until midday on March 16. The initial percolation rate was observed to be in the order of 0.5 inches per minute. The combination of fresh snow, freezing temperatures, bentonite and an ice sheet over the sump hole, caused the water to rise to the top once the general ground condition had become saturated.

The hole was stopped at 26 m still in gravelly boulder till as the drill was needed to begin at another location. Six core boxes were used in the collection of the vertical till sample. Additional deep drilling and further trenching is recommended at both the 16-BBDH2 and 16-BBDH3 locations.

Additional drilling outside the scope of this writer's involvement was done on Bingay B. One of the holes was north of 16-BBDH1 and to the east at the end of the E/W trail. The location of hole 16- BMD 02 (on road) is: It is located right in the fork in the road. The sump was to be on the road cut going North. Collar is located on the SE edge of the road right below the fork.

Water was to be supplied from the same location used for the 3 BBDH holes.

Along the N/S road that runs along the west side of Elk River, bedrock outcrops were observed in the road bed in the 2010 campaign.

The drilling of the 16-BMD 02 hole was completed at last. This is the Fernie Shale lithology. The dip of the drill is to 80 degrees northwest between the boundary Bingay B and Bingay Main area. The hole was drilled to 150.40 m and recovered 46 m of overburden into 4 core boxes.

8.3 Bingay B Trenches

A short program to trench for rock outcrops was done along the road by the company geologist Victor Zhou. The following table and pictures show the road encountered just under the thin till cover along the road cut. The following image shows the location of the three trenches along the roadway.

Table 8-3: 2016 Bingay B Area Trench Record

Trench No.	Coordinate	Lithology	Bedding Plane (see Photos) Strike/Dip
Trench 1	644795E, 5561273N, Elevation: 1388m.	Siltstone, dark grey, massive.	340/50. Picture 5-TR.1
Trench 2	644783E, 5561283N, Elevation: 1383m.	Siltstone, dark grey, massive.	340/45. Picture 6-TR. 2
Trench 3	644768E, 5561306N, Elevation: 1388m.	Siltstone, dark grey, massive.	355/40. Picture 7-TR 3

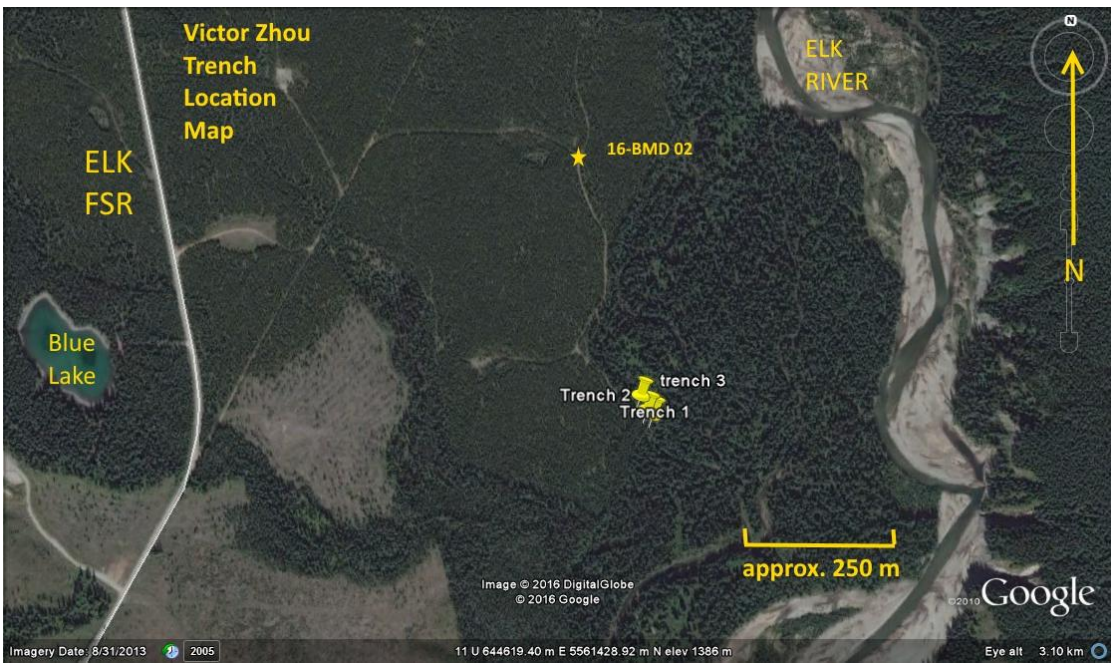


Figure 8-4: 2016 Trench Location map

Picture 8-5: 2016 Trench 1

Picture 8-6: 2016 Trench 2

Picture 8-7: 2016 Trench 3

Both of Bingay A and B core box are stored at the Bingay main camp site steel storage containers.

9.0 Conclusions and Recommendations

This exercise has produced a potential structural outline of the Elk Valley fault system. As this is a theoretical model, extensive drilling will be required along with seismic work to define possible coal measures below and the outlines of buried blocks. The fault systems will have to be traced where possible on surface with excavation trenching where required.

Bingay A Area:
The hole of interest is D-96-D which intersected 14 coal beds (4 major) before it was stopped only due to technical problems with the drill. Of special note is the fact that hole 16-BA02 was stopped just short of the trace of the coal bearing beds. Should this hole be deepened, the potential of finding coal on Bingay A is high. See Fig.9-1: 2017 Bingay A Drill Program Discussion.

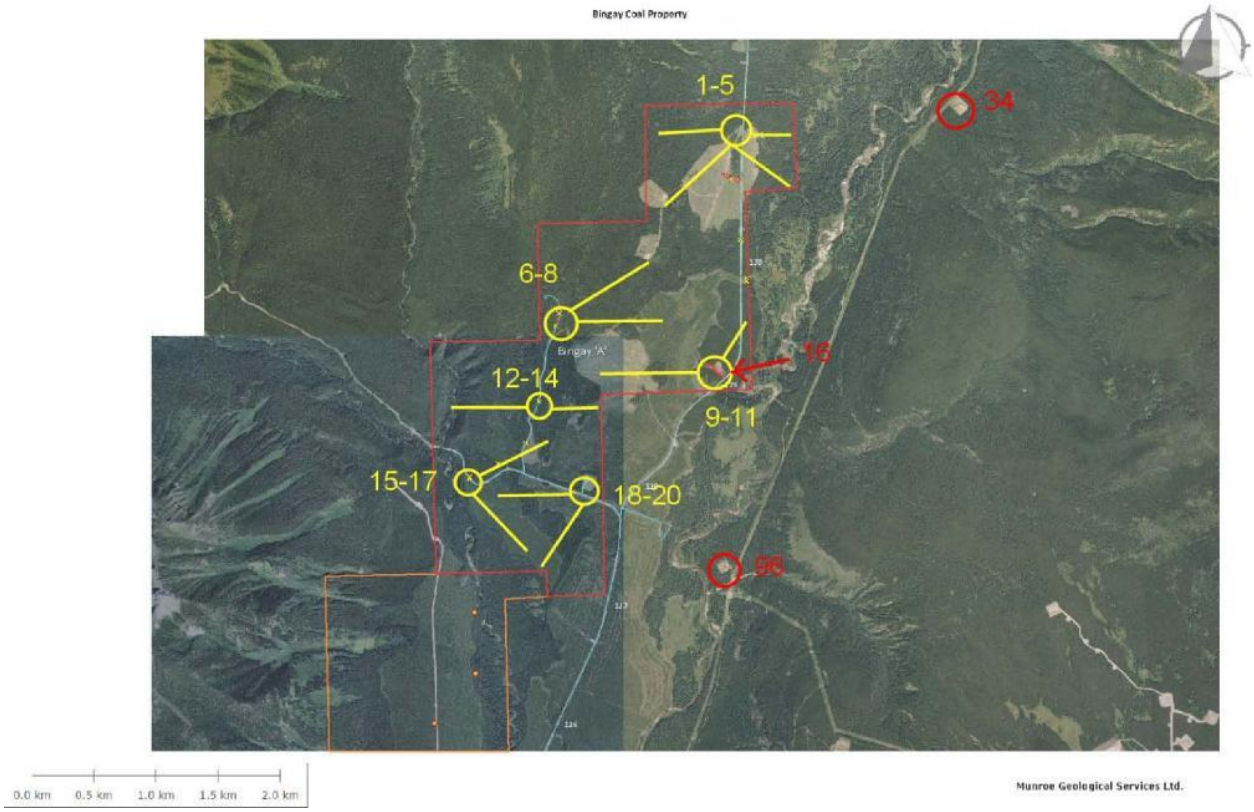


Figure 9-1: 2017 Bingay A Drill Program Proposed Hole Locations

Bingay B and C Area:
Bill`s Road area also depicts several important findings. Along the road between kilometer markers 118 and 119 a red circle has been placed. This demarks a location where numerous coal float partings were collected along the sandy clay road base. In areas where water has ponded, coal was noted to collect into small pockets along the edge. The other locations where coal partings were located in a similar manner are along Bill`s Road at the two other red circle

locations. The area to the northwest along that road was dug out with a shovel and fair quantities of small coal partings were recovered. See Fig. 9-2: 2017 Bingay B and C Drill Program Proposed Hole Locations.

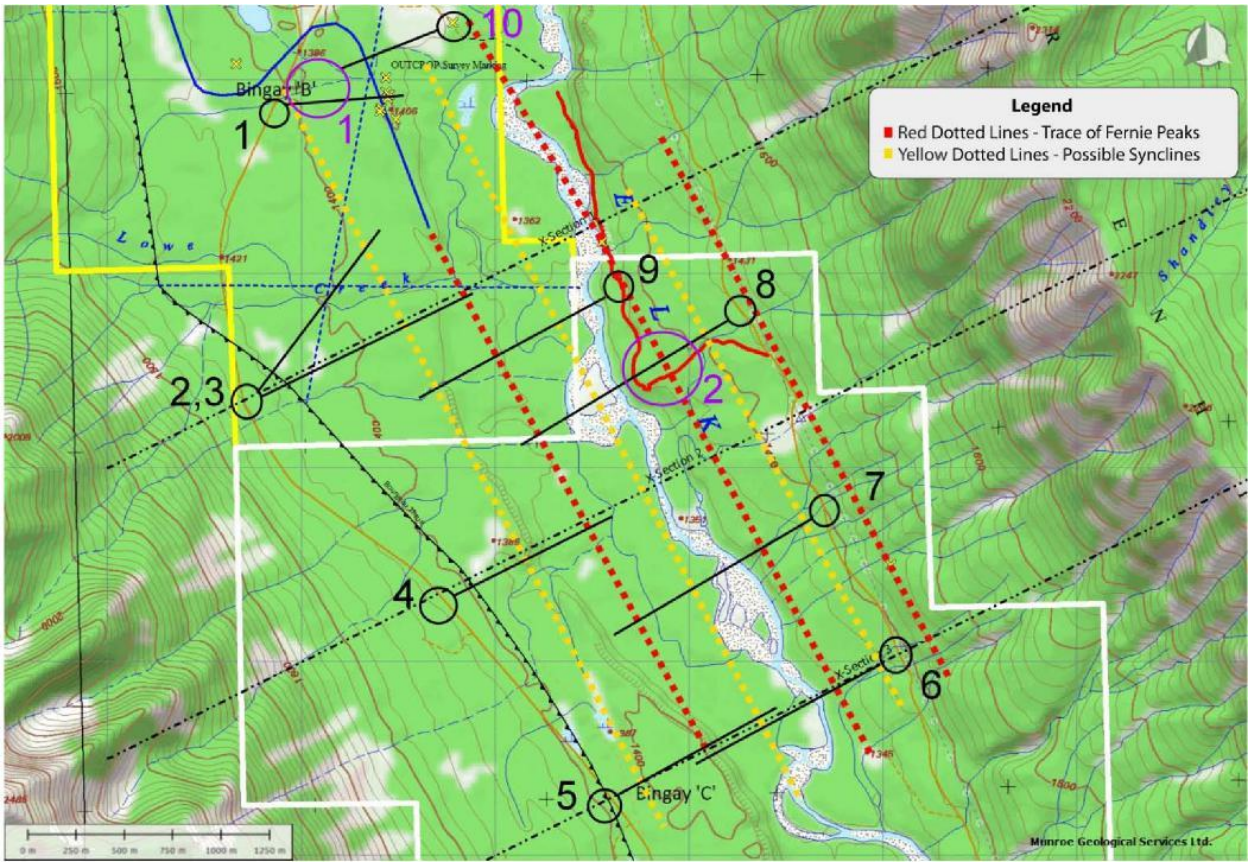


Figure 9-2: 2017 Bingay B and C Drill Program Proposed Hole Locations

The writer also wishes to acknowledge the great assistance provided by Richard Munroe in this study. Imparting their extensive knowledge to the writer and the in-field assistance by Mr. Munroe contributed greatly to allowing this model to be developed in such a short period.

10.0 Cost

Exploration Work type	Comment	Days		
Ted Nunn/Professional			$0.00	$8,000.00
Munroe Geological/Professional			$0.00	$29,258.85

Sarah Shi/Professional			$0.00	$5,000.00
SNC/Professional			$0.00	$60,000.00
Other (specify)				
				$102,258.85
Office Studies	**List Personnel (note - Office only, do not include field days**			
Literature search			$0.00	$0.00
Database compilation			$0.00	$0.00
Computer modelling			$0.00	$2,200.00
Reprocessing of data			$0.00	
General research			$0.00	$0.00
Report preparation			$0.00	$3,000.00
Officer repair				
BC hydro				
Supply				
Other (specify)				
				$5,200.00
Airborne Exploration Surveys	**Line Kilometres / Enter total invoiced amount**			
Aeromagnetics			$0.00	$0.00
Radiometrics			$0.00	$0.00
Electromagnetics			$0.00	$0.00
Gravity			$0.00	
Digital terrain modelling			$0.00	
Other (specify)			$0.00	$0.00
				$0.00

Remote Sensing	**Area in Hectares / Enter total invoiced amount or list personnel**			
Aerial photography			$0.00	
LANDSAT			$0.00	$0.00
Other (specify)			$0.00	$0.00
				$0.00
Ground Exploration Surveys	**Area in Hectares/List Personnel**			
Geological mapping			$0.00	$1,200.00
Regional			$0.00	$0.00
Reconnaissance			$0.00	$0.00
Prospect			$0.00	$0.00
Underground			$0.00	$0.00
Air Project			$0.00	$0.00
Seismic Surveys			$0.00	$0.00
Trenches			$0.00	$0.00
Other (specify)			$0.00	$0.00
				$1,200.00
Ground geophysics	**Line Kilometres / Enter total amount invoiced list personnel**			
Radiometrics				
Magnetics				
Gravity				
Digital terrain modelling				
Electromagnetics	*note: expenditures for your crew in the field*			
SP/AP/EP	*should be captured above in Personnel*			
IP	*field expenditures above*			

AMT/CSAMT				
Resistivity				
Complex resistivity				
Seismic reflection				
Seismic refraction				
Well logging	Define by total length			$8,862.00
Geophysical interpretation				
Petrophysics				
Density				$0.00
Standby				$0.00
Log delivery				$0.00
Mic				
Other (specify)				$0.00
				$8,862.00
Geochemical Surveying	**Number of Samples**	**No.**	**Rate**	**Subtotal**
Drill (cuttings, core, etc.)			$0.00	$0.00
Measurement				$1,760.00
Sample Preparation				
Stream sediment			$0.00	$0.00
Soil	*note: This is for assays or*		$0.00	$0.00
Rock	*laboratory costs*		$0.00	$0.00
Water			$0.00	
Biogeochemistry			$0.00	$0.00
Whole rock			$0.00	$0.00

Petrology			$0.00	
Core Box				
Holes				
Other (specify)			$0.00	$0.00
				$1,760.00
Drilling	**No. of Holes, Size of Core and Metres**	**No.**	**Rate**	**Subtotal**
Diamond			$0.00	$241,425.00
Field Time			$0.00	
Hydrological drilling steel				
Dozer/Cat road maintenance				
Mis				
Reverse circulation (RC)			$0.00	
Rotary air blast (RAB)			$0.00	
Reverse circulation (RC)			$0.00	
Rotary air blast (RAB)			$0.00	
General Supplies				$17,290.00
Gas Detector				
Excavator Sumps/Moving				$15,600.00
Dozer/Cat for site Prep				
Core Shed				
Expense				
Rental				
Core Logging				

Core Boxes				$17,620.00
Stumpage				
Dip Meter Insurance				
Other stumpage				
Dilling Security				
Water truck				
Site radio				
Auto Repair				
Maintenance				
Tools				
Site Prepare				
Fuel				
Labor				$16,650.00
Pump Test for hydrological				$9,000.00
Mine Electrical Power Design				
Other (specify)			$0.00	$0.00
				$317,585.00
Other Operations	**Clarify**	**No.**	**Rate**	**Subtotal**
Trenching			$0.00	$18,000.00
Trenching sample Boxes				
Bulk sampling			$0.00	$0.00
Underground development			$0.00	$0.00
Coal quality analysis				
Sample Tags				

excavator Rental				
Coal Sample analysis				
Snowplowing				$300.00
Other (specify)			$0.00	$0.00
				$18,300.00
Reclamation	**Clarify**	**No.**	**Rate**	**Subtotal**
After drilling	Seeding/Gravel			$1,600.00
Monitoring				
Other (specify)			$0.00	$0.00
				$1,600.00
Transportation		**No.**	**Rate**	**Subtotal**
Airfare			$0.00	$0.00
Taxi			$0.00	$0.00
truck repair			$0.00	
truck Rentals			$0.00	
truck transport				
kilometers			$0.00	$0.00
Freight				$690.00
ATV			$0.00	$0.00
Helicopter (hours)			$0.00	
Fuel (litres/hour)			$0.00	
Fuel Storage				
Tank				
Venicle intransit Storage				

Other				
				$690.00
Accommodation & Food	**Rates per day**			
Hotel			$0.00	
Camp			$0.00	$6,500.00
Camp Electrical				
Camp Supplies				
Camp Security				
Camp Communication				
Camp Fuel				
Camp Cook				
Storage Rent				
labor				
Van Rental				
Meals	day rate or actual costs-specify		$0.00	$5,400.00
				$11,900.00
Miscellaneous				
Telephone			$0.00	$1,180.00
First Aid				$5,000.00
Safety First Aid				
First Aid Evacuation Link				
Other (Specify)			$0.00	$0.00
				$6,180.00
Equipment Rentals				
Field Gear (Specify)			$0.00	$0.00

Sample Prep			$0.00	
Sink/Float			$0.00	
labor				
Other (Specify)				
				$0.00
Freight, rock samples				
			$0.00	$0.00
			$0.00	$0.00
				$0.00
TOTAL Expenditures				**$475,535.85**

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Certification of Qualification

I, Ji Hong Zhou (Victor), residing at 206-255 Ross Drive, New Westminster, British Columbia, declares:

1. That I have been 30 years of mining industry experience in planning, developing, and coordinating programs of geotechnical, geological, geophysical, and hydrological data acquisition; Analyzing and mapping to assist in the development of mining projects for regional development; Planning, developing, coordinating, and conducting theoretical and experimental studies in mine exploration, evaluation, and feasibility studies related to the mining industry. I won Chinese provincial science and technology progress prize and the youth academic excellence award and so on.
2. I have graduated from Central South University (bachelor) in 1986 and Northeastern University (master) in 1991 in China.
3. After immigrant to Canada, I used to work in Canadian Dehua International Mines Group Inc. Prospecting and exploring of underground coal mines and drillhole lithology log; Assessment for Geology、Geophysics and Geochemistry of Vancouver Island Iron Property; Coal mine and Iron Project Geological management. For example: Murray River Coal, Bullmoose Coal, Wapiti River Coal and Pacific Iron Project.
4. I have been involving in Bingay Coal Project Geo-tech exploration on site in the spring, 2016, and working on the study report and etc. after I joined to the Centermount team, I am familiar with the project technical data service.
5. I have been employed as Vice Manager--Technical Service of Centermount Coal Ltd. Since 2016.

Ji Hong Zhou (Victor)

17 March 2017

Victor Zhou

March 17, 2016

Certificate of Qualification

Certificate of Qualification
Changli(George) Li P.Geo.
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Fax: (604) 5689378
George.li@centerpointcanada.com

I, Changli (George) Li, do hereby certify that:

I am a Professional Geoscientist, employed by Centerpoint Resources Inc. with registered address at 10west Pender Street Vancouver, B.C., Canada.

I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia. I graduated from the China University of Geosciences, Wuhan, China with a Bachelor of Engineering degree in mineral exploration in1990 and completed Geomatics Engineering Technology program from British Columbia Institute of Technology, Burnaby, BC in 2007.

I have practiced my profession more than 18 years since 1990 and have been involved in exploration, drilling, developing, surveying and evaluation of mineral properties of precious metals, base metals and coal in China and Canada.

I have been involved in reviewing the Bingay Coal Project since I started working at Centerpoint in July 2016. I visited the project site once in January 2017

I have reviewed this report prepared by Victor Zhou. The data, opinions and conclusions contained herein are based on a review of previous records and fieldwork carried out under Ted Nunn supervision in early 2016.

As of the date of the certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated at Vancouver, British Columbia, this 18th day of March, 2017

Changli(George) Li P.Geo.

March 17, 2017

Appendices

Appendix A: 2016 Bingay A Property Technical Assessment Report

1. **Certification of Bingay A Coal Sample Analysis Result**
2. **16-BA02 Borehole Lithology Corelog**
3. **16-BA02 Borehole Corebox Photos**
4. **16-BA02 Borehole Geophysical Logging**

Appendix B: 2016 Bingay B Coal property Technical Assessment Report

1. **Certification of Bingay B Selenium and Cadmium analysis results.**
2. **Bingay B Drilling hole core lithology log**
3. **Bingay B Drilling hole core box photos**
4. **Bingay B Drilling and Trenching Report, June 2016. By Richard Munroe.**
5. **Proposed Bingay Main Coal Project Waste Spoils, Geotechnical Assessment, by SNC Oct.20,2016**

Appendix A: 2016 Bingay A Property Technical Assessment Report

1. **Certification of Bingay A Coal Sample Analysis Result**
2. **16-BA02 Borehole Lithology Corelog**
3. **16-BA02 Borehole Corebox Photos**
4. **16-BA02 Borehole Geophysical Logging**

16-BA02
646722, 5570235; Elevation: 1442m. 340°/80°

Box No.	Depth (m)		Thickness	Lithology	Core Description	Apparent Dip of Bedding	Recovery (m)	Core Cut (m)		RQD (cm)													Note
	from	to	m					Recovery %	Run	core sticks>=10 cm													%
box 1	0.00	4.20	4.20	till	mixed with cobbles, gravel, silt and clay. Probably alluvium. Core intact. Soft, wet. At top, 0.20m, quartz sand.		3.27																
box 2	4.20	10.00	5.80																				
	4.20	7.00	2.80	till	cobbles and gravel mainly, with minor clay and sand. Ø: 0.02-0.05m.		1.40																
	7.00	10.00	3.00	till	same as above. But core broken and crushed, subrounded. Three pieces fine-grained sandstone, 0.06-0.08m.		2.07																
box 3	10.00	19.00	9.00																				
	10.00	13.00	3.00	till	cobbles and gravel, clear. No clay, washed away. Ø: 0.01-0.06m, Max.0.10m. Subrounded, rubbles.		2.17																
	13.00	19.00	6.00	till	same as above. First casing: at 16.50m.		1.35																
box 4	19.00	31.50	12.50																				
	19.00	22.00	3.00	till	same as above.		0.80																
	22.00	25.00	3.00	till	same as above.		0.50																
	25.00	28.00	3.00	till	same as above.		0.95																
	28.00	31.50	3.50	till	same as above.		1.20																
box 5	31.50	43.00	11.50																				
	31.50	34.00	2.50	till	cobbles and gravel mainly, with minor clay and sand. Ø: 0.02-0.05m. Subrounded.		0.45																
	34.00	37.00	3.00	till	cobbles and gravel mainly, with minor clay and sand. Ø: 0.01-0.05m. Subrounded.		0.70																
	37.00	40.00	3.00	till	cobbles and gravel mainly, with minor clay and sand. Ø: 0.02-0.06m. Subrounded.		1.17																
	40.00	43.00	3.00	till	cobbles and gravel mainly, with minor clay and sand. Ø: 0.02-0.05m. Subrounded.		1.17																
box 6	43.00	48.56	5.56																				
	43.00	46.00	3.00	till	cobbles and gravel mainly, with minor clay and sand. Ø: 0.02-0.05m. Subrounded.		0.70																
	46.00	48.56	2.56	siltstone	siltstone. Dark grey, interbedded with light grey fine-grained sandstone laminated. Ripples, 20%. Vertical slip. Slightly broken, from 46.60-47.30m.	45	2.56	20.67	46-49	0.10	0.16	0.12	0.12	0.12									20.67
box 7	48.56	51.73	3.17																				
	48.56	49.00	0.44	sandstone	sandstone. Fine-grained, light grey. With dark grey siltstone laminated. Irregular calcite veins. Broken.		0.44																
	49.00	50.73	1.73	sandstone	interbedded with light grey fine-grained sandstone and dark grey siltstone. 50:50. fracture developed, with slickensides and polished. Irregular calcite veins.	45-65	2.73																
	50.73	51.73	1.00	siltstone	siltstone. Dark grey, with light grey fine-grained sandstone laminated, 10%. Broken, with slickensides and polished.		1.00	31.67	49-52	0.17	0.10	0.11	0.13	0.10	0.10	0.14	0.10						31.67
Box 8	51.73	54.40	2.67	sandstone	FGSS, light grey, with SL laminates, 10%. at top: 0.27 m, SL; at 53.8 to end, badly broken, fragment, calcite veins. Bedded plane increased to 70-75 degree		2.73	39.33	52-55	0.26	0.11	0.18	0.19	0.10	0.10	0.24							39.33
Box 9	54.40	56.95	2.55	sandstone	FGSS, light grey, with SL laminates (10%). From 54.65-56.45m fracture zone, horizon slip, slickenside and polished, calcite veins	70-75	2.55	25.67	55-58	0.34	0.30	0.13											25.67
Box 10	56.95	59.85	2.90	sandstone	FGSS, light grey, with minor SL laminate (5%), slightly broken, bedded plane almost vertical, irregular calcite veins.	75-80	2.90	53.67	58-61	0.20	0.10	0.19	0.10	0.15	0.14	0.15	0.23	0.15	0.20				53.67
Box 11	59.85	62.95	3.10	sandstone	same as above, at 62-62.53m SL, dark grey mainly, broken.		3.10	41.00	61-64	0.34	0.33	0.11	0.10	0.35									41.00
Box 12	62.96	66.15	3.19	siltstone	SL, dark grey, with minor FGSS laminate, at 63.70-64.75m, broken, slickenside.		3.20	32.00	64-67	0.14	0.14	0.15	0.30	0.11	0.12								32.00
Box 13	66.15	68.20	2.05	siltstone	at 66.30-67.38m, SL, dark grey, fracture zone, highly broken, fragment, slickenside + polished; 67.38 to end, FGSS Mainly irregular calcite veins.	70-75	2.05	48.67	67-70	0.19	0.19	0.20	0.26	0.17	0.23	0.22							48.67
Box 14	68.20	71.30	3.10	siltstone	SL, dark grey, massive. to 71.00m, irregular calcite veins; from 71.00 to end (71.30) and to 74.00m, badly broken, fragment.		3.10	9.67	70-73	0.11	0.18												9.67
Box 15	71.30	74.96	3.66	siltstone	as above. continue highly broken, slicken side + polished, fragment, fracture zone, bedded plane: 45-70.	45-70	2.80																
Box 16	74.06	76.65	2.59				2.59	3.67	73-76	0.11													3.67
	74.06	76.35	2.29	sandstone	FGSS and SL interbedded. at base, 0.10m coal streak	70																	
	76.35	**76.65**	**0.30**	**coal**	**0.30m coal seam broken and ground, black, bright, light**																		
Box 17	76.65	79.90	3.25				3.25	5.33	76-79	0.16													5.33
	76.65	**77.25**	**0.60**	**coal**	**0.60m coal seam**	**70**																	
	77.25	78.15	0.90	mudstone	black MS, badly broken, fragment. at top, coaly MS																		
	78.15	78.58	0.43	coal	0.43m coal seam, ground and powder, mixed with minor black MS.																		
	78.58	79.90	1.32	siltstone	silty MS, dark grey, with minor FGSS laminates, broken			55.00	79-82	0.33	0.16	0.17	0.17	0.13	0.24	0.45							55.00

Box 18	79.90	82.32	2.42	siltstone	siltstone, dark grey, with irregular calcite veins. at 81.40-82m, highly broken, slicken side + polished	70	2.42																
Box 19	82.32	85.18	2.86				2.86																
	82.32	84.76	2.44	siltstone	as above																		
	84.76	85.18	0.42	mudstone	ms, dark grey			45.67	82-85	0.31	0.22	0.10	0.20	0.16	0.12	0.16	0.10						45.67
Box 20	85.18	88.18	3.00																				
	85.18	85.70	0.52	mudstone	Black, MS, massive		0.52																
	85.70	87.30	1.60	mudstone	black MS, highly broken and horizontal slip, parallel axis, mylonization; mixed with coal strings, friable.	85-90	1.60																
					-Fault probably-																		
	87.30	88.18	0.88	mudstone	black MS, bedded plane almost 90, broken, slicken side + polished		0.88	0.00	85-88	0.00													0.00
Box 21	88.18	90.68	2.50	mudstone	black MS, to base, gradually silty, badly broken, slickenside + polished.	70	2.50																
					-Fault probably-			8.00	88-91	0.24													8.00
Box 22	90.68	93.52	2.84	mudstone	same as above. core relatively complete, silty mainly		2.86	41.67	91-94	0.15	0.11	0.14	0.15	0.10	0.11	0.13	0.14	0.22					41.67
Box 23	93.52	96.80	3.28																				
	93.52	94.20	0.68	mudstone	Silty MS, broken and fragment.		0.68																
	94.20	96.80	2.60	siltstone	siltstone, dark grey, with minor FGSS laminate, at base, massive, sandy	70	2.60	56.00	94-97	0.24	0.23	0.20	0.17	0.12	0.40	0.11	0.21						56.00
Box 24	96.80	99.58	2.78	sandstone	FGSS, light grey, with SL laminate, 30%, massive. at 97-97.50m, broken, infilled irregular calcite veins (locally 0.01m); at base, calcite veins.		2.78	57.33	97--100	0.10	0.18	0.23	0.20	0.11	0.23	0.42	0.15	0.10					57.33
Box 25	99.58	102.68	3.10	sandstone	FGSS/SL interbedded, (50;50), core relatively complete. with minor irregular calcite veins.	70	3.10	77.67	100-103	0.19	0.57	0.12	0.25	0.20	0.43	0.47	0.10						77.67
Box 26	102.68	105.35	2.67	sandstone																			
	102.68	104.75	2.07	sandstone	FGSS, light grey, with dark grey SL laminate, 30%, minor veins	70	2.07																
	104.75	105.35	0.60		FGSS, badly broken, ground, fragment, fracture zone		0.60	38.00	103-106	0.37	0.28	0.15	0.24	0.10									38.00
Box 27	105.35	108.08	2.73			70																	
	105.35	107.40	2.05	sandstone	same as above, highly broken and fragment, slickenside + polished, fracture parallel axis fracture parallel axis.		2.05	26.00	106-109	0.16	0.10	0.27	0.25										26.00
	107.40	108.08	0.68		dark grey SL mainly, slightly broken	70	0.68																
Box 28	108.08	111.00	2.92																				
	108.08	109.28	1.20	sandstone	same as above		1.20																
	109.28	111.00	1.72	siltstone	SL, dark grey, with light grey FGSS laminate, almost parallel axis. fracture developed, slickenside + polished, badly broken.	70																	
Box 29	111.00	114.42	3.42					22.33	109-112	0.10	0.26	0.17	0.14										22.33
	111.00	112.00	1.00	siltstone	dark grey SL, muddy		1.00																
	112.00	114.42	2.42	mudstone	MS, black, massive, slightly broken		2.42	25.33	112-114	0.12	0.28	0.10	0.14	0.12									25.33
Box 30	114.42	118.70	4.28																				
	114.42	114.85	0.43	mudstone	0.43m black MS broken, Carbonaceous and coal streak.	70	0.43																
	114.85	**117.00**	**2.15**	**coal**	**coal seam 2.15m, badly broken and friable along cheat, ground, dull,**		**0.90**																
	117.00	117.50	0.50	mudstone	Black MS, massive, gradually silty		0.50																
	117.50	118.70	1.20	siltstone	SL, dark grey, with minor calcite veins.		1.20	0.00	114-117	0.00													0.00
Box 31	118.70	121.70	3.00	siltstone	SL, dark grey, with minor light grey FGSS laminates, 5%. Slightly broken, locally calcite veins.		3.00	69.00	117-120	0.14	0.25	0.12	0.10	0.22	0.22	0.24	0.18	0.10	0.50				69.00
Box 32	121.70	124.80	3.10																				
	121.70	123.00	1.30	siltstone	Same as above, broken, inti small pieces.		1.30																
	123	124.8	1.8	mudstone	black MS. fracture zone, sheared mylonization, mixed with coal strings, friable and schistous		1.8	12.67	120-123	0.2	0.2												12.67
Box 33	124.80	127.75	2.95																				
	124.80	125.25	0.45	mudstone	silty MS, with coal streak, broken and crushed		0.45																
	125.25	**126.00**	**0.75**	**coal**	**coal seam, 0.75m broken and friable along cheat, dull, light**		**0.75**																
	126.00	127.75	1.75	siltstone	siltstone, with FGSS laminate, 40%, minor calcite veins	65-70	1.75	0.00	123-126	0.00													0.00
Box 34	127.75	130.10	2.35	siltstone	dark grey siltstone, badly broken, fragment, minor calcite veins, slickenside + polished.			34.67	126-129	0.29	0.62	0.13											34.67
Box 35	130.10	132.80	2.70																				
	130.10	132.00	1.90	sandstone	light grey FGSS, with minor dark grey SL laminate, 5%, irregular calcite veins, broken	70	1.90																
	132.00	132.80	0.80	siltstone	dark grey SL, with minor FGSS laminate, at base, 0.50m black MS, badly broken, slickenside + polished.	70	0.80	26.33	129-132	0.28	0.20	0.18	0.13										26.33
Box 36	132.80	135.55	2.75																				
	132.80	135.18	2.38	mudstone	Silty MS, at top 0.10m badly broken.		2.38																
	135.18	135.55	0.37	mudstone	black MS, broken and ground, schistous, parallel axis fractured		0.37	39.67	132-135	0.13	0.12	0.20	0.18	0.35	0.21								39.67
Box 37	135.55	138.00	2.45																				
	135.55	135.85	0.30	mudstone	black MS		0.30																
	135.85	138.00	2.15	mudstone	coaly MS, bedded plane parallel axis, broken badly along cheat, fragment. at 136.70-137.50m, 0.80 coal seam, (actual , 0.07m) vertical.			0.00	135-138	0.00													0.00
Box 38	138.00	141.00	3.00	mudstone	black MS, mainly with carbonaceous and coaly MS. at 139.60-140.50m, dark grey, SL, with 0.02m coal seam; at 140.50-140.85m, 0.35m coal seam	70	3.00	0.00	138-141	0.00													0.00

Box 39	141.00	144.00	3.00																				
	141.00	142.10	1.10	mudstone	black MS, with Carbonaceous and coal seam (0.02m), badly broken & grounded.		1.00																
	142.1	144	1.9	siltstone	SL, dark grey, at base, 0.70m, highly broken, coal streak		1.9	28.00	141-144	0.10	0.13	0.61											28.00
Box 40	144.00	147.00	3.00																				
	144.00	146.80	2.80	mudstone	black MS, with carbonaceous and coaly MS (see at 144-144.10m, 0.10m). badly broken and friable, dip change from 80-65-55.	70-80	2.80																
	146.80	147.00	0.20	sandstone	FGSS, light grey with dark grey SL laminate (10%)		0.20	37.67	144-147	0.23	0.36	0.14	0.10	0.30									37.67
Box 41	147.00	149.92	2.92	sandstone	FGSS, light grey with dark grey SL laminate (10%). at base, 0.85m highly broken, numerous SL and calcite veins.																		
			0.00			65		47.67	147-150	0.10	0.14	0.20	0.11	0.13	0.53	0.22							47.67
Box 42	149.92	153.00	3.08	sandstone	same as above	70-15	3.08	70.00	150-153	0.24	0.12	0.31	0.30	0.11	0.34	0.27	0.23	0.18					70.00
Box 43	153.00	155.80	2.80																				
	153.00	153.90	0.90	sandstone	FGSS, light grey, irregular calcite veins	45-70	0.90																
	153.90	155.80	1.90	mudstone	black MS. minor coal streak. at 154.80-155.50m, badly broken, slickenside + polished, schistous.		1.90																
Box 44	155.80	159.00	3.20					53.33	153-156	0.23	0.16	0.22	0.27	0.13	0.19	0.22	0.18						53.33
	155.80	156.53	0.73	mudstone	MS, black, broken, minor coal streak	70	0.73																
	156.53	157.61	1.08	mudstone	coaly MS, half coal and half MS, badly broken and ground		1.08																
	157.61	158.16	0.55	mudstone	MS, black, broken, coal streak		0.55																
	158.16	159.00	0.84	mudstone	coaly MS (50:50)		0.84		156-159	0.00													0.00
Box 45	159.00	161.72	2.72																				
	159.00	160.00	1.00	mudstone	MS, black, broken, gradually to base, silty		1.00																
	160.00	161.72	1.72	siltstone	SL, dark grey, with minor FGSS laminate (5%), core relatively complete		1.72	64.00	159-162	0.37	0.26	0.18	0.11	0.10	0.31	0.19	0.19	0.21					64.00
Box 46	161.72	164.75	3.03																				
	161.72	163.00	1.28	mudstone	dark grey silty MS, minor calcite veins		1.28																
	163.00	163.90	0.90	sandstone	FGSS mainly, with SL, 40%, irregular calcite veins,		0.90	64.00	162-165	0.54	0.10	0.13	0.27	0.26	0.19	0.27	0.16						64.00
	163.90	164.50	0.60	mudstone	black MS, massive, at base, minor coal strings		0.60																
	164.50	**164.75**	**0.25**	**coal**	**0.25m coal seam, badly broken along cheat, almost parallel axis**	**80**	**0.25**																
Box 47	164.75	167.63	2.88																				
	164.75	**165.50**	**0.75**	**coal**	**0.75m coal seam, broken into small pieces along cheat, parallel axis**		**0.75**																
	165.50	167.63	2.13	mudstone	MS, black, at top, 0.15m, carbonaceous MS		2.13	36.00	165-168	0.25	0.22	0.34	0.27										36.00
Box 48	167.63	170.69	3.06																				
	167.63	169.00	1.37	mudstone	MS, black, slightly broken		1.37																
	169.00	170.29	1.29	siltstone	SL, dark grey, with minor FGSS laminate (5%)		1.29																
	170.29	170.69	0.4	mudstone	MS, black, massive		0.4	58.00	168-171	0.1	0.6	0.3	0.4	0.3	0.1								58.00
Box 49	170.69	173.72	3.03	sandstone	FGSS, light grey, with minor dark grey SL laminate (5%). Slightly broken, slickenside + polished, minor calcite veins.	70	3.03	37.33	171-174	0.16	0.23	0.27	0.18	0.28									37.33
Box 50	173.72	176.76	3.04	sandstone	same as above, irregular calcite veins. a fracture line 1.60m, from 174.60-176.20m.		3.04	19.67	174-177	0.34	0.25												19.67
Box 51	176.76	179.78	3.02	mudstone	MS, black, slightly broken, slickenside + polished, coal trace		3.02	33.67	177-180	0.22	0.12	0.11	0.18	0.10	0.15	0.13							33.67
Box 52	179.78	182.65	2.87	siltstone	SL, dark-medium grey, broken, facture developed, into small pieces, irregular calcite veins.	62	2.87																
			0.00					26.00	180-183	0.17	0.10	0.10	0.11	0.17	0.13								26.00
Box 53	182.65	185.70	3.05	siltstone	same as above, slickenside + polished. at 185m, pyrite trace, coal trace.		3.05	6.67	183-186	0.10	0.10												6.67
Box 54	185.70	188.74	3.04				3.04																
	185.70	186.70	1.00	siltstone	SL, dark-medium grey, irregular calcite veins, at base, sandy,	70	1.00																
	186.70	188.74	2.04	sandstone	FGSS, light grey, with minor SL laminate (10%), at base, silty. Two sets different direction calcite veins.		2.04	75.00	186-189	0.21	0.25	0.36	0.17	0.10	0.35	0.38	0.20	0.23					75.00
Box 55	188.74	191.48	2.74	siltstone	SL, medium-dark grey. at 189-189.70m, broken into small pieces. infilled irregular calcite veins. to base, gradually muddy.		2.74	61.67	189-192	0.18	0.25	0.41	0.40	0.35	0.10	0.16							61.67
Box 56	191.48	193.93	2.45																				
	191.48	192.00	0.52	mudstone	Black MS, at base, broken		0.52																
	192.00	192.83	0.83	mudstone	coaly MS. broken into small pieces along cheat. (20% coal)		0.83																
	192.83	193.93	1.1	mudstone	Black MS		1.1	37.33	192-195	0.2	0.1	0.2	0.5	0.1									37.33
Box 57	193.93	197.00	3.07																				
	193.93	195.30	1.37	mudstone	black MS, at base, 0.50m, broken		1.37																
ox 57 + 5	195.30	198.40	3.10		coaly MS, badly broken and grounded, mixed with MS and coal seam. maybe 50:50, schistous.		3.10																
	198.40	199.56	1.16	mudstone	MS, black. at base, 0.20m broken, minor coal trace.		1.16		195-198	0.00													0.00
Box 59	199.56	202.69	3.13	mudstone	MS. Dark grey, silty, vertical slip, slickenside + polished, minor calcite veins		3.13	28.00	198-201	0.19	0.12	0.10	0.14	0.29									28.00
Box 60	202.69	203.40	0.71	mudstone	same as above		2.21																
			0.00		-fault probably-																		
Box 61	204.90	207.55	2.65				2.65	39.00	201-204	0.16	0.11	0.16	0.46	0.13	0.15								39.00
	203.40	207.55	4.15	mudstone	badly broken, fragment into small pieces				204-207	0.00													

Box 62	207.55	210.00	2.45	mudstone	badly broken, not too bad than last run (204-207)		2.45	19.33	207-210	0.10	0.10	0.11	0.15	0.12								19.33
Box 63	210.00	212.50	2.50	siltstone	SL, dark grey, with minor FGSS laminate (20%). from 210.50-211.50m badly broken into small pieces, slickenside.	75		16.67	210-213	0.22	0.11	0.17										16.67
Box 64	212.50	215.20	2.70	sandstone	FGSS, light grey mainly to 216m (Box65) to 221.20 (Box66)		2.70															
Box 65	215.20	218.00	2.80	sandstone	at 212.80-213.30m badly broken, friable and ground, with coal streak		2.80	48.00	213-216	0.15	0.25	0.14	0.35	0.27	0.28							48.00
Box 66	218.00	221.20	3.20	sandstone	from 216.50-219.50m horizontal fracture developed (parallel axis); slickenside + polished, well irregular calcite veins. at 220.70-221.20m broken.	80-75	3.20	30.67	216-219	0.17	0.28	0.10	0.10	0.27								30.67
Box 67	221.20	223.00	1.80	sandstone	from 220.70-223.50m highly broken. at base, become ground, minor coal streak. slickenside + polished, calcite veins.		1.80	28.67	219-222	0.18	0.10	0.10	0.25	0.23								28.67
Box 68	223.00	226.25	3.25	siltstone	from 223.50 to 228.00m, SL, dark grey. at 226.50-227.25m highly broken into small pieces, locally ground.	75	3.25	33.00	222-225	0.18	0.15	0.16	0.19	0.20	0.11							33.00
Box 69	226.25	229.03	2.78		from 228.00-231.00m, FGSS light grey mainly, with dark grey SL laminate (40%), irregular calcite veins.		2.78	26.67	225-228	0.23	0.12	0.25	0.20									26.67
Box 70	229.03	231	1.97	sandstone	Same as above.		1.97	69.67	228-231	0.15	0.59	0.12	0.21	0.14	0.20	0.23	0.10	0.15	0.20			69.67
Box 71	231.00	233.50	2.50	siltstone	SL. dark-medium grey, massive, irregular calcite veins, at 232.10-232.60m, at 233.25-233.55m, at 235.70-236.00m badly broken into small pieces, schistous, parallel axis fractured.		2.50															
72	233.50	235.00	1.50	siltstone			1.50	37.67	231-234	0.12	0.14	0.20	0.24	0.11	0.16	0.16						37.67
73	235.00	237.10	2.10	siltstone	from 236.00-240.00m, FGSS		2.10	49.33	234-237	0.12	0.17	0.15	0.21	0.25	0.23	0.15	0.20					49.33
74	237.10	239.30	2.20	sandstone	FGSS. light grey, numerous coal strings at 236-236.90m; from 237-238.80m, highly broken, into small pieces, schistous.		2.20	5.00	237-240	0.15												5.00
Box 75	239.30	242.45	3.15	sandstone	From 240.00m, FGSS, light grey, with numerous coal streak. at 250.25-250.40m, 0.15 coal seam, broken and friable, bright, light, to 251.15m.		3.15	21.33	240-243	0.20	0.33	0.11										21.33
76	242.45	245.10	2.65	sandstone		60	2.65	39.67	243-246	0.21	0.34	0.11	0.15	0.18	0.20							39.67
77	245.10	247.95	2.85	sandstone			2.85	31.67	246-249	0.26	0.29	0.12	0.15	0.13								31.67
78	247.95	251.15	3.20	sandstone				24.33	249-252	0.11	0.22	0.15	0.25									24.33
Box 79	251.15	253.70	2.55	sandstone	FGSS, light grey, badly broken into small pieces, to 261.00m (BX82). from 254.00-254.30m, 0.30m coal seam, broken, friable and ground; from 256-257.40m, horizontal fracture + slip, parallel axis, slickenside + polished.		2.55															
Box 80	253.70	255.90	2.20	sandstone			2.20	0.00	252-255	0.00												0.00
81	255.90	258.30	2.40	sandstone		70	2.40	10.67	255-258	0.22	0.10											10.67
82	258.30	260.94	2.64	sandstone			2.64	19.33	258-261	0.22	0.10	0.11	0.15									19.33
Box 83	260.94	263.60	2.66	sandstone	to 261.13m complete core, FGSS, light grey. from 261.13-262.30m FGSS, badly broken into small pieces and ground. from 261.13-262.30m FGSS, badly broken into small pieces and ground, with coal streak. 262.30-262.80m, MS, black, massive262.30-262.80m, MS, black, massive; 262.80-263.80m FGSS, light grey, with dark grey SL laminate.	50	2.66	37.00	261-264	0.13	0.44	0.29	0.12	0.13								37.00
Box 84	263.60	266.25	2.65	siltstone	263.80-266.20m silty MS, dark grey, at 265.30-266.20m highly broken, with minor coal streak.	60	2.65	21.33	264-267	0.15	0.15	0.11	0.12	0.11								21.33
Box 85	266.25	269.00	2.75	siltstone	266.20-270.00m, SL, dark grey, with FGSS, light grey laminate (10%). locally 50% (at 267.60-270.00m) with irregular calcite veins.	65	2.75	68.00	267-270	0.13	0.35	0.20	0.25	0.20	0.12	0.10	0.10	0.12	0.37	0.10		68.00
Box 86	269.00	271.95	2.95																			
	269.00	270.63	1.63	mudstone	MS, black, with coal streak		0.63															
	270.63	**271.25**	**0.62**	**coal**	**0.62m coal seam, friable and ground, schistous, dull, light**		**0.62**															
	271.25	272.45	1.20	siltstone	SL:FGSS (50:50), irregular calcite veins. to base, muddy, minor coal		1.20															
Box 87	271.95	274.50	2.55																			
	272.45	273.60	1.15	mudstone	coaly MS, half coal and half MS, maybe, badly broken and ground	65	1.15	22.67	270-273	0.15	0.24	0.10	0.19									22.67
	273.60	274.50	0.90	mudstone	silty MS, broken, minor coal streak		0.90															
Box 88	274.50	277.10	2.60																			
	274.50	275.20	0.70	mudstone	Black MS, at top 0.10m coaly MS		0.70															
	275.20	276.00	0.80	mudstone	coaly MS, Maybe half coal and half MS, friable and ground		0.80	4.00	273-276	0.12												4.00
	276.00	279.27	3.27	sandstone	FGSS, light grey broken with minor coal strings. at 276 to 277.60m, highly broken, slickenside + polished, with dark grey irregular SL laminate, 30%.		3.27	25.00	276-279	0.10	0.19	0.23	0.11	0.12								25.00
	279.27	280.40	1.13	mudstone	279.27-280.40m, black MS																	
Box 89	277.10	279.95	2.85	mudstone		65-70	2.85															
Box 90	279.95	282.52	2.57					26.67	279-282	0.28	0.13	0.10	0.16	0.13								26.67
	280.40	282.52	2.12	sandstone	FGSS, light dark with dark grey SL laminate (10%), to base, increased 30%. minor coal streak. at 280.80-281.20m, 0.40m badly broken, ground, with coal streak to 283.40m.		2.12															
Box 91	282.52	285.28	2.76					35.67	282-285	0.13	0.23	0.15	0.20	0.16	0.20							35.67
	283.40	286.38	2.98	siltstone	medium-dark grey SL, with minor light grey FGSS laminate	65-70																
Box 92	285.28	288.50	3.22					13.67	285-288	0.13	0.16	0.12										13.67
	286.38	289.00	2.62	mudstone	Black MS, minor carbonaceous and coal streak, at 287.70-288.00, 0.30m coal seam, ground and friable, throughout broken, to base, silty.		2.62															
Box 93	288.50	291.05	2.55																			

	289.00	290.10	1.10	sandstone	FGSS. light grey, minor coal strings		1.10																
	290.10	291.60	1.50	mudstone	black MS, badly broken into small pieces. at 291.10-291.60m, 0.50m coal seam. friable and ground, dull, light.		1.50	14.33	288-291	0.18	0.25												14.33
Box 94	291.05	294.00	2.95					13.00	291-294	0.10	0.13	0.16											13.00
	291.60	294.00	2.40	siltstone	SL, dark grey, broken, irregular calcite veins, and two set directions	70	2.40																
Box 95	294.00	296.60	2.60																				
	294.00	295.70	1.70	siltstone	SL, dark-medium, grey, with irregular calcite veins. at 295.10-295.40m, badly broken into small pieces, with minor coal streak, to base, sandy.	70	1.70		294-297														
Box 96	296.60	299.00	2.40																				
	295.70	296.50	0.80	sandstone	FGSS, light grey, to base, muddy, irregular calcite veins		0.80																
	296.50	**296.70**	**0.20**	**coal**	**0.20m coal seam. friable and ground, dull, light**		**0.20**																
	296.70	303.20	6.50	mudstone	Black MS. highly broken, fragment and into small (very) pieces, with minor coal streak			0.00	297-300	0.00													0.00
					-fault probably-																		
Box 97	299.00	302.00	3.00		-fault probably-																		
Box 98	302.00	304.50	2.50			70		0.00	300-303	0.00													0.00
	303.20	304.50	1.30	sandstone	303.20-304.50m FGSS, light grey, with minor coal streak, slickenside + polished			0.00	303-306	0.00													0.00
Box 99	304.50	307.00	2.50	sandstone	FGSS, light grey. 304.50-306m fracture zone, badly broken into small pieces and ground, mixed black MS and coal strings, slickenside + polished. From 306-	65-70	1.50																
Box100	307.00	309.05	2.05					25.67	306-309	0.26	0.16	0.11	0.10	0.14									25.67
	308.50	309.50	1.00	siltstone	dark grey SL, highly broken, into very small pieces, fragment, fracture zone, fault gauge?		1.00																
Box 101	309.05	312.22	3.17					0.00	309-312	0.00													0.00
	309.50	311.40	1.90	mudstone	fault zone, mixed with black MS and coal streak (10%), sheared, slickenside + polished, fragment.		0.90																
Box 102	312.20	315.22	3.02			65-70		23.67	312-315	0.10	0.12	0.10	0.10	0.15	0.14								23.67
	311.40	318.00	6.60	siltstone	SL, dark grey, massive, 2 sets irregular calcite veins, locally slickenside + polished.																		
Box 103	315.22	318.00	2.78					45.67	315-318	0.10	0.25	0.12	0.23	0.46	0.21								45.67
Box 104	318.00	321.00	3.00	siltstone	318-319m, SL, dark grey, badly broken, slickenside + polished		1.00	0.00	318-321	0.00													0.00
	319.00	**320.30**	**1.30**	**coal**	**1.30m coal seam, badly broken into small pieces along cheat**	**70**	**1.30**	**16.00**	**321-324**	**0.48**													**16.00**
	320.30	321.00	0.70	mudstone	black MS, locally carbonaceous and coal strings, badly broken into small pieces		0.70	22.00	324-327	0.23	0.20	0.23											22.00
Box 105	321.00	323.70	2.70	sandstone	FGSS, light grey, from 322-324.50m, broken, slickenside + polished																		
Box 106	323.70	326.00	2.30	sandstone	with minor dark grey SL laminate, ripples																		
Box 107	326.00	328.80	2.80																				
	326.00	327.60	1.60	siltstone	siltstone, dark grey, slightly broken	70	1.60																
	327.60	328.80	1.20	mudstone	MS, black, massive, highly broken into small pieces, fragment, slickenside + polished.		1.20	15.33	327-330	0.26	0.10	0.10											15.33
Box 108	328.80	331.90	3.10	siltstone	from 328.80-333.93m, SL, dark grey, angle almost parallel axis, with light grey FGSS laminates, irregular calcite veins, slickenside + polished. at 332.30-333.50m, badly broken into small pieces, locally infilled coal streak.		3.10	20.00	330-333	0.12	0.29	0.19											20.00
	331.90	333.93	2.03	siltstone			2.03																
Box 109	331.90	334.20	2.30			70		61.67	333-336	0.17	0.22	0.20	0.25	0.71	0.30								61.67
Box 110	334.20	337.40	3.20																				
	333.93	337.40	3.47	sandstone	from 333.93-337.40m, FGSS, light grey, with minor dark grey SL laminate. locally infilled coal streak, horizontal bedded.			35.33	336-339	0.11	0.48	0.47											35.33
Box 111	337.40	340.22	2.82																				
	337.40	340.85	3.45	sandstone	FGSS, grey, with dark grey SL laminates, 30-40%, locally infilled coal to end, sandy, to 340.85m.	70	3.45																
Box 112	340.70	343.45	2.75					57.67	339-342	0.19	0.25	0.41	0.19	0.17	0.52								57.67
	340.85	342.40	1.55	mudstone	MS, dark-grey, massive, horizontal fracture developed, polished, minor coal streak		1.55																
	342.40	344.00	1.60	siltstone	SL, dark-medium, grey, irregular calcite veins, at base, minor coal streak		1.60	30.00	342-345	0.30	0.20	0.19	0.21										30.00
Box 113	343.45	346.76	3.31																				
	344.00	346.00	2.00	mudstone	coaly MS, because angle almost parallel axis, maybe have half coal and half black MS (Locally carbonaceous MS), highly broken along cheat, into very small pieces, numerous ground, friable, dull and light	65-70	2.00	43.00	345-348	0.18	0.22	0.50	0.15	0.10	0.14								43.00
	346.00	348.50	2.50	siltstone	SL, dark grey, with light grey FGSS laminate, 40%. and minor coal streak at top.		1.50																
Box 114	346.76	349.50	2.74				0.80																
	348.50	349.30	0.80	mudstone	348.50-349.30m, black MS, split into small pieces, polished, coal streak		0.25																

	349.30	349.55	0.25	mudstone	349.30-349.55m, coaly MS, carbonaceous and coal, high broken, ground, mixed with MS and coal				348-351														
Box 115	349.50	352.30	2.80																				
	349.55	350.90	1.35	mudstone	Black MS. coaly at base, from 350.60-350.90m, 0.30m		1.35																
	350.90	353.00	2.10	sandstone	FGSS, grey, with dark grey SL laminate, 30%, irregular calcite veins	70			351-354														
Box 116	352.30	355.05	2.75																				
	353.00	353.60	0.60	mudstone	dark grey MS, silty, coal streak occasional		0.60																
	353.60	354.00	0.40	mudstone	coaly MS, highly broken, friable and ground, mixed		0.40																
	354.00	**354.60**	**0.60**	**coal**	**coal seam, 0.60m, intact, dull and light. Coal sample: No.3**		0.60																
	354.60	355.60	1.00	mudstone	black MS, badly broken into small pieces, at top, coal streak, and at base, silty		1.00	38.33	354-357	0.38	0.35	0.20	0.22										38.33
Box 117	355.05	358.05	3.00																				
	355.60	358.05	2.45	siltstone	SL, dark grey, massive, occasional minor coal streak, to end,	65-70	2.45																
	358.05	360.15	2.10	sandstone	sand, to FGSS, slightly broken		2.10	29.67	357-360	0.17	0.22	0.14	0.14	0.10	0.12								29.67
Box 118	358.05	361.10	3.05																				
	360.15	367.00	6.85	siltstone	SL, dark-medium grey, badly broken, fragment, mylonization, displacement and squeezed, mixed SL/FGSS/calcite veins, polished and slickenside, at 363.45-363.55m, 0.10m coal.			5.00	360-363	0.15													5.00
					-Fault probably-																		
Box119	361.10	363.45	2.35																				
Box120	363.45	365.85	2.40		-fault probably-			0.00	363-366	0.00													0.00
Box121	365.85	368.20	2.35																				
	367.00	368.20	1.20	siltstone	same as above, but, core relatively complete, polished, coal streak			21.67	366-369	0.13	0.15	0.21	0.16										21.67
Box 122	368.20	371.15	2.95	sandstone	FGSS, light grey, badly broken, with dark grey SL laminate, 10%, and minor coal streak, at top, silty.		2.95	6.67	369-372	0.20													6.67
	371.15	**371.25**	**0.10**	**coal**	**0.10m coal seam.**		**0.10**																
Box123	371.15	373.75	2.60					15.33	372-375	0.28	0.18												15.33
	371.25	374.23	2.98	siltstone	SL, dark grey, broken, at 317.50-373.00m, with numerous coal streak, badly broken, slickenside + polished.		2.98																
			0.00																				
Box 124	373.75	376.65	2.90					0.00	375-378	0.00													0.00
	374.23	378.50	4.27	sandstone	FGSS, light grey, highly broken into small pieces. at 375.-376.65m, numerous coal streak. throughout slickenside + polished, sheared?		4.27																
Box125	376.65	378.50	1.85	sandstone	-fault probably																		
Box 126	378.50	382.00	3.50																				
	378.50	379.00	0.50	sandstone	FGSS, light grey, badly broken, with minor SL laminate	45	0.50	23.33	378-381	0.35	0.35												23.33
	379.00	382.00	3.00	sandstone	SL:FGSS=50:50, core relatively complete	45-50	3.00																
Box 127	382.00	384.00	2.00	sandstone	same as above, highly broken into small pieces		2.00	24.67	381-384	0.18	0.13	0.11	0.12	0.10	0.10								24.67
Box 128	384.00	387.00	3.00																				
	384.00	386.10	2.10	sandstone	Same as above, core intact		2.10	52.00	384-387	0.25	0.40	0.16	0.25	0.39	0.11								52.00
	386.10	390.00	3.90	sandstone	FGSS, light grey, highly broken into small pieces, fragment, slickenside + polished	30	3.90	11.67	387-390	0.12	0.13	0.10											11.67
Box 129	387.00	389.42	2.42																				
Box 130	389.42	392.45	3.03																				
	390.00	396.90	6.90	siltstone	from 390.-396.90m SL mainly, with light grey FGSS laminate (20%). badly broken into small pieces, slickenside + polished.		6.90	20.67	390-393	0.20	0.16	0.11	0.15										20.67
Box 131	392.45	394.90	2.45																				
Box 132	394.90	397.20	2.30					0.00	393-396	0.00													0.00
	396.90	397.50	0.60	mudstone	from 396.90-397.50m, coaly MS, numerous carbonaceous, badly broken, friable, ground, along cheat.		0.60	7.00	396-399	0.10	0.11												7.00
Box 133	397.20	400.00	2.80																				
	397.50	400.00	2.50	siltstone	SL, dark grey, highly broken, minor coal streak, slickenside + polished, with light grey FGSS, laminate, 20%, to end, sandy.	30-45	2.50	5.00	399-402	0.15													5.00
Box134	400.00	403.10	3.10	sandstone	FGSS, light grey, bedding plane, with dark grey SL laminate (30%). at 400.-402m, badly broken into small pieces, trace coal.	40	3.10	35.00	402-405	0.11	0.10	0.12	0.10	0.19	0.15	0.14	0.14						35.00
Box 135	403.10	405.30	2.20																				
	403.10	406.50	3.40	sandstone	FGSS, grey, bedding plane, highly broken, split into irregular plates, fragment		3.40																
Box 136	405.30	408.00	2.70					21.00	405-408	0.14	0.13	0.10	0.26										21.00
	406.50	408.60	2.10	siltstone	SL dark grey thickly bedded, with minor FGSS laminate (20%) trace coal, broken.	50																	
Box 137	408.00	411.00	3.00					11.33	408-411	0.18	0.16												11.33

	408.60	411.00	2.40	mudstone	Silty MS, black, decomposed and split into the irregular plate numerous coal streak, at 409.10-409.20m, 0.10m coal seam, brecciated and decomposed, ground, calcite vein along the joints.																		
Box 138	411.00	414.30	3.30					8.67	411-414	0.11	0.15												8.67
	411.00	412.10	1.10	mudstone	Carbonaceous MS, black, numerous coal strings, at base, badly broken		1.10																
	412.10	**412.20**	**0.10**	**coal**	**0.10 coal seam, brecciate and decomposed**		**0.10**																
	412.20	413.70	1.50	siltstone	SL dark grey, thickly bedded, split into the small pieces	45																	
			0.00		-fault probably-																		
	413.70	417.70	4.00	siltstone	mixed with dark grey SL and light grey FGSS, highly broken into small irregular plate, slickenside + polished.	70-75	4.00	0.00	414-417	0.00													0.00
Box 139	414.30	416.90	2.60		-fault probably-																		
Box 140	416.90	419.82	2.92																				
	417.70	421.70	4.00	sandstone	FGSS light grey, bedding plane, with dark grey SL laminate (20%). calcite veins along the different joint.	55	4.00	31.33	417-420	0.20	0.18	0.26	0.15	0.15									31.33
Box141	419.82	422.40	2.58	siltstone		40		50.00	420-423	0.14	0.36	0.15	0.10	0.29	0.16	0.20	0.10						50.00
	421.70	422.00	0.30	mudstone	SL, dark-medium grey, thickly bedded		0.30																
	422.00	425.50	3.50	sandstone	MS, black, massive, thickly bedded, calcite veins along the join.		3.50																
Box142	422.40	425.40	3.00																				
Box143	425.40	428.60	3.20			45-70																	
	425.50	426.00	0.50	sandstone	from 425.50-426.m, FGSS, light grey, bedding plane, with SL laminate (20%)		0.50	79.00	423-426	0.10	0.17	0.22	0.32	0.19	0.52	0.13	0.11	0.11	0.11	0.13	0.13	0.13	79.00
	426.00	431.10	5.10	siltstone	426-431.10m SL, dark-medium grey, massive, thickly bedded, calcite veins along the joint, at base, sandy.		5.10	51.67	426-429	0.13	0.13	0.11	0.18	0.18	0.55	0.27							51.67
Box144	428.60	432.00	3.40																				
	431.10	432.00	0.90	sandstone	431.10-432m FGSS mainly, minor SL laminate, angle increased 70 into fracture zone, 2 sets, different direction calcite veins along the irregular joint.		0.90	69.00	429-432	0.17	0.41	0.19	0.60	0.20	0.27	0.23							69.00
Box145	432.00	434.50	2.50																				
	432.00	433.20	1.20	sandstone	Into Fault zone, mixed with SL and MS and FGSS. gauge, brecciated and decomposed mylonization	40	1.20																
	433.20	434.85	1.65	sandstone	mixed dark grey SL with grey FGSS, calcite veins along the irregular joint		1.65	21.00	432-435	0.10	0.13	0.13	0.15	0.12									21.00
Box146	434.50	437.80	3.30																				
	434.85	436.40	1.55	siltstone	into fault zone again, mylonization, displacement, decomposed, ground fault gauge and coal trace, mixed.		1.55	30.00	435-438	0.18	0.18	0.23	0.11	0.20									30.00
	436.40	437.80	1.40	siltstone	SL, dark grey, with FGSS, laminate (40%), massive, numerous irregular veins along the joint.		1.40																
Box147	437.20	439.60	2.40																				
	437.80	440.60	2.80	siltstone	437.80-440.60m mixed with SL/FGSS/MS. ground, decomposed, mylonization, cannot distinguished lithology, -fault probably- sheared.		2.80	0.00	438-441	0.00													0.00
Box148	439.60	442.45	2.85			45	2.85																
	440.60	442.45	1.85	siltstone	440.60-442.45m, SL, dark grey, massive, sandy, quartz vein along the joint.			31.00	441-444	0.17	0.16	0.18	0.15	0.13	0.14								31.00
					-fault probably-																		
Box149	442.45	444.90	2.45	siltstone	mixed with dark grey SL and grey FGSS, badly broken into small pieces by slickensides, calcite veins along the joints, minor coal trace		2.45	33.67	444-447	0.10	0.13	0.10	0.16	0.20	0.18	0.14							33.67
						45																	
Box150	444.90	447.90	3.00	siltstone	SL, dark grey, massive, thickly bedded, with minor grey FGSS laminate, 10%, calcite veins along the joint.		3.00																
Box151	447.90	450.74	2.84			45		54.67	447-450	0.28	0.25	0.15	0.19	0.26	0.20	0.18	0.13						54.67
	447.90	449.85	1.95	mudstone	silty MS, dark grey, massive, thickly bedded, minor calcite veins		1.95																
	449.85	450.74	0.89	siltstone	mixed with SL and FGSS, interbedded, calcite veins along the joint, two sets, different direction.																		
Box152	450.74	453.53	2.79					48.67	450-453	0.40	0.10	0.18	0.20	0.58									48.67
	450.74	451.50	0.76	mudstone	silty MS, dark grey, Massive, thickly bedded, minor calcite veins		0.76																
	451.50	452.30	0.80	mudstone	Black MS, massive, trace coal occasional		0.80																
	452.30	455.40	3.10	mudstone	Silty MS, dark grey, massive, thickly bedded occasional trace coal. bedding plane increased to 60.	60	3.10	39.67	453-456	0.19	0.10	0.23	0.22	0.13	0.10	0.10	0.12						39.67
Box153	453.53	456.13	2.60		455.40-459.00m -fault probably-																		
Box154	456.13	458.40	2.27																				
	455.40	458.40	3.00	siltstone	at top 0.40m sandy SL, thickly bedded, calcite vein along the joint after 455.40m, badly broken, with slickensides, split into thin irregular plates, sheared, mixed with FGSS/SL/MS, cannot distinguished. brecciated and decomposed.																		
			0.00		-fault probably-																		
Box155	458.40	469.18	10.78																				
	458.40	459.00	0.60	siltstone	SL, dark grey, highly broken with slickenside, fragment		0.60	0	456-459	0.00													0.00

	459.00	459.50	0.50	siltstone	459.00-459.50m, SL, dark grey, highly broken with slickensides; brecciated and decomposed;																	
	459.50	462.00	2.50		459.50-462.00m, only a few of SL pieces and mixed with trace coal and MS powder? recovery only 0.20m, lost: 1.30m.		0.20															
	462.00	**465.00**	**3.00**	**coal**	**driller' report: poor recovery, only 0.60m, mixed with black MS and coal streak? not clear! maybe is coal seam.**		**0.60**															
	465.00	469.18	4.18	mudstone	MS black, highly broken with slickenside, sheared; split into thin small plate and ground. Recovery: 1.25m lost: 3.25m. Rod and core barrel Stuck! End of hole depth is measured by wireline log (469.18,) we cannot find the wood piece from driller's number of depth.		1.25															

notes: MS: mudstone
SL: siltstone
FGSS: fine-grained sandstone

2016-BA02 Borehole Core Box Photos:

Box 1

Box 2

Box 3

Box 4

Box 5

Box 6

Box 7

Box 8

Box 9

Box 10

Box 11

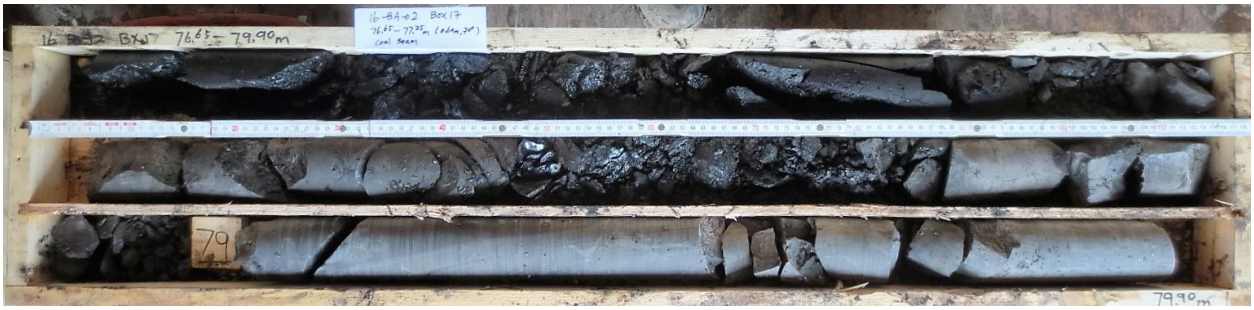
Box 12

Box 13

Box 14

Box 15

Box 16



Box 17

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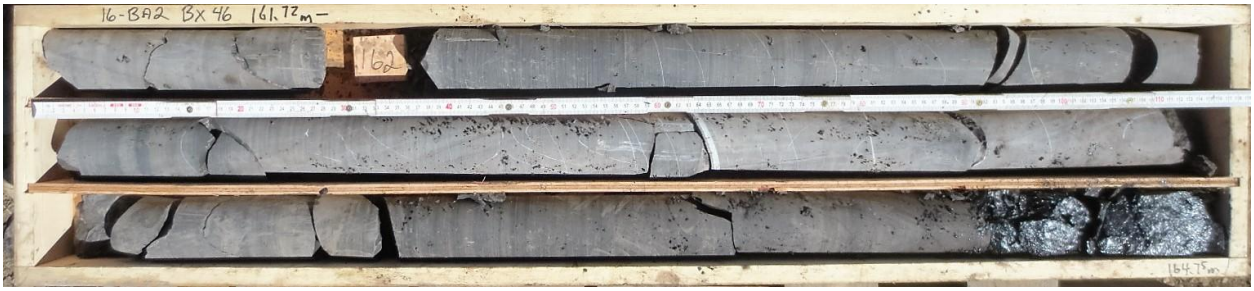

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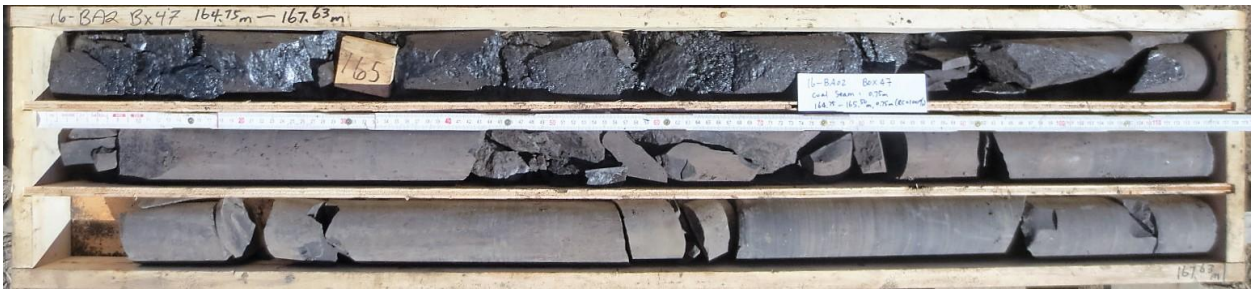

Box 47

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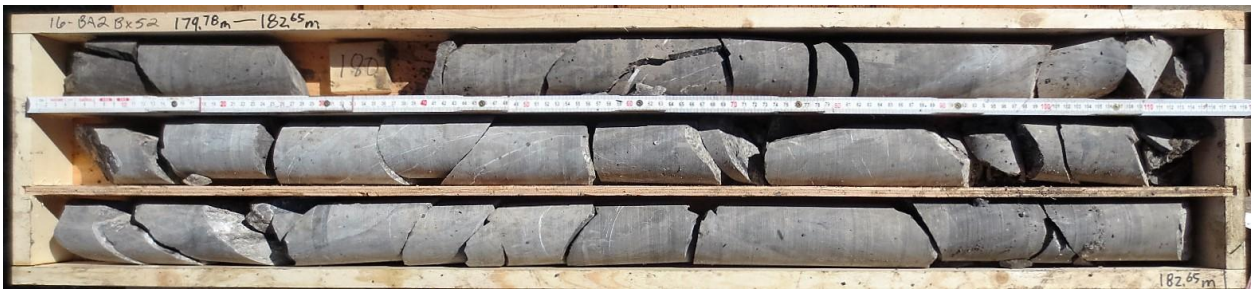

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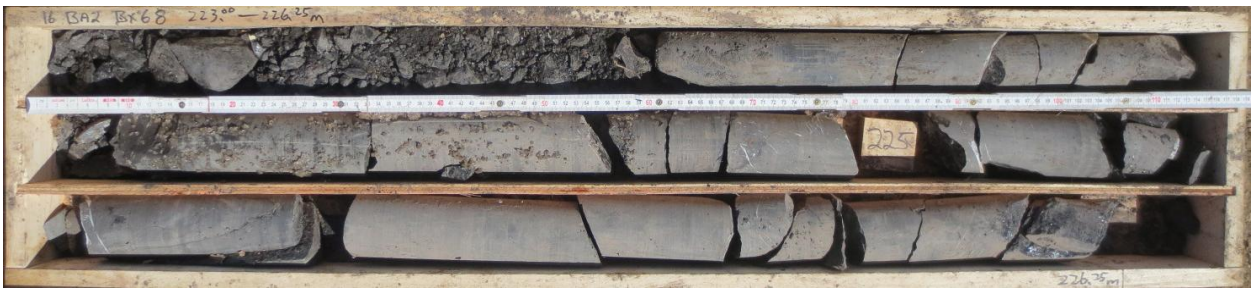

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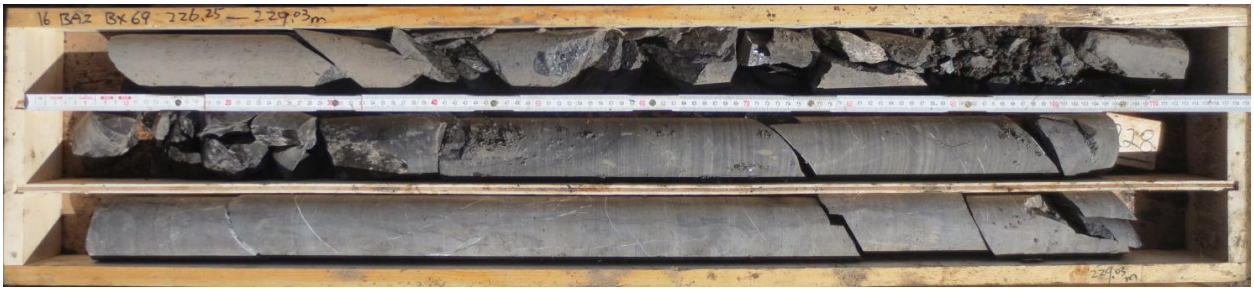
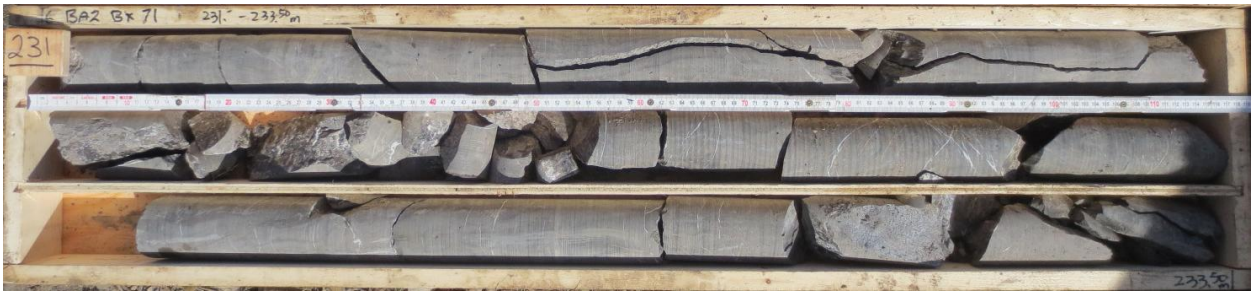


Box 69

Box 70



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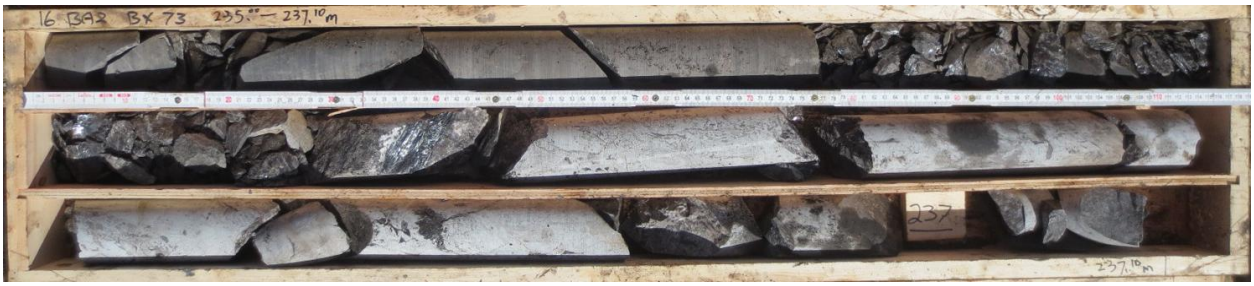

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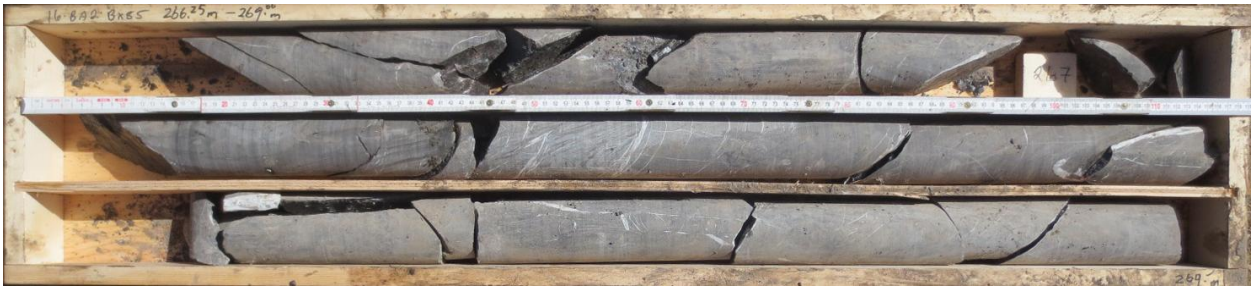

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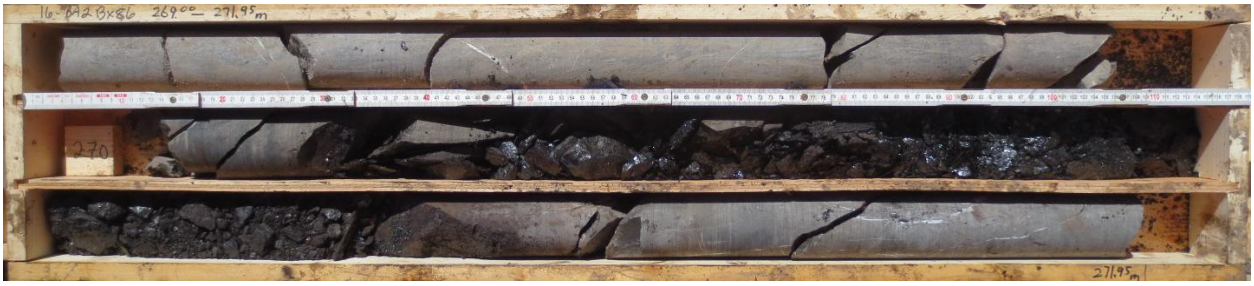

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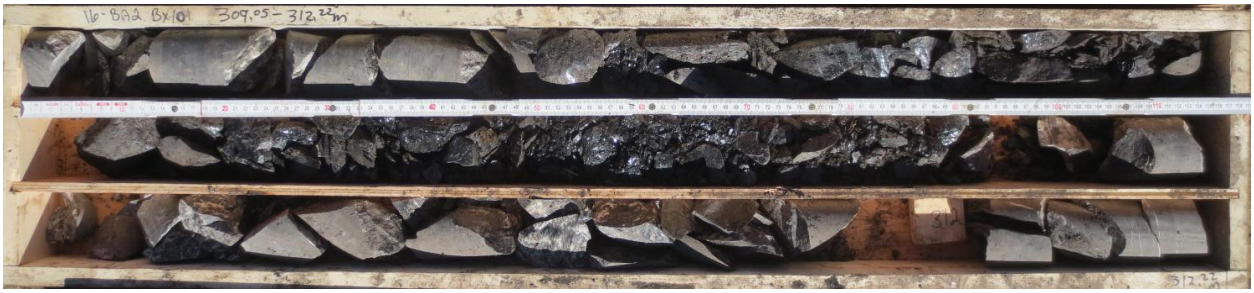

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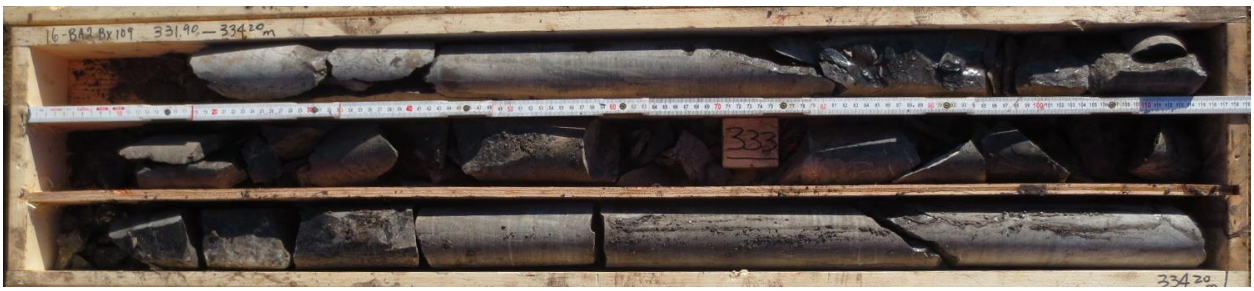

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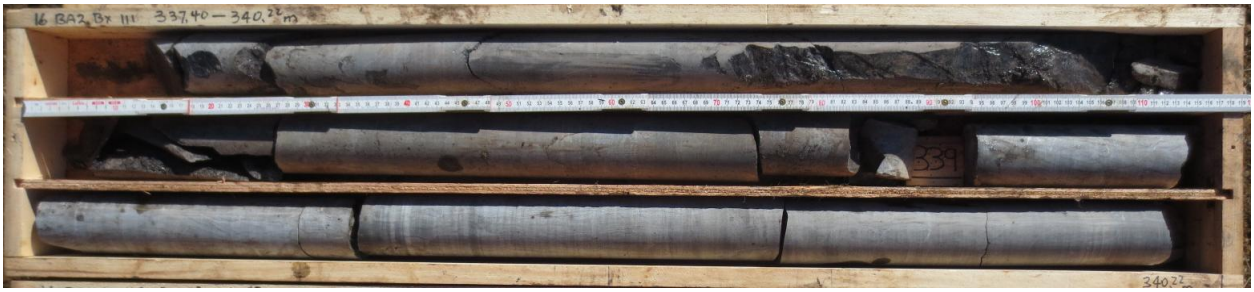
Box 110



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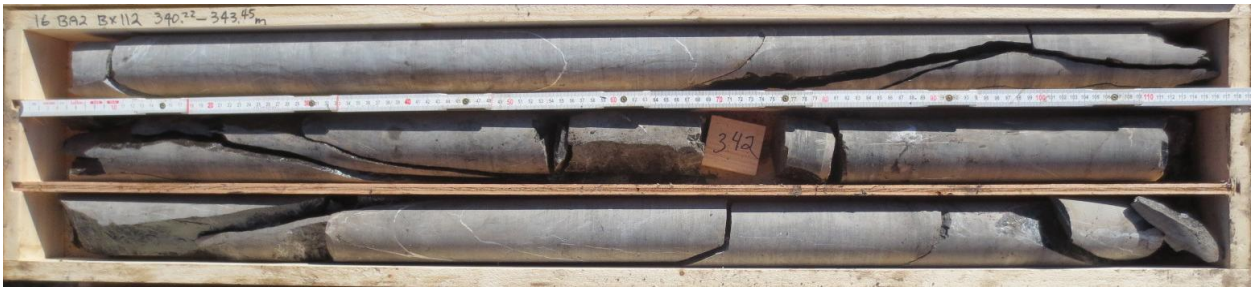
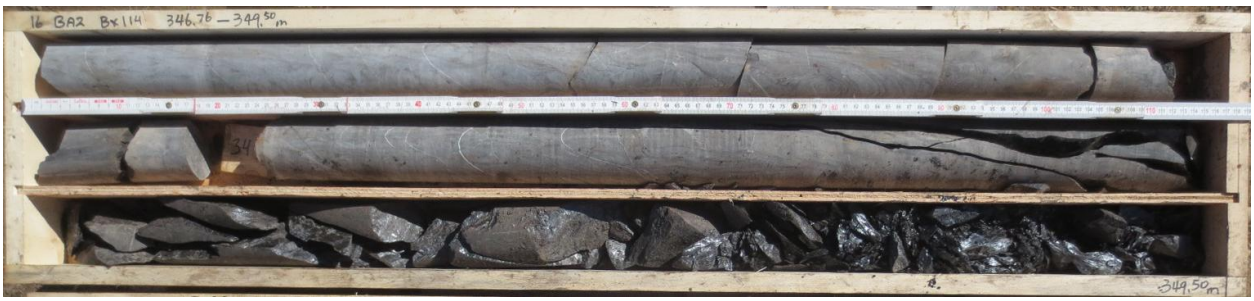


Box 112

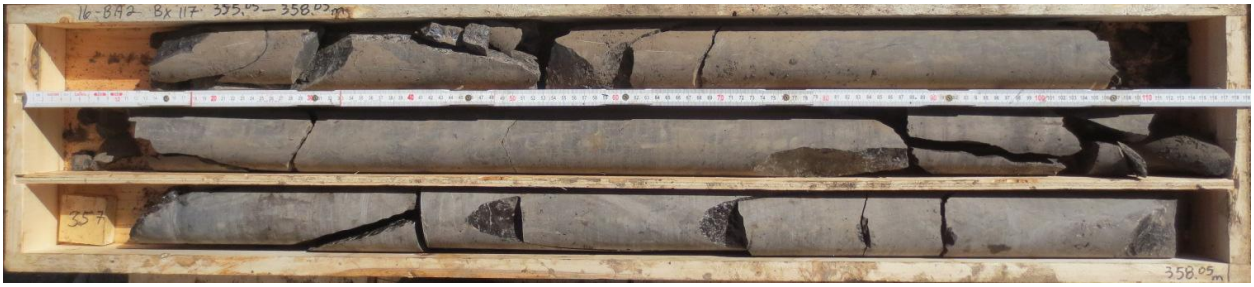
Box 113



Box 114

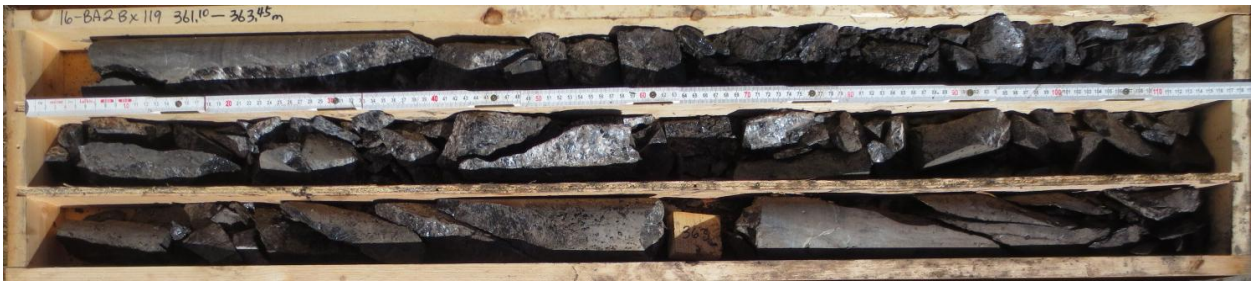
Box 115

Box 116 (coal sample: 354.00-354.60m)



Box 117

Box 118



Box 119

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Box 147

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Box 149

Box 150

Box 151

Box 152

Box 153

Box 154

Box 156 (TD=469.18m from Wireline Log)

GAMMA-DENSITY (CPS) LOG THRU DRILL PIPE
16-BA2

Century WIRELINE SERVICES

COMPANY CENTERMOUNT COAL
WELL 16-BA2
WELL EXT
FIELD N/A
COUNTY
PROVINCE BRITISH COLUMBIA
COUNTRY CANADA
LICENSE N/A

COMPANY : CENTERMOUNT COAL
WELL : 16-BA2
WELL EXT :
FIELD : N/A
COUNTY :
PROVINCE : BRITISH COLUMBIA
COUNTRY : CANADA
LICENSE : N/A
UNIQ ID : N/A
LSD : N/A
LOCATION : N/A SECTION: N/A TOWNSHIP: N/A RANGE: N/A
LAT. UTMN : N/A
LONG. UTME: N/A
DISPLAY7_JL37

PERMANENT DATUM	N/A	Elevations:	
DRL MEASURED FROM	N/A	KB	N/A M
LOG MEASURED FROM	N/A	DF	N/A M
ELEV PERM DATUM	N/A M	GL	N/A M

Other Services: NEUTRON

DATE	04/15/16 15:52
DEPTH – DRILLER	466.50 M
DEPTH – LOGGER	469.18 M
Log Top	0.00 M
Log Bottom	465.79 M
BIT SIZE	96.00 MM
CASING – DRILLER	48.00 M
CASING – LOGGER	48.00 M
CASING O.D.	N/A CM
CASING TYPE	N/A
FLUID TYPE	H2O
FLUID DENSITY	1.00 G/CC
FLUID VISCOSITY	N/A
FLUID PH	N/A
MUD SOURCE	N/A
RM @ MEAS TEMP	N/A @ N/A C
RMF @ MEAS TEMP	N/A @ N/A C
RMC @ MEAS TEMP	N/A @ N/A C
CIRC STOPPED	N/A
RIG NUMBER	CENTURY
FLUID LEVEL	N/A
RECORDED BY	B.HILL
WITNESSED BY	VICTOR
REMARKS 1	
REMARKS 2	
REMARKS 3	

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

1:100 SLIM DENSITY THRU PIPE 16-BA2 04/15/16

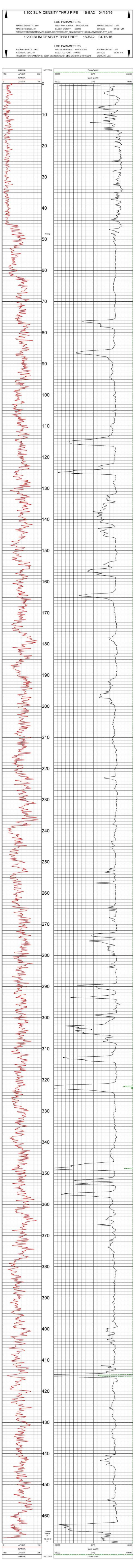
LOG PARAMETERS
MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 0 ELECT. CUTOFF : 99000 BIT SIZE : 96.00 MM
PRESENTATION NAME/DATE: 9068A-CENTERMOUNT_SLIM-DENSITY 100.0 04/15/2(DISPLAY7_JL37

1:100 SLIM DENSITY THRU PIPE 16-BA2 04/15/16

LOG PARAMETERS
MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 0 ELECT. CUTOFF : 99000 BIT SIZE : 96.00 MM
PRESENTATION NAME/DATE: 9068A-CENTERMOUNT_SLIM-DENSITY 100.0 04/15/2(DISPLAY7_JL37

1:200 SLIM DENSITY THRU PIPE 16-BA2 04/15/16

LOG PARAMETERS
MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 0 ELECT. CUTOFF : 99000 BIT SIZE : 96.00 MM
PRESENTATION NAME/DATE: 9068A-CENTERMOUNT_SLIM-DENSITY.0 04/15/2016 DISPLAY7_JL37



1:200 SLIM DENSITY THRU PIPE 16-BA2 04/15/16

LOG PARAMETERS
MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 0 ELECT. CUTOFF : 99000 BIT SIZE : 96.00 MM
PRESENTATION NAME/DATE: 9068A-CENTERMOUNT_SLIM-DENSITY.0 04/15/2016 DISPLAY7_JL37

TOOL CALIBRATION 16-BA2 04/15/16 15:52
TOOL 9068A TM VERSION 2002
SERIAL NUMBER 640

	DATE	TIME	SENSOR		STANDARD Point1	STANDARD Point2	RESPONSE [CPS] Point1	RESPONSE [CPS] Point2
1	Jul02,15	15:21:07	GAMMA	[API-GR]	0.100	545.000	1.000	185

Appendix B: 2016 Bingay B Coal property Technical Assessment Report

1. **Certification of Bingay B Selenium and Cadmium analysis results.**
2. **Bingay B Drilling hole core lithology log**
3. **Bingay B Drilling hole core box photos**
4. **Bingay B Drilling and Trenching Report, June 2016. By Richard Munroe.**
5. **Proposed Bingay Main Coal Project Waste Spoils, Geotechnical Assessment, By SNC Oct.20, 2016**

2016 Bingay B Coal Property Selenium & Cadmium Samples

Borehole	Sample	Depth (m)		Lithology	Elements		Total metal by ICPMS		Dry Weight
No.	No.	from	to		Se(mg/kg)	Cd(mg/kg)	Se(mg/kg)	Cd(mg/kg)	kg
16-BBDH1	664352			Cutting from drill base	3.00	0.45	N/A	N/A	
16-BBDH1	664353	19.20	23.74	small grabs more core	1.00	1.00	N/A	N/A	
16-BBDH1	664356	25.80	27.00	small grabs more core	1.10	1.00	N/A	N/A	
16-BBDH1	664359	29.50	30.67	small grabs more core	0.96	0.97	N/A	N/A	
16-BBDH1	664362	32.50	33.67	small grabs more core	0.85	0.94	N/A	N/A	
16-BBDH1	664365	35.50	36.67	small grabs more core	0.88	1.00	N/A	N/A	
16-BBDH1	664368	38.35	39.40	small grabs more core	1.10	1.00	N/A	N/A	
16-BBDH1	664371	43.34	44.51	small grabs more core	N/A	N/A	<0.50	1.12	44.68
16-BBDH1	664374	48.21	49.30	small grabs more core	N/A	N/A	<0.50	0.946	0.998
16-BBDH1	664377	52.51	53.61	small grabs more core	0.85	0.69	N/A	N/A	
16-BBDH1	664380	55.86	57.03	small grabs more core	2.10	0.51	N/A	N/A	
16-BBDH1	664383	60.56	61.68	small grabs more core	<0.50	0.37	N/A	N/A	
16-BBDH1	664386	64.00	65.17	small grabs more core	1.00	0.50	N/A	N/A	
16-BBDH1	664389	68.17	69.32	small grabs more core	0.64	0.52	N/A	N/A	
16-BBDH1	664392	79.00	80.76	small grabs more core	N/A	N/A	2.40	0.398	1.218
16-BBDH1	664393	80.76	82.00	small grabs more core					
16-BBDH1	664394	87.00	87.67	small grabs more core	3.30	0.39	N/A	N/A	
16-BBDH1	664395	88.20	88.75	small grabs more core	N/A	N/A	7.88	0.484	0.899
16-BBDH1	664396	91.80	92.10	small grabs more core	3.30	0.44	N/A	N/A	
16-BBDH2	664397	3.00	4.75	small grabs more core			1.15	0.567	0.941
16-BBDH2	664398	7.65	10.00	small grabs more core			<0.50	0.511	0.828
16-BBDH2	664399	16.00	16.50	small grabs more core			<0.50	0.586	0.946
16-BBDH2	664400	24.00	27.00	small grabs more core			<0.50	0.345	1.039
16-BBDH2	664201	32.10	33.00	small grabs more core			0.88	0.662	0.873
16-BBDH2	664202	35.50	36.00	small grabs more core	2.30	0.27	N/A	N/A	
16-BBDH2	664203	38.50	39.00	small grabs more core	3.60	0.79	N/A	N/A	
16-BBDH2	664204	40.90	41.50	small grabs more core	3.50	0.40	N/A	N/A	
16-BBDH2	664205	44.00	44.50	small grabs more core	N/A	N/A	2.88	0.542	0.997
16-BBDH2	664206	48.60	49.10	small grabs more core	N/A	N/A	2.25	0.453	0.876
16-BBDH2A	664207	1.00	4.00	small grabs more core	N/A	N/A	<0.50	0.555	0.779
16-BBDH2A	664208	10.00	11.50	small grabs more core	N/A	N/A	<0.50	0.340	0.843
16-BBDH2A	664209	16.00	17.00	small grabs more core	N/A	N/A	<0.50	0.390	1.228
16-BBDH3	664210	1.00	5.15	small grabs more core	0.81	0.56	N/A	N/A	
16-BBDH3	664211	5.15	12.70	small grabs more core	N/A	N/A	<0.50	0.582	1.603
16-BBDH3	664212	12.70	16.00	small grabs more core	N/A	N/A	<0.50	0.583	1.948
16-BBDH3	664213	16.00	21.20	small grabs more core	0.65	0.66	N/A	N/A	
16-BBDH3	664214	21.20	24.60	small grabs more core	N/A	N/A	<0.50	0.629	1.243
16-BMD02	664239	7.30	16.00	small grabs more core	N/A	N/A	<0.50	0.486	1.179
16-BMD02	664240	28.12	31.80	small grabs more core	N/A	N/A	<0.50	0.767	1.825
16-BMD02	664241	58.10	61.20	small grabs more core	4.10	0.42	N/A	N/A	
16-BMD02	664242	89.15	92.30	small grabs more core	4.10	0.41	N/A	N/A	
16-BMD02	664243			cutting from drilling base	2.10	0.43	N/A	N/A	
16-BMD02	664244	122.10	125.36	small grabs more core	1.50	0.22	N/A	N/A	
16-BMD02	664245	148.38	150.40	small grabs more core	2.30	0.25	N/A	N/A	

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Your Project #: BINGAY COAL
Site Location: ELKFORD, BC

Attention:CHARLIE ZHAO

CENTERMOUNT COAL LTD.
1055-1140 WEST PENDER STREET
VANCOUVER, BC
CANADA V6E 4G1

Report Date: 2016/05/31
Report #: R2189388
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B633166
Received: 2016/05/02, 15:53

Sample Matrix: Soil
Samples Received: 69

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICPMS (total) (1)	11	2016/05/24	2016/05/24	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Elements by ICPMS (total) (1)	18	2016/05/25	2016/05/25	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Elements by ICPMS - Soils	15	2016/05/05	2016/05/06	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Elements by ICPMS - Soils	15	2016/05/06	2016/05/07	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Weight of Sample Received (charge/kg) (1)	1	N/A	2016/05/25		
Weight of Sample Received (1)	39	N/A	2016/05/25		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Vancouver

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Shanaz Akbar, Project Manager
Email: SAkbar@maxxam.ca
Phone# (604)639-2618
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B633166
Report Date: 2016/05/31

CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		OO0479		OO0480	OO0486	OO0489	OO0491	OO0492	OO0493	
Sampling Date										
	UNITS	**664371**	**QC Batch**	**664374**	**664392**	**664395**	**664397**	**664398**	**664399**	**QC Batch**
Industrial										
Dry Weight	kg	44.68	8278990	0.9980	1.218	0.8990	0.9410	0.8280	0.9460	8278889

Maxxam ID		OO0494	OO0495	OO0499	OO0500	OO0501	OO0502	OO0503	
Sampling Date									
	UNITS	**664400**	**664201**	**664205**	**664206**	**664207**	**664208**	**664209**	**QC Batch**
Industrial									
Dry Weight	kg	1.039	0.8730	0.9970	0.8760	0.7790	0.8430	1.228	8278889

Maxxam ID		OO0505	OO0506	OO0508	OO0509	OO0510	OO0513	OO0514	OO0534	
Sampling Date										
	UNITS	**664211**	**664212**	**664214**	**664238**	**664247**	**664239**	**664240**	**664257**	**QC Batch**
Industrial										
Dry Weight	kg	1.603	1.948	1.243	1.311	1.306	1.179	1.825	0.8230	8278889

Maxxam ID		OO0535	OO0536	OO0537	OO0538	OO0539	OO0541	OO0542	OO0543	
Sampling Date										
	UNITS	**664258**	**664259**	**664263**	**664264**	**664271**	**664224**	**664225**	**664226**	**QC Batch**
Industrial										
Dry Weight	kg	0.6730	1.549	0.9460	1.274	0.8350	1.076	0.8100	1.032	8278889

Maxxam ID		OO0544	OO0546	OO0547	OO0548	OO0550	OO0551	OO0552	OO0553	
Sampling Date										
	UNITS	**664227**	**664229**	**664230**	**664231**	**664233**	**664234**	**664235**	**664236**	**QC Batch**
Industrial										
Dry Weight	kg	0.8550	1.057	1.077	1.142	1.015	0.7700	1.045	0.9600	8278889

Maxxam ID		OO0554	
Sampling Date			
	UNITS	**664237**	**QC Batch**
Industrial			
Dry Weight	kg	1.128	8278889

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Maxxam Job #: B633166
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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0472	OO0473		OO0474		OO0475	OO0476		
Sampling Date										
	UNITS	664352	664353	QC Batch	664356	QC Batch	664359	664362	RDL	QC Batch
Elements										
Total Cadmium (Cd)	mg/kg	0.45	1.0	8261272	1.0	8262727	0.97	0.94	0.050	8261272
Total Selenium (Se)	mg/kg	3.0	1.0	8261272	1.1	8262727	0.96	0.85	0.50	8261272
RDL = Reportable Detection Limit										

Maxxam ID		OO0477		OO0478		OO0481		OO0482		
Sampling Date										
	UNITS	664365	QC Batch	664368	QC Batch	664377	QC Batch	664380	RDL	QC Batch
Elements										
Total Cadmium (Cd)	mg/kg	1.0	8261272	1.0	8262727	0.69	8261272	0.51	0.050	8262727
Total Selenium (Se)	mg/kg	0.88	8261272	1.1	8262727	0.85	8261272	2.1	0.50	8262727
RDL = Reportable Detection Limit										

Maxxam ID		OO0483		OO0484	OO0485		OO0488		OO0490		
Sampling Date											
	UNITS	664383	QC Batch	664386	664389	QC Batch	664394	QC Batch	664396	RDL	QC Batch
Elements											
Total Cadmium (Cd)	mg/kg	0.37	8261272	0.50	0.52	8262727	0.39	8261272	0.44	0.050	8262727
Total Selenium (Se)	mg/kg	<0.50	8261272	1.0	0.64	8262727	3.3	8261272	3.3	0.50	8262727
RDL = Reportable Detection Limit											

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CENTERMOUNT COAL LTD.
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Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0496		OO0497		OO0498	OO0500	OO0501		
Sampling Date										
	UNITS	**664202**	**QC Batch**	**664203**	**QC Batch**	**664204**	**664206**	**664207**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.27	8261272	0.79	8262727	0.40	N/A	N/A	0.050	8261272
Total Selenium (Se)	mg/kg	2.3	8261272	3.6	8262727	3.5	N/A	N/A	0.50	8261272
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	N/A	N/A	N/A	N/A	0.453	0.555	0.050	8276850
Total Selenium (Se)	mg/kg	N/A	N/A	N/A	N/A	N/A	2.25	<0.50	0.50	8276850

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0502	OO0503		OO0504	OO0505	OO0506		
Sampling Date									
	UNITS	**664208**	**664209**	**QC Batch**	**664210**	**664211**	**664212**	**RDL**	**QC Batch**
Elements									
Total Cadmium (Cd)	mg/kg	N/A	N/A	8261272	0.56	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	N/A	8261272	0.81	N/A	N/A	0.50	8262727
Total Metals by ICPMS									
Total Cadmium (Cd)	mg/kg	0.340	0.390	8276850	N/A	0.582	0.583	0.050	8276850
Total Selenium (Se)	mg/kg	<0.50	<0.50	8276850	N/A	<0.50	<0.50	0.50	8276850

RDL = Reportable Detection Limit
N/A = Not Applicable

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0507	OO0508	OO0509	OO0510	OO0511	OO0512	OO0513		
Sampling Date										
	UNITS	**664213**	**664214**	**664238**	**664247**	**664246**	**664248**	**664239**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.66	N/A	N/A	N/A	0.80	0.87	N/A	0.050	8261272
Total Selenium (Se)	mg/kg	0.65	N/A	N/A	N/A	1.5	2.9	N/A	0.50	8261272
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	0.629	0.553	0.698	N/A	N/A	0.486	0.050	8276850
Total Selenium (Se)	mg/kg	N/A	<0.50	<0.50	0.95	N/A	N/A	<0.50	0.50	8276850

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0514		OO0515	OO0516		OO0517		OO0518		
Sampling Date											
	UNITS	**664240**	**QC Batch**	**664241**	**664242**	**QC Batch**	**664243**	**QC Batch**	**664244**	**RDL**	**QC Batch**
Elements											
Total Cadmium (Cd)	mg/kg	N/A	8261272	0.42	0.41	8262727	0.43	8261272	0.22	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	8261272	4.1	4.1	8262727	2.1	8261272	1.5	0.50	8262727
Total Metals by ICPMS											
Total Cadmium (Cd)	mg/kg	0.767	8276850	N/A	N/A	N/A	N/A	N/A	N/A	0.050	N/A
Total Selenium (Se)	mg/kg	<0.50	8276850	N/A	N/A	N/A	N/A	N/A	N/A	0.50	N/A

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B633166
Report Date: 2016/05/31

CENTERMOUNT COAL LTD.
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0519	OO0534	OO0535	OO0536	OO0537	OO0538	OO0539		
Sampling Date										
	UNITS	**664245**	**664257**	**664258**	**664259**	**664263**	**664264**	**664271**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.25	N/A	N/A	N/A	N/A	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	2.3	N/A	N/A	N/A	N/A	N/A	N/A	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	2.90	0.804	1.71	1.95	0.798	0.641	0.050	8278014
Total Selenium (Se)	mg/kg	N/A	2.83	0.84	2.59	4.50	1.95	1.50	0.50	8278014

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0540	OO0541	OO0542	OO0543	OO0544		OO0545		
Sampling Date										
	UNITS	**664272**	**664224**	**664225**	**664226**	**664227**	**QC Batch**	**664228**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.80	N/A	N/A	N/A	N/A	8261272	3.0	0.050	8262727
Total Selenium (Se)	mg/kg	1.7	N/A	N/A	N/A	N/A	8261272	3.8	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	0.841	3.85	6.35	6.15	8278014	N/A	0.050	N/A
Total Selenium (Se)	mg/kg	N/A	<0.50	5.08	6.31	6.00	8278014	N/A	0.50	N/A

RDL = Reportable Detection Limit
N/A = Not Applicable

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0545	OO0546	OO0547	OO0548	OO0549	OO0550	OO0551		
Sampling Date										
	UNITS	**664228 Lab-Dup**	**664229**	**664230**	**664231**	**664232**	**664233**	**664234**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	3.0	N/A	N/A	N/A	0.14	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	3.3	N/A	N/A	N/A	<0.50	N/A	N/A	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	5.15	4.13	5.07	N/A	2.24	2.47	0.050	8278014
Total Selenium (Se)	mg/kg	N/A	4.34	4.17	4.28	N/A	1.43	1.77	0.50	8278014

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		OO0552	OO0553	OO0554	OO2416		
Sampling Date							
	UNITS	**664235**	**664236**	**664237**	**16-BBDH1 DRILL CUTTINGS PETROGRAPHY**	**RDL**	**QC Batch**
Elements							
Total Cadmium (Cd)	mg/kg	N/A	N/A	N/A	0.48	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	N/A	N/A	2.4	0.50	8262727
Total Metals by ICPMS							
Total Cadmium (Cd)	mg/kg	1.82	1.80	2.03	N/A	0.050	8278014
Total Selenium (Se)	mg/kg	1.50	2.56	1.51	N/A	0.50	8278014

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B633166
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CENTERMOUNT COAL LTD.
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GENERAL COMMENTS

Results relate only to the items tested.

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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8261272	PC5	Matrix Spike	Total Cadmium (Cd)	2016/05/06		98	%	75 - 125
			Total Selenium (Se)	2016/05/06		97	%	75 - 125
8261272	PC5	Spiked Blank	Total Cadmium (Cd)	2016/05/06		98	%	75 - 125
			Total Selenium (Se)	2016/05/06		97	%	75 - 125
8261272	PC5	Method Blank	Total Cadmium (Cd)	2016/05/06	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/06	<0.50		mg/kg	
8261272	PC5	RPD	Total Cadmium (Cd)	2016/05/06	3.5		%	35
			Total Selenium (Se)	2016/05/06	NC		%	35
8262727	PC5	Matrix Spike [OO0545-01]	Total Cadmium (Cd)	2016/05/07		96	%	75 - 125
			Total Selenium (Se)	2016/05/07		99	%	75 - 125
8262727	PC5	Spiked Blank	Total Cadmium (Cd)	2016/05/07		92	%	75 - 125
			Total Selenium (Se)	2016/05/07		94	%	75 - 125
8262727	PC5	Method Blank	Total Cadmium (Cd)	2016/05/07	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/07	<0.50		mg/kg	
8262727	PC5	RPD [OO0545-01]	Total Cadmium (Cd)	2016/05/07	0.072		%	35
			Total Selenium (Se)	2016/05/07	14		%	35
8276850	DJ	Matrix Spike	Total Cadmium (Cd)	2016/05/24		99	%	75 - 125
			Total Selenium (Se)	2016/05/24		97	%	75 - 125
8276850	DJ	QC Standard	Total Cadmium (Cd)	2016/05/24		113	%	70 - 130
8276850	DJ	Spiked Blank	Total Cadmium (Cd)	2016/05/24		98	%	75 - 125
			Total Selenium (Se)	2016/05/24		99	%	75 - 125
8276850	DJ	Method Blank	Total Cadmium (Cd)	2016/05/24	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/24	<0.50		mg/kg	
8276850	DJ	RPD	Total Cadmium (Cd)	2016/05/24	NC		%	30
			Total Selenium (Se)	2016/05/24	NC		%	30
8278014	DJ	Matrix Spike	Total Cadmium (Cd)	2016/05/25		97	%	75 - 125
			Total Selenium (Se)	2016/05/25		95	%	75 - 125
8278014	DJ	QC Standard	Total Cadmium (Cd)	2016/05/25		115	%	70 - 130
8278014	DJ	Spiked Blank	Total Cadmium (Cd)	2016/05/25		105	%	75 - 125
			Total Selenium (Se)	2016/05/25		108	%	75 - 125
8278014	DJ	Method Blank	Total Cadmium (Cd)	2016/05/25	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/25	<0.50		mg/kg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B633166
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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Harry (Peng) Liang, Senior Analyst

Rob Reinert, B.Sc., Scientific Specialist

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Maxxam
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Success Through Science®

Your Project #: BINGAY COAL
Site Location: ELKFORD, BC

Attention:CHARLIE ZHAO

CENTERMOUNT COAL LTD.
1055-1140 WEST PENDER STREET
VANCOUVER, BC
CANADA V6E 4G1

Report Date: 2016/06/10
Report #: R2195029
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B633166
Received: 2016/05/02, 15:53

Sample Matrix: Soil
Samples Received: 70

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICPMS (total) (1)	7	2016/05/20	2016/05/24	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Elements by ICPMS (total) (1)	15	2016/05/24	2016/05/24	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Elements by ICPMS (total) (1)	18	2016/05/25	2016/05/25	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Elements by ICPMS - Soils	15	2016/05/05	2016/05/06	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Elements by ICPMS - Soils	15	2016/05/06	2016/05/07	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Vancouver

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Shanaz Akbar, Project Manager
Email: SAkbar@maxxam.ca
Phone# (604)639-2618
==========
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Maxxam Job #: B633166
Report Date: 2016/06/10

CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0472	OO0473		OO0474		OO0475	OO0476		
Sampling Date										
	UNITS	**664352**	**664353**	**QC Batch**	**664356**	**QC Batch**	**664359**	**664362**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.45	1.0	8261272	1.0	8262727	0.97	0.94	0.050	8261272
Total Selenium (Se)	mg/kg	3.0	1.0	8261272	1.1	8262727	0.96	0.85	0.50	8261272
RDL = Reportable Detection Limit										

Maxxam ID		OO0477		OO0478	OO0479	OO0479	OO0480		
Sampling Date									
	UNITS	**664365**	**QC Batch**	**664368**	**664371**	**664371 Lab-Dup**	**664374**	**RDL**	**QC Batch**
Elements									
Total Cadmium (Cd)	mg/kg	1.0	8261272	1.0	N/A	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	0.88	8261272	1.1	N/A	N/A	N/A	0.50	8262727
Total Metals by ICPMS									
Total Cadmium (Cd)	mg/kg	N/A	N/A	N/A	1.12	1.06	0.946	0.050	8275898
Total Selenium (Se)	mg/kg	N/A	N/A	N/A	<0.50	<0.50	<0.50	0.50	8275898
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									
N/A = Not Applicable									

Maxxam ID		OO0481		OO0482		OO0483		OO0484	OO0485		
Sampling Date											
	UNITS	**664377**	**QC Batch**	**664380**	**QC Batch**	**664383**	**QC Batch**	**664386**	**664389**	**RDL**	**QC Batch**
Elements											
Total Cadmium (Cd)	mg/kg	0.69	8261272	0.51	8262727	0.37	8261272	0.50	0.52	0.050	8262727
Total Selenium (Se)	mg/kg	0.85	8261272	2.1	8262727	<0.50	8261272	1.0	0.64	0.50	8262727
RDL = Reportable Detection Limit											

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Maxxam Job #: B633166
Report Date: 2016/06/10

CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0486	OO0487		OO0488	OO0489		OO0490		
Sampling Date										
	UNITS	664392	664393	QC Batch	664394	664395	QC Batch	664396	RDL	QC Batch
Elements										
Total Cadmium (Cd)	mg/kg	N/A	N/A	8262727	0.39	N/A	8261272	0.44	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	N/A	8262727	3.3	N/A	8261272	3.3	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	0.398	0.498	8275898	N/A	0.484	8275898	N/A	0.050	8275898
Total Selenium (Se)	mg/kg	2.40	2.88	8275898	N/A	7.88	8275898	N/A	0.50	8275898

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0491	OO0492		OO0493	OO0494	OO0495		
Sampling Date									
	UNITS	664397	664398	QC Batch	664399	664400	664201	RDL	QC Batch
Total Metals by ICPMS									
Total Cadmium (Cd)	mg/kg	0.567	0.511	8275898	0.586	0.345	0.662	0.050	8276850
Total Selenium (Se)	mg/kg	1.15	<0.50	8275898	<0.50	<0.50	0.88	0.50	8276850

RDL = Reportable Detection Limit

Maxxam ID		OO0496		OO0497		OO0498	OO0499	OO0500		
Sampling Date										
	UNITS	664202	QC Batch	664203	QC Batch	664204	664205	664206	RDL	QC Batch
Elements										
Total Cadmium (Cd)	mg/kg	0.27	8261272	0.79	8262727	0.40	N/A	N/A	0.050	8261272
Total Selenium (Se)	mg/kg	2.3	8261272	3.6	8262727	3.5	N/A	N/A	0.50	8261272
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	N/A	N/A	N/A	N/A	0.542	0.453	0.050	8276850
Total Selenium (Se)	mg/kg	N/A	N/A	N/A	N/A	N/A	2.88	2.25	0.50	8276850

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B633166
Report Date: 2016/06/10

CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0501	OO0502	OO0503		OO0504	OO0505	OO0506		
Sampling Date										
	UNITS	**664207**	**664208**	**664209**	**QC Batch**	**664210**	**664211**	**664212**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	N/A	N/A	N/A	8261272	0.56	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	N/A	N/A	8261272	0.81	N/A	N/A	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	0.555	0.340	0.390	8276850	N/A	0.582	0.583	0.050	8276850
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	8276850	N/A	<0.50	<0.50	0.50	8276850

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0507	OO0508	OO0509	OO0510	OO0511	OO0512	OO0513		
Sampling Date										
	UNITS	**664213**	**664214**	**664238**	**664247**	**664246**	**664248**	**664239**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.66	N/A	N/A	N/A	0.80	0.87	N/A	0.050	8261272
Total Selenium (Se)	mg/kg	0.65	N/A	N/A	N/A	1.5	2.9	N/A	0.50	8261272
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	0.629	0.553	0.698	N/A	N/A	0.486	0.050	8276850
Total Selenium (Se)	mg/kg	N/A	<0.50	<0.50	0.95	N/A	N/A	<0.50	0.50	8276850

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B633166
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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0514		OO0515	OO0516		OO0517		OO0518		
Sampling Date											
	UNITS	**664240**	**QC Batch**	**664241**	**664242**	**QC Batch**	**664243**	**QC Batch**	**664244**	**RDL**	**QC Batch**
Elements											
Total Cadmium (Cd)	mg/kg	N/A	8261272	0.42	0.41	8262727	0.43	8261272	0.22	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	8261272	4.1	4.1	8262727	2.1	8261272	1.5	0.50	8262727
Total Metals by ICPMS											
Total Cadmium (Cd)	mg/kg	0.767	8276850	N/A	N/A	N/A	N/A	N/A	N/A	0.050	N/A
Total Selenium (Se)	mg/kg	<0.50	8276850	N/A	N/A	N/A	N/A	N/A	N/A	0.50	N/A

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0519	OO0534	OO0535	OO0536	OO0537	OO0538	OO0539		
Sampling Date										
	UNITS	**664245**	**664257**	**664258**	**664259**	**664263**	**664264**	**664271**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.25	N/A	N/A	N/A	N/A	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	2.3	N/A	N/A	N/A	N/A	N/A	N/A	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	2.90	0.804	1.71	1.95	0.798	0.641	0.050	8278014
Total Selenium (Se)	mg/kg	N/A	2.83	0.84	2.59	4.50	1.95	1.50	0.50	8278014

RDL = Reportable Detection Limit
N/A = Not Applicable

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CENTERMOUNT COAL LTD.
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0540	OO0541	OO0542	OO0543	OO0544		OO0545		
Sampling Date										
	UNITS	**664272**	**664224**	**664225**	**664226**	**664227**	**QC Batch**	**664228**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	0.80	N/A	N/A	N/A	N/A	8261272	3.0	0.050	8262727
Total Selenium (Se)	mg/kg	1.7	N/A	N/A	N/A	N/A	8261272	3.8	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	0.841	3.85	6.35	6.15	8278014	N/A	0.050	N/A
Total Selenium (Se)	mg/kg	N/A	<0.50	5.08	6.31	6.00	8278014	N/A	0.50	N/A

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		OO0545	OO0546	OO0547	OO0548	OO0549	OO0550	OO0551		
Sampling Date										
	UNITS	**664228 Lab-Dup**	**664229**	**664230**	**664231**	**664232**	**664233**	**664234**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/kg	3.0	N/A	N/A	N/A	0.14	N/A	N/A	0.050	8262727
Total Selenium (Se)	mg/kg	3.3	N/A	N/A	N/A	<0.50	N/A	N/A	0.50	8262727
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	N/A	5.15	4.13	5.07	N/A	2.24	2.47	0.050	8278014
Total Selenium (Se)	mg/kg	N/A	4.34	4.17	4.28	N/A	1.43	1.77	0.50	8278014

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		OO0552	OO0553	OO0554	OO2416		
Sampling Date							
	UNITS	**664235**	**664236**	**664237**	**16-BBDH1 DRILL CUTTINGS PETROGRAPHY**	**RDL**	**QC Batch**
Elements							
Total Cadmium (Cd)	mg/kg	N/A	N/A	N/A	0.48	0.050	8262727
Total Selenium (Se)	mg/kg	N/A	N/A	N/A	2.4	0.50	8262727
Total Metals by ICPMS							
Total Cadmium (Cd)	mg/kg	1.82	1.80	2.03	N/A	0.050	8278014
Total Selenium (Se)	mg/kg	1.50	2.56	1.51	N/A	0.50	8278014

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N/A = Not Applicable

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CENTERMOUNT COAL LTD.
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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B633166
Report Date: 2016/06/10

CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8261272	PC5	Matrix Spike	Total Cadmium (Cd)	2016/05/06		98	%	75 - 125
			Total Selenium (Se)	2016/05/06		97	%	75 - 125
8261272	PC5	Spiked Blank	Total Cadmium (Cd)	2016/05/06		98	%	75 - 125
			Total Selenium (Se)	2016/05/06		97	%	75 - 125
8261272	PC5	Method Blank	Total Cadmium (Cd)	2016/05/06	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/06	<0.50		mg/kg	
8261272	PC5	RPD	Total Cadmium (Cd)	2016/05/06	3.5		%	35
			Total Selenium (Se)	2016/05/06	NC		%	35
8262727	PC5	Matrix Spike [OO0545-01]	Total Cadmium (Cd)	2016/05/07		96	%	75 - 125
			Total Selenium (Se)	2016/05/07		99	%	75 - 125
8262727	PC5	Spiked Blank	Total Cadmium (Cd)	2016/05/07		92	%	75 - 125
			Total Selenium (Se)	2016/05/07		94	%	75 - 125
8262727	PC5	Method Blank	Total Cadmium (Cd)	2016/05/07	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/07	<0.50		mg/kg	
8262727	PC5	RPD [OO0545-01]	Total Cadmium (Cd)	2016/05/07	0.072		%	35
			Total Selenium (Se)	2016/05/07	14		%	35
8275898	DJ	Matrix Spike [OO0479-01]	Total Cadmium (Cd)	2016/05/24		89	%	75 - 125
			Total Selenium (Se)	2016/05/24		93	%	75 - 125
8275898	DJ	QC Standard	Total Cadmium (Cd)	2016/05/24		118	%	70 - 130
8275898	DJ	Spiked Blank	Total Cadmium (Cd)	2016/05/24		94	%	75 - 125
			Total Selenium (Se)	2016/05/24		96	%	75 - 125
8275898	DJ	Method Blank	Total Cadmium (Cd)	2016/05/24	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/24	<0.50		mg/kg	
8275898	DJ	RPD [OO0479-01]	Total Cadmium (Cd)	2016/05/24	5.1		%	30
			Total Selenium (Se)	2016/05/24	NC		%	30
8276850	DJ	Matrix Spike	Total Cadmium (Cd)	2016/05/24		99	%	75 - 125
			Total Selenium (Se)	2016/05/24		97	%	75 - 125
8276850	DJ	QC Standard	Total Cadmium (Cd)	2016/05/24		113	%	70 - 130
8276850	DJ	Spiked Blank	Total Cadmium (Cd)	2016/05/24		98	%	75 - 125
			Total Selenium (Se)	2016/05/24		99	%	75 - 125
8276850	DJ	Method Blank	Total Cadmium (Cd)	2016/05/24	<0.050		mg/kg	
			Total Selenium (Se)	2016/05/24	<0.50		mg/kg	
8276850	DJ	RPD	Total Cadmium (Cd)	2016/05/24	NC		%	30
			Total Selenium (Se)	2016/05/24	NC		%	30
8278014	DJ	Matrix Spike	Total Cadmium (Cd)	2016/05/25		97	%	75 - 125
			Total Selenium (Se)	2016/05/25		95	%	75 - 125
8278014	DJ	QC Standard	Total Cadmium (Cd)	2016/05/25		115	%	70 - 130
8278014	DJ	Spiked Blank	Total Cadmium (Cd)	2016/05/25		105	%	75 - 125
			Total Selenium (Se)	2016/05/25		108	%	75 - 125
8278014	DJ	Method Blank	Total Cadmium (Cd)	2016/05/25	<0.050		mg/kg	

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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2016/05/25	<0.50		mg/kg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B633166
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CENTERMOUNT COAL LTD.
Client Project #: BINGAY COAL
Site Location: ELKFORD, BC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Harry (Peng) Liang, Senior Analyst

Rob Reinert, B.Sc., Scientific Specialist

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2016 Bingay B Coal Property Drilling Hole Core Lithology Log

16-BBDH1

644175.1, 5561546.3. ELEVATION: 1396.1m. 90 degree.

Box No.	Depth (m)		Thickness	Lithology	Core Description	Apparent Dip of Bedding	Core Cut (m)		RQD (cm)													Note
	from	to					Recovery	Run	core sticks>=10 cm												%	
Box 1	0.00	1.00	1.00	till	cobbles, Ø:2-8cm, and gravl, Ø:1-4cm. Mixed with matrix.		0.80	1.00														
	1.00	3.90	2.90	till	three teeth in the core box, at 3.4m.		2.71	2.90														
Box 2	3.90	10.00	6.10		cobbles and gravl, grey, cobbles: Ø:2-8cm.		5.38	6.10														
	4.30	4.60	0.30	till	rich craver layer-all sand washed out/no clay.																	
					(water rich layer)																	
	4.60	7.00	2.40	till	clay and silt. 3"rock(minor). Box limited is 5.38m, drill is 7.0m																	
	7.00	10.00	3.00	till	clay rich till. 3"top size mixed lithology.																	
Box 3	10.00	12.80	2.80	till	same. Clay rich till cravel as above.		1.82	2.80														
					hard demarkation to grey silty zone at 12.80m.																	
					good. 90% recovery of silt zone, but some washed out.																	
					at 13m, block/ave to water in hole. (flushed out ??)																	
					loss of 2.5m of gravl rich till tag wood 13+16m -																	
					same type of till as seen above from 10.0-12.8m.																	
					from 10-13m, lost 1.18m of sample.																	
	12.80	16.00	3.20	till	from 13-16m, lost 2.5m of sample/at 16m, still clay rich zone.		0.70	3.20														
					:. water ponded from 12.8m or 13.0m-16.0m. (very unstable zone).																	
	16.00	19.20	3.20	till	plastic, dark grey, sandy, silty layer.		3.20	3.20														
					SNC LAVALIN took sample from 16.25-16.45m for testing.																	
					most of sample was about of 50% slump factor shakes like jells and romning bonded.																	
Box 4	19.20	22.00	2.80	till	soft wet Very fine grained(VFG) sand (grey). Keeps it's form. But slumps over 50% in box slot/ edges of pieces are still rel atively sharp (not soupy)		1.40	2.80														
	22.00	23.50	1.50	till	firm grey silt layer begins.		0.57	1.50														
					SNC LAVALIN took sample from 22.00-22.26m for testing.																	
					Same material down to 25.8m with some layers up to 0.3m thick of lenses of higher water content. This changes the plastic native of the clay/silt material. But centrally no slump in box slot. Proper term for material should be silty clay. Lost 0.93m of sample from 22-23.5m of drilling.																	
	23.50	25.80	2.30	till	same as above. Soft wet VFG sand, grey.		2.30	2.30														
Box 5	25.80	29.50	3.70																			
	25.80	26.50	0.70	till	full recovery of sample.		0.35	0.70														
					very firm sicty clay less sandy thin material above - uniform womoceneous silty clay - no boading/layers/ varves/ in clusions. No slumping in box slot. Firm to toved. But some hidded zones of higher water content from 26.5m to be unknown depth. Probaby for 0.35m as we.																	
	26.50	28.00	1.50	till	lost that much core between 26.5 to 28.0m. Core rooms wet for 0.1m between 26.5 and 26.6m. And then again from 27.8 to 28.0m. Probably 2 zones of higher plasticity.			1.50														

	28.00	29.50	1.50	till	firm grey silty clay. Same as above. But more firm, no setting in core box slot. Full recovery to end of box.		1.50	1.50													
Box 6	29.50	32.50	3.00	till	same as above. Not setting on core box. Full recovery, 100%.		3.00	3.00													
Box 7	32.50	35.50	3.00	till	same as above. At top, soft, wet, full recovery 100%.		3.00	3.00													
Box 8	35.50	38.35	2.85																		
	35.50	37.00	1.50	till	same as above. full recovery 100%.		1.50	1.50													
	37.00	38.35	1.35	till	same as above. At base, soft, wet, full recovery 100%.		1.35	1.35													
Box 9	38.35	43.34	4.99																		
	38.35	40.00	1.65	till	same as above. At 38.35-39.40m, soft, wet, full recovery 100%.		1.65	1.65													
	40.00	43.34	3.34	bedrock	Bedrock.		1.53	3.34													
					40.02-40.15m, 0.13m sandstone; 42.53-42.62m, 0.09m siltstone. 40.15-40.50m, 0.35m gravl and till, Ø:1-6cm. From 42.62m to end, dark grey clay and silt, minor till.																	
					recovery: 1.53m, lost: 1.81m.																
Box 10	43.34	48.21	4.87																		
	43.34	46.00	2.66	siltstone	siltstone. Dark grey, mixed with gravel and silt, probably colluvium, broken, rolled. Recovery: 1.56m, lost: 1.10m.		1.56	2.66													
	46.00	48.21	2.21	siltstone	siltstone. Drak grey. As above. Occasional FGSS, core broken and more gravel, 0.10-3.0cm. Recovery: 1.80m, lost: 0.41m.		1.80	2.21													
Box 11	48.21	52.51	4.30																		
	48.21	49.00	0.79	siltstone	same as above. At base, 48.63-48.87m, 0.24m FGSS, very hard. Knife cann't cut, maybe quartz sand? Recovery 100%.		0.78	0.79													
	49.00	50.50	1.50	siltstone	soft wet clay and silt. Dark grey, minor with small sand. At base, 0.40m FGSS. Recovery: 0.66m, lost: 0.84m.		0.66	1.50													
	50.50	52.51	2.01	siltstone	siltstone, dark gery, broken and rolled. Mixed with gravel and till. At 52.00m, 0.18m uncemented conglomerates. Recovery: 1.78m, lost: 0.23m.		1.78	2.01													
Box 12	52.51	55.86	3.35	siltstone																	
	52.51	55.00	2.49	siltstone	siltstone, dark grey. As above. Mixed with gravel and till. At upper part, soft wet VFG sand and clay, broken.		2.49	2.49													
	55.00	55.86	0.86	siltstone	same as above.		0.86	0.86													
Box 13	55.86	60.56	4.70																		
	55.86	58.00	2.14	mudstone	from 55.86-57.03m, black mudstone, mixed with soft wet VFGSS. In the middle, some gravel (breccia). Core intact. From 57.03-58.00m, broken, mixed with MS/FGSS. Dip: 40 degree. With gravel from 2.0-6.0 cm. lost core. Recovery: 1.67m, lost: 0.17m.	40	1.67	2.14													
	58.00	60.56	2.56		interbedded with siltstone and FGSS, Broken, with wet clay and silt. Fault zone? Recovery: 1.78m, lost: 0.78m.		1.78	2.56													
Box 14	60.56	64.00	3.44																		
	60.56	61.00	0.44	siltstone	siltstone, dark gerey. Mixed with gravel and silt. Broken. Surface stick mud materials.		0.44	0.44													
	61.00	61.68	0.68		soft wet clay and till, minor gravel and sand.			0.68													
	61.68	62.85	1.17	sandstone	silty FGSS, Grey. Developed fracture, broken.			1.17													
	62.85	64.00	1.15	siltstone	siltstone, grey, broken. With VFG sand. At 63.50-63.60m, 0.10m surface yellow material-selenium? Recovery: 2.88m, lost: 0.12m.		2.88	1.15													
box 15	64.00	68.17	4.17	siltstone				4.17													
	64.00	67.00	3.00	siltstone	soft wet VFG sand, grey. At top, 0.10m gravel. At 64.56-64.69m, 0.13m FGSS. At base, keep it's form but slump over 50% in box slot. Recovery: 2.20m, lost: 0.80m.		2.20	3.00													

	67.00	68.17	1.17	siltstone	same as above. Soft wet VFG sand, grey.		1.17	1.17														
Box 16	68.17	72.22	4.05	siltstone																		
	68.17	70.00	1.83	siltstone	same as above. Recovery: 1.30m, lost: 0.53m.		1.30	1.83														
	70.00	72.22	2.22	siltstone	soft, wet VFG sand, grey. At bottom, keep it's form but slump over 40% in box slot. Recovery: 2.13m, lost: 0.08m.		2.13	2.22														
Box 17	72.22	77.02	4.80	siltstone	same as above. At 73.60-73.68m, 0.08m FGSS. AT UPPER PART, SLUMP OVER 50% IN BOX SLOT.																	
	72.22	73.00	0.78	siltstone	recovery: 100%.		0.78	0.78														
	73.00	76.00	3.00	siltstone	recovery: 1.48m, lost: 1.52m.		1.48	3.00														
	76.00	77.02	1.02	siltstone	recovery: 100%.		1.02	1.02														
Box 18	77.02	80.76	3.74	siltstone																		
	77.02	79.00	1.98	siltstone	same as above. Recovery: 100%.		1.98	1.98														
	79.00	80.76	1.76	mudstone	mudstone, black, very broken with slickensides. Debris, fault zone. Polished, nodules.		1.76	1.76														
Box 19	80.76	84.25	3.49																			
	80.76	82.00	1.24	mudstone	same as above.		1.24	1.24														
	82.00	84.25	2.25	mudstone	same as above. But relatively comple. Partly fault gauge. At 84.00m, dip: 60 degree. Polished and slickensides. Recovery: 2.00m, lost: 0.25m.	60	2.00	2.25	0.20	0.12	0.20										23%	
Box 20	84.25	87.67	3.42																			
	84.25	85.00	0.75	mudstone	mudstone, black. Massive.		0.75	0.75	0.16	0.11	0.32										79%	
	85.00	87.67	2.67	mudstone	Mudstone, black. Massive, broken. At base, 0.75m very broken, mylonization, polished and slickensides. Fault zone? Carbonaceous partly.		2.67	2.67	0.30	0.18	0.10	0.13									27%	
Box 21	87.67	91.49	3.82					3.82														
	87.67	88.00	0.33	mudstone	mudstone, black. Massive. RQD=0.10/0.33=30%.		0.33	0.33	0.10												30%	
	88.00	91.00	3.00	mudstone	Mudstone, black, massive. At 88.30-89.45m, broken with polished and slickensides. Partly like flour, and with calcite veins.		2.47	3.00	0.10	0.10	0.28										16%	
					RECOVERY: 2.47m, lost: 0.53m.																	
	91.00	91.49	0.49	mudstone	same as above. Intact. RQD=100%.		0.49	0.49	0.24	0.25											100%	
Box 22	91.49	92.50	1.01	mudstone	same as above. Broken with polished and slickensides. At base. 0.65m mylonization. Carbonaceous. Dip: 75-80 degree.	75-80	1.01														0%	
					Total Depth: 92.50m. March 15, 2016																	

16-BBDH2

644024.2, 5560884.9; Elevation: 1394.5m. 90 degree.

Box No.	Depth (m)		Thickness	Lithology	Core Description	Apparent Dip of Bedding	Core Cut (m)		RQD (cm)													Note
	from	to					Recovery	Run	core sticks>=10 cm												%	
box 1	0.00	7.65	7.65	till	till. Broken, probably colluvium.																	
	0.00	1.00	1.00	till	gravel and cobbles, grey. Max: Ø0.08m.		0.36	1.00														
	1.00	4.00	3.00	till	at top, 0.75m grey-brown, soft, wet fine-grained sand. At base, 0.30m cobbles and gravel, Max. 0.08m. More core lost.		1.06	3.00														
	4.00	7.00	3.00	till	at top, 0.40m soft, wet, fine-grained sand, brown; at 4.40-5.00m, soft, wet clay or silt. At base, gravel and cobbles, mixed with clay and silt, broken. More core lost.		1.23	3.00														
	7.00	7.65	0.65	till	mixed with siltstone and gravel, clay or silt, broken.																	
box 2	7.65	13.84	6.19	till	till, broken.																	
	7.65	10.00	2.35	till	cobbles and gravel, grey, with clay or silt. More core lost.		1.17	2.35														
	10.00	11.50	1.50	till	empty.																	
	11.50	13.00	1.50	till	only cobbles and gravel. Washed out. Ø: 0.02-0.05m, grey. More core lost.		1.40	1.50														
	13.00	13.84	0.84	till	same as above.																	
box 3	13.84	21.00	7.16	till																		
	13.84	16.00	2.16	till	same as above. Ø: 0.02-0.06m, grey. More core lost.		2.16	2.16														
	16.00	16.50	0.50	till	same as above. Partly siltstone (minor).																	
	16.50	18.00	1.50	till	same as above.		0.70	1.50														
	18.00	21.00	3.00	till	mixed with gravel and clay or silt. At base, 0.30m siltstone. More core lost.		1.00	3.00														
box 4	21.00	30.00	9.00	till																		
	21.00	24.00	3.00	till	mixed with fine-grained sandstone and siltstone, with gravel and clay. Core more lost.		1.17	3.00														
	24.00	27.00	3.00	till	same as above. More core lost.		1.27	3.00														
	27.00	30.00	3.00	till	at top, 27.00-27.60m, gravel and silt mainly. At base, 0.45m mudstone, black, broken. More core lost.		1.00	3.00														
Bedrock					**bedrock at 29.55m.**																	
box 5	30.00	34.37	4.37																			
	30.00	33.00	3.00	mudstone	from 30.00-31.64m, soft, wet clay or silt, with minor gravel and sand; at 31.64-31.76m, 0.12m black mudstone, massive. At base, mixed with black mudstone and fine-grained sand.		2.06	3.00														
	33.00	34.37	1.37	mudstone	mudstone. Black, massive. At top, 0.10m fine-grained sandstone.			1.37	0.16	0.13	0.13	0.14	0.15	0.11							60%	
box 6	34.37	37.80	3.43					3.43														
	34.37	36.00	1.63	mudstone	mudstone. Black, thicky bedded, massive. With minor fine-grained sandstone. Slightly broken. Recovery: 1.54m, lost: 0.09m.		1.54	1.63	0.19	0.17	0.13	0.12									37%	
	36.00	37.80	1.80	mudstone	same as above.		1.80	1.80	0.25	0.18	0.15	0.14	0.12								70%	
box 7	37.80	40.90	3.10					3.10														
	37.80	39.00	1.20	mudstone	mudstone. Black, massive, thicky bedded. Fracture developed, very broken into small pieces by slickensides.		1.20	1.20													0%	
	39.00	40.90	1.90	mudstone	same as above. At 39.48-39.75m, with slickensides and polished; at 40.20-40.40m, very broken into small pieces by slickensieds and polished.		1.90	1.90	0.14	0.13	0.21										25%	
box 8	40.90	44.00	3.10					3.10														

	40.90	42.00	1.10	mudstone	same as above. Locally with fine-grained sandstone laminated and debris. At top, 0.47m btoken.		1.10	1.10	0.63												57%	
	42.00	43.50	1.50	mudstone	mudstone. Black, massive, thicky bedded. With minor fine-grained sandstone laminated. Slightly broken. Dip: 70 degree.	70	1.50	1.50	0.15	0.13	0.16										29%	
	43.50	44.00	0.50	mudstone	same as above.		0.50	0.50	0.20	0.30											100%	
box 9	44.00	47.28	3.28					3.28														
	44.00	45.00	1.00	mudstone	mudstone. Black,massive, thicky bedded. At 44.17-44.45m, very broken with slickensides and polished.			1.00	0.30	0.16											46%	
	45.00	47.28	2.28	mudstone	same as above. Relatively complete. At base, nodule. At 45.44m, 0.01m fine-grained sandstone laminated. Locally lenses.			2.28	0.44	0.42	0.44	0.19	0.31	0.13							85%	
box 10	47.28	50.00	2.72					2.72														
	47.28	48.00	0.72	mudstone	mudstone. Black, massive, thicky bedded. At 47.28-47.58m, locally nodule; at 47.58m to end, infilled fine-grained sandstone laminated and lenses, ripple.			0.72	0.10	0.40											69%	
	48.00	50.00	2.00	mudstone	same as above. At 48.65-49.10m, broken. Locally lenses. Ripple.			2.00	0.14	0.13	0.26	0.11	0.19	0.14	0.48						73%	

End of Hole: 50.00m. March 15,2016

16-BBDH2A

644016.8, 5560888.9; Elevation: 1395.0m. 270°/50°.

Box No.	Depth (m)		Thickness	Lithology	Core Description	Apparent Dip of Bedding	Core Cut (m)		RQD (cm)														Note
	from	to					Recovery	Run	core sticks>=10 cm													%	
box 1	0.00	7.62	7.62	till	overburden. Till.				0.10														
	0.00	1.00	1.00		iced wet clay and till, with gravel. Drak grey. Recovery: 0.38m.		0.38																
	1.00	4.00	3.00		cobble and gravel, mixed with minor dark grey siltstone (0.07m). Recovery: 1.01m, lost: 1.99m.		1.01																
	4.00	7.00	3.00		interbedded with dark grey siltstone and grey fine-grained sandstone. Broken. Mixed with clay and silt, minor gravle. Recovery: 1.50m,lost:1.50m.		1.50																
	7.00	7.62	0.62		soft, wet clay mainly, yellow. Mixed with gravel, Ø: 0.02-0.06m.		0.62																
box 2	7.62	13.47	5.85	till																			
	7.62	10.00	2.38		siltstone. Grey, broken. Mixed with clay and silt, minor gravel. Recovery: 0.76m, lost: 1.62m.		0.76																
	10.00	11.50	1.50		same as above. Recovery: 1.45m, lost: 0.05m.		1.45																
	11.50	13.00	1.50		same as above. More core lost. Recovery: 0.84m, lost: 0.66m.		0.84																
	13.00	13.47	0.47		mixed with dark grey siltstone and wet clay or silt. Broken.		0.47																
box 3	13.47	18.00	4.53	till																			
	13.47	16.00	2.53		soft, wet clay and very fine-grained sand, brown. At base, 0.07m dark grey siltstone. More core lost. Recovery: 0.57m, lost: 1.96m.		0.57																
	16.00	18.00	2.00		siltstone. Grey, broken. Drilling cutting deformed. Mixed with lithology, wet gravel/clay/silt. Ø: 0.02-0.08m.		2.00																
box 4	18.00	25.00	7.00	till																			
	18.00	21.00	3.00		cobble and gravel, grey. Recovery: 0.82m.		0.82																
					in the gravel fracture size range from 15/16" to 6" in round diameter. All gravelare clear with no clay cenmently, only about 2% of clasts have any clay. Still attached to them. Other may have washed clean during drilling or were not heavily coated and bond only with sand. most clasts more than Ø: 1 3/4"show. they were cut multiple times by core bit. they rolled during drill drop and jammed bit constantly. all appear to be washed moraine gravels with assorted petrography. standard glacial till material but loosely boulder.																	
	21.00	24.00	3.00		same as above. Recovery: 0.95m.		0.95																
	24.00	25.00	1.00		similar description as above. But seems to be a finer fracture or layer. Probably in a braided stream zone During deglaciation +/or Elk river flooding. From 24 to 24.2m, the gravel is firm, Ø: 1/4 to 1/2", with some clasts, mixed into probably Ø: 3" clasts.		1.00																
					from 24.5-24.8m, there was a strong sand layer. Recovered generally coarse sand to fine gravel, Ø: 1/16 to 1/4" size clasts with no stone. Similar to cut section seen in the drops excavation, next to drill hole. Angled braided seams of cross bedded coarse gravelly sand. mixed lithology. but we rounded particles indicating good transport. no road find sand or clay in the layer so fast moving current. from 24.8-25.00m, back to corase clasts uo to on estimated 4" diameter to sands.																	

End of Hole: 25.00m. March 16, 2016.

16-BBDH3

644082.3, 5560316.4; Elevation: 1403.2m. 90 degree.

Box No.	Depth (m)		Thickness	Lithology	Core Description	Apparent Dip of Bedding	Core Cut (m)		RQD (cm)													Note
	from	to					Recovery	Run	core sticks>=10 cm												%	
box 1	0.00	1.00	1.00	till	0-0.30m, surface organics plus roots. Orange/ reddish. Mixed with fine clay and very fine-grained (VFG) sand. 1/4" clast.		0.46															
					from 0.30-0.46m, start of mixed gravel from fine clay/silt binder (very wet) to +6" clast. Cut by drill bit. In first meter of drilling recovery only 0.46m of core.																	
	1.00	4.00	3.00	till	start boulder clay layer. About 50% clasts rancing from +8"(estimates) to coarse sand. Some clast were cut by tricore drill bit, and rolled in the barrel once clber atm from band matrix. From 1.0-1.4m, matrix browne moist and slumped =50% in the box slot. probably from seasonal rain fall/percipitrtion as it is right binsw the organics. at 1.6-1.7m, tiny psckets of core shards are encased in the matrix clay, appears to have +1" clast that simply disintegrated in the matrix once clbcrated by the drill. 3m of drilling with only 1.87m recovery. lost 1.13m in section appears to be from 1.7- to 2.2m zone find in box. that 0.5m zone is mostly rould broken layers clasts from coarse sand to +6" cobbles. there is only about 10% of the clay matrix left in that section. it appears that most of tag 1.13m loss. would be in that zone. sellecting that tag "rocky" section was originaly about 0.50+1.13=1.63m thick. some of tag loss could have also come from tag upper 0.30m of tag 1.0-4.0m zone. but tag write feels that it should be placed on section into tag 1.7-2.2m zone.		1.87															
					at tag 2.2m mark in the box right to tag 4.0m block. The full charctor of tag clay rich stony till is seen well compacted and contacts all normal grain size fractions. If we stand with the end of that recovered core section being at 4.0m in depth then from tag base of tag core section up to what would be 3.85m to 4.00m. there are additional small shards of coal mixed in the till, more random and spotty then noted above. but deserves mention in the log.															
	4.00	5.15	1.15	till	another section of till similar to tag upper till zone (1.4-4.0m). Similar lithology, but 4.0-4.4m is much more clay rich and presents as a sprey clay with max. clast size Ø: 1/8". From 4.4m, tag till becomes much more rocky with small (4") pockets of clay presenting in the core. end of core in slot muchwater.		1.15															
					took selenium sample from 1.00-5.15m in the box.																	
box 2	5.15	12.70	7.55	till	from 5.15-10.00m, this is only 0.70m in box. Section seems firm and hard with 100% recovery. This monns tag loss has to be from tag wet zone at tag base of box 1. 0-5.15m is tag end of that run, which manys. 10.0-5.15=4.85m loss of core. Probably next a sandy layer which flushed from core barrel.		3.40															

					entire length of box 2 appears similar. Mixed lithology, clasts from fine grey clay tag up to what appear to be Ø: +7" cobbles. Clasts and cobbles are subrounded which selects limited transport by water. Therefore this represents tag top of tag basal boulder clay fracture. all core of till is dry with almost no firm penetration flushed out. appears as a firm stabilized fill. which Ø: +6" pieces of core are wiggled in the slot. the thin connction clays appear plastic with VMY little water coming out of the matrix. this tag would probably dry very hard when exposed and from hard till benches. these types of benches are seen cross the full valley floor.																	
					at 10.75m, there seem to be a small (0.03m) zone of wetness where the till matrix has liovifind-probably had to a ROD-VP/ROD full sequence- did not absorb and chemistry. from the drill but want to a plastic state when allowed to cut wet in hole. rest of core is firm and hard right to 12.70m.																
					selenium sample 664211 taken from entire length of box.																
box 3	12.70	16.00	3.30	till	exactly the same as the firm the distribution above. Nothing remarkable. Recovery: 100%.		3.30														
					selenium sample 664212 taken from entire length of box.																
box 4	16.00	21.20	5.20	till	started in a thick coarse gravel cobble sequence (no sands or clay).		2.75														
					1.17m + 0.70m in first 2 slot of box, recovery 1.87m. 19-16=3.0m of drilling. 3-1.87=1.13m of loss.																
					gravel band is from 16-17.27m, followed by 0.60m of sand till. Does not appear to be a lossing the till, so the 1.13m must be in the gravels, Ø: >1/2" clasts. In section the till should start at 18.4m. Attribute loss to gravel band. At 19.0m, more the till is very wet. appear that is sandy layer may have washed out here. was difficult drilling. after 19.0m block, next mark in slots of box 5 is 21.20m. this shows that 0.88m of core was lost to wash out of sands. from 19.88-21.20m, in section the till is firm/hard with 100% recovery. much less stoney than upper basal till, only corase sand in the till matrix only a few clasts observed in till.																
					selenium sample No.664213 taken from entire length of box.																
box 5	21.20	24.60	3.40	till	full box of dry hard grey till.		3.40														
					from 21.2-22.0m, block till is like above. Sandy till with flow small clasts. From 22.0-24.6m, till. Becomes increasingly stone rich, big cobbles cut by drill of up to Ø: >8". But still mostly return all the of the upper till sequences. 100% recovery. No water zones or wet zones, until you get to around 24.4m. till becomes a bit, more broken as % of clasts + cobbles exceed the % of matrix.																
					selenium sample No.664214 taken from entire length of box.																
box 6	24.60	26.00	1.40	till	from 24.6-24.85m, solid spny till as above. 100% recovery for 0.25m. After that point down to E.O.H. (26.0m), only loose cobble and gravel with full mixture of sandstone and mudstone, but No Fernie Formation.		1.40														
					hole stopped as drill would on another add location.																
					hole did not drop to bedrock. No selenium sample.																

E.O.H: 26.00m. March 16,2016

16-BMD02

644640.4, 5561741.9, Elevation: 1384.8m. TD=150.40m. 300°/80°. Packer Response Test Hole.

Box No.	Depth (m)		Thickness	Lithology	Core Description	Apparent Dip of Bedding	Core Cut (m)		RQD (cm)													Note
	from	to					Recovery	Run	core sticks>=10 cm												%	
box 1	0.00	7.30	7.30	till	till			7.30														
	0.00	4.00	4.00		mixed with cobbles and gravels and silt. Probably colluvium. Ø: 0.01-0.05m, max.: 0.11m. Lost: 3.30m.		1.70															
	4.00	7.30	3.30		same as above. Lost: 1.65m.		1.75															
box 2	7.30	28.12	20.82	till				20.82														
	7.30	10.00	2.70		mainly cobbles, minor gravel and silt. Ø: 0.03-0.06m, max.0.16m. Lost: 0.95m.		1.75															
	10.00	28.12	18.12		gravel and silt mainly. At base, 0.12m quartz sand, missing lots of core. Lost: 16.50m. Water level?		1.62															
					16.00-25.00m, 9.00m washed away, only one piece per 3 meter.																	
box 3	28.12	31.80	3.68	till	mixed with gravels and silt/clay. Core intact. With three fine-grained sandstone, more than 0.08m. Ø: 0.01-0.05m.			3.68														
box 4	31.80	46.00	14.20	till				14.20														
	31.80	34.00	2.20		same as above. Core intact. Rolled. At base, 0.20m cobbles. Lost: 0.95m.		1.25															
	34.00	37.00	3.00		cobbles and gravels, dark grey. Lost: 2.30m		0.70															
	37.00	40.00	3.00		mainly gravels, grey, subrounded. Lost: 2.50m. CASING AT 37.50M.		0.50															
	40.00	43.00	3.00		same as above. Lost: 2.45m.		0.55															
	43.00	46.00	3.00		mixed with cobble and gravel, subrounded. Lost: 2.65m.		0.35															
box 5	46.00	49.16	3.16	mudstone				3.16	0.12	0.10	0.15	0.10	0.19	0.16							30%	
					bedrock at 46.00m. Fernie Formation? Mudstone (shale)																	
					mudstone, black. at top, 0.65m friable and broken, slickensides; at 47.25-47.85m, friable and broken, slickensides, calcite veins. LOST: 0.10m.	10																
box 6	49.16	52.22	3.06	mudstone	fernie shale. (mudstone)		3.06	3.06														
					same as above. Minor lenses, 0.01-0.03m, and occasional calcite veins, at 52.00m, disturbed calcite vein. Slickensides and polished.																	
box 7	52.22	55.20	2.98	mudstone	**same as above. At 54.00m, vertical fracture.** **Packer Response Test: at 54.00-57.30m.**		2.98	2.98	0.15	0.10	0.16	0.12	0.28								27%	
box 8	55.20	58.10	2.90	mudstone	same as above. From 57.0-58.0m, vertical fracture developed. Broken. Mixed with gravel and silt, or clay. Caused by second time casing. Because first time casing unsteady).		2.90	2.90	0.47	0.10	0.37	0.29	0.17								48%	
box 9	58.10	61.00	2.90	mudstone	same as above. At 58.60-58.80m, with slickensides and vertical slip.	5 to 10	2.90	2.90	0.18	0.18	0.18	0.14	0.15	0.14	0.19						40%	
box 10	61.00	64.20	3.20	mudstone			3.00	3.20	0.23												8%	
					from 61.30m into fault zone probably																	
				mudstone	mudstone. Black. Very broken into small pieces, ground, with slickensides and polished to end.																	
box 11	64.20	67.38	3.18	mudstone	mudstone. Black. Vertical slip and slickensides + polished. Lost: 0.10m.		3.08	3.18	0.11												4%	
					fault zone continue to 67.20m probably.																	
box 12	67.38	70.48	3.10	mudstone	mudstone. Black, core intact. Thicky bedded, massive. At 70.00m, dip: 55 degree.	55	3.10	3.10	0.56	0.31	0.10	0.20	0.18	0.10	0.22	0.48					69%	
box 13	70.48	73.75	3.27	mudstone	same as above. At 71.60-72.40m, with fine-grained sandstone laminated, bedded plane: 55 degree. At 72.70-73.30m, 0.10m vertical slip.	55	3.27	3.27	0.35	0.14	0.24	0.28	0.10	0.36							45%	
			0.00																			
box 14	73.75	77.00	3.25	mudstone	same as above. From 73.75-74.35m, vertical slip; from 75.15-76.00m, broken and crushed, with slickensides.	55	3.25	3.25	0.25	0.10	0.23	0.44	0.13								35%	

box 15	77.00	80.13	3.13	mudstone	fernie shale. (mudstone)		3.13	3.13	0.11	0.23	0.16	0.18	0.10	0.42	0.14	0.28					52%	
					mudstone. Black, Thicky bedded, massive.	10																
box 16	80.13	83.15	3.02	mudstone	same as above. Minor nodular, irregular rounded, light grey.		3.02	3.02	0.10	0.27	0.14	0.12	0.12	0.38	0.10	0.18	0.13				51%	
box 17	83.15	86.20	3.05	mudstone			3.05	3.05	0.17	0.43	0.21										27%	
	83.15	83.46	0.31		broken, slickensides, minor calcite veins.																	
	83.46	84.22	0.76		mudstone. Black.																	
	84.22	85.85	1.63		fracture zone. Dip increased to 60 degree. Abrupt. Fragment. With slickensides and polished, infilled fault gauge and minor calcite veins. Minor nodular, light grey.																	
	85.85	86.20	0.35		mudstone. Black.																	
box 18	86.20	89.15	2.95	mudstone	except for at 86.68-87.50m, core intact. Other very broken with slickensides and polished. Minor irregular calcite veins and nodular.		2.95	2.95	0.45	0.11	0.15										24%	
box 19	89.15	92.30	3.15	mudstone	same as above. Broken, slickensides and polished at 90.55-91.20m.	45	3.15	3.15	0.24	0.18	0.13	0.10	0.10	0.14							28%	
					selenium sample No. 644242																	
box 20	92.30	96.60	4.30																			
	92.30	94.00	1.70	mudstone	mudstone. Black, massive, thicky bedded. Broken with slickensides and polished at base.		1.70	1.70	0.24	0.21											26%	
	94.00	96.60	2.60		broken. Fragmentpieces about 0.04m. Lost: 1.00m.		1.60	2.60													0%	
box 21	96.60	99.70	3.10	mudstone																		
	96.60	98.65	2.05		same as above. Very broken into small pieces with slickensides and polished. Fragment, nodules.		2.05	2.05													0%	
	98.65	99.70	1.05		same as above.			97-100	0.10	0.23	0.11	0.16									20%	
box 22	99.70	102.92	3.22	mudstone	mudstone. Black, thicky bedded. Core relatively complete.			100-103	0.12	0.36	0.11	0.18	0.18	0.21	0.29	0.22	0.33	0.14	0.16		77%	
box 23	102.92	106.12	3.20	mudstone	same as above. At 104.05m, 0.03m fine-grained light grey sandstone.			103-106	0.12	0.11	0.11	0.32	0.11	0.21	0.14	0.15	0.20	0.15	0.34	0.10	69%	
box 24	106.12	109.45	3.33	mudstone	same as above. From 106.30-107.10m, broken with slickensides and polished.			106-109	0.12	0.10	0.13	0.10	0.38	0.24	0.15	0.15					46%	
box 25	109.45	112.57	3.12	mudstone	mudstone. Black, thicky bedded. At 109.60-110.60m, and 111.15-112.00m, broken into small pieces with slickensides and polished. At 111.00m, pyrite nodule.	40		109-112	0.30	0.10	0.15	0.11	0.23	0.10							33%	
box 26	112.57	115.64	3.07	mudstone	mudstone. At 112.57-113.00m and 114.75-115.35m, broken into small pieces with slickensides and polished, fault gauge; at 115.00-115.30m, irregular calcite veins; at 113.57m, pyrite nodule.			112-115	0.10	0.15	0.17	0.17	0.21	0.12	0.10	0.10					37%	
box 27	115.64	119.08	3.44	mudstone	as above. At 116.45-116.65m, 0.20m broken, vertical slip, slickensides and polished. At base, 118.96-119.13m, broken into small pieces.	40		115-118	0.11	0.15	0.12	0.22	0.11	0.11	0.10	0.11	0.17	0.10	0.48		59%	
box 28	119.08	122.10	3.02	mudstone	same as above.			118-121	0.40	0.44	0.11	0.16	0.38	0.24	0.40	0.24					79%	
box 29	122.10	125.36	3.26	mudstone	same as above. Silty. From 124.75m to end, minor light grey fine-grained sandstone laminated.	15		121-124	0.16	0.23	0.27	0.17	0.21	0.35	0.20	0.13	0.60	0.10			81%	
					selenium sample No. 664244																	
box 30	125.36	128.55	3.19	mudstone				124-127	0.33	0.13	0.10	0.16	0.12	0.16	0.54	0.32	0.25				70%	
	125.36	126.70	1.34		silty mudstone. At 125.55m, 0.02m light grey fine-grained sandstone laminated; at 126.10m, pyrite nodule.																	
	126.70	128.70	2.00		**fault zone 2.00m probably.**																	
box 31	128.55	131.58	3.03	mudstone		35		127-130	0.11	0.74	0.33										39%	
	128.70	131.58	2.88		same as above.			130-133	0.29	0.12	0.35	0.28	0.29								44%	
box 32	131.58	134.90	3.32	mudstone	same as above. But core relatively complete.	20		133-136	0.49	0.34	0.14	0.25	0.34	0.11	0.10	0.25	0.13				72%	
box 33	134.90	138.17	3.27	mudstone	same as above. Minor iron nodules, brown.	20		136-139	0.40	0.10	0.32	0.11	0.13	0.10	0.13	0.12	0.46				62%	
box 34	138.17	141.55	3.38	mudstone				139-142	0.13												4%	
	138.17	139.00	0.83		mudstone. Black. Broken up, with slickensides and polished. Sheared.																	
	139.00	141.55	2.55		mudstone. Highly broken into small pieces with slickensides and polished. Fragment at 139.00-139.50m, 139.80-140.10m and 141.00-141.55m. Minor calcite veins infilled, and vertical slip. Lost: 0.21m.	65	2.34															
box 35	141.55	145.00	3.45	mudstone				142-145	0.10	0.12	0.14	0.12	0.12	0.13	0.14						29%	

	141.55	142.00	0.45		same as above. Broken up.																	
	142.00	145.00	3.00		as above. Silty, slightly broken. from 142.20-142.85m, 0.65m light grey fine-grained sandstone, with irregular calcite veins. At base, pyrite nodule. Lost: 0.28m.	20	2.72															
box 36	145.00	148.38	3.38	mudstone																		
	145.00	148.38	3.38		broken up. Fragment. With slickensides and polished. At base, 0.50m intact, see one calcite vein and one fine-grained sandstone laminated (0.02m).			145-148	0.11	0.26											12%	
box 37	148.38	150.40	2.02	mudstone	same as above. Minor calcite veins. At base, 0.20m badly broken.	30		2.02	0.21	0.15	0.21	0.25									41%	

E.O.H: 150.40m. April 2, 2016

2016 Bingay B Drilling Hole Core Box Photos:

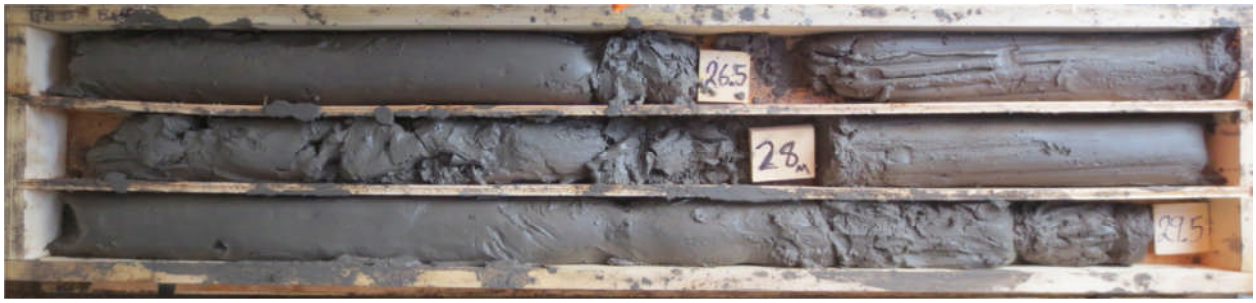
16-BBDH1 Core Box Photos:

Box 1

Box 2

Box 3

Box 4

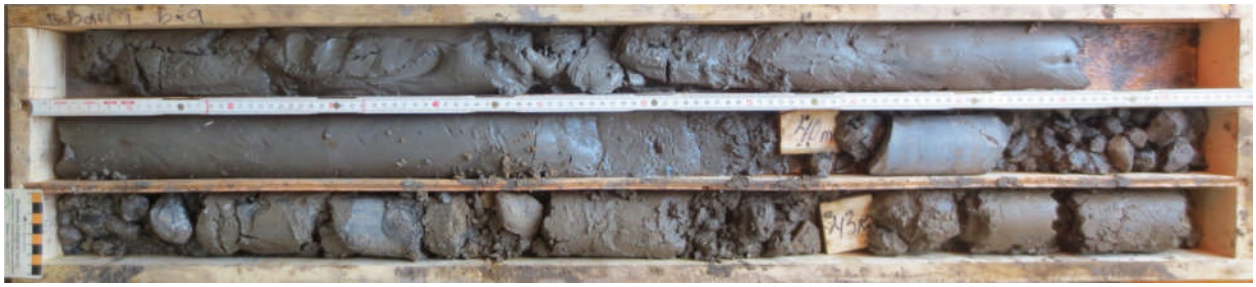


Box 5

Box 6

Box 7

Box 8



Box 9

Box 10

Box 11

Box 12

Box 13

Box 14

Box 15

Box 16

Box 17

Box 18

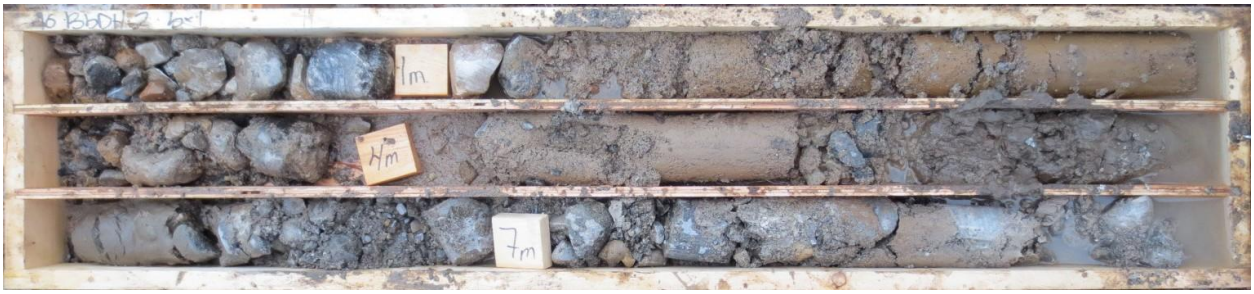
Box 19

Box 20

Box 21

Box 22 (TD=92.50m)

16-BBDH2 Core Box Photos:



Box 1

Box 2

Box 3

Box 4

Box 5

Box 6

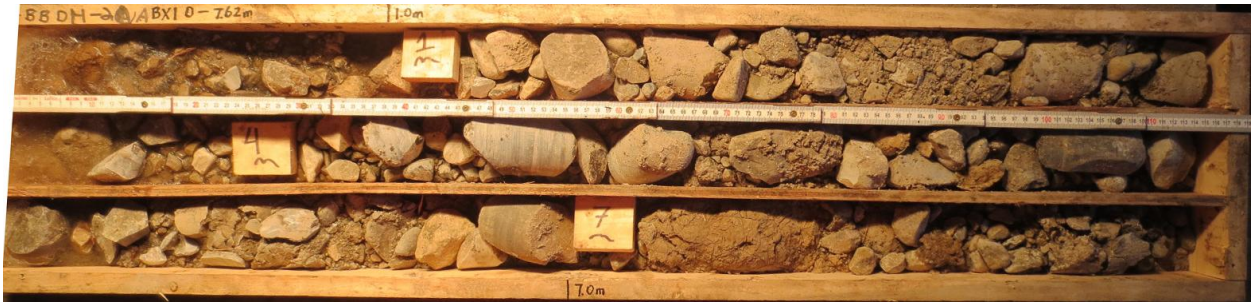
Box 7

Box 8

Box 9

Box 10 (TD=50m)

16-BBDH2A Core Box Photos:



Box 1

Box 2

Box 3

Box 4 (TD=25m)

16-BBDH3 Core Box Photos:

Box 1

Box 2

Box 3

Box 4

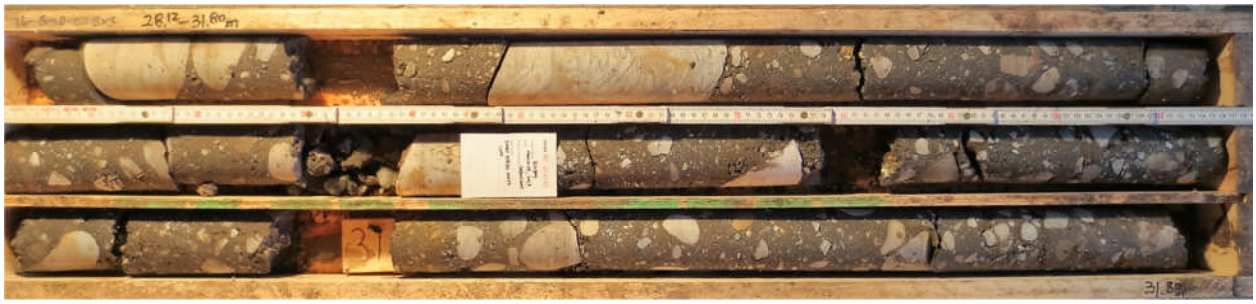
Box 5

Box 6 (TD=26m)

16-BMD02 CORE BOX PHOTOS:

Box 1

Box 2



Box 3

Box 4

Box 5

Box 6

Box 7

Box 8

Box 9

Box 10

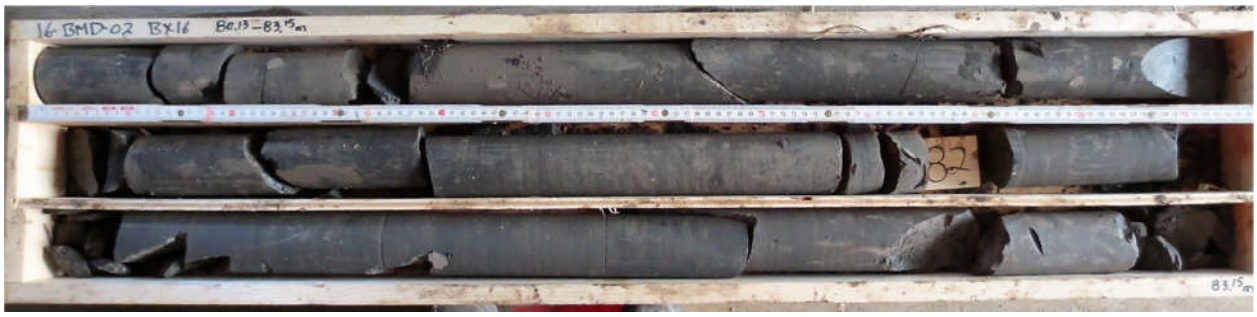
Box 11

Box 12

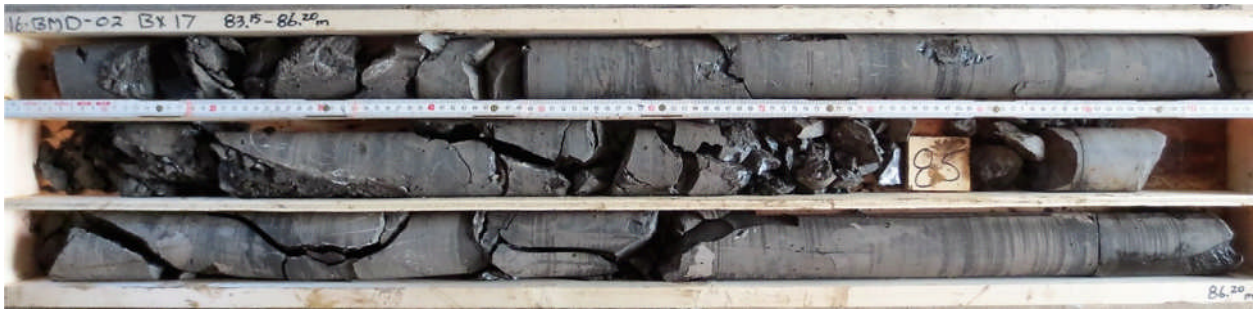
Box 13

Box 14

Box 15



Box 16



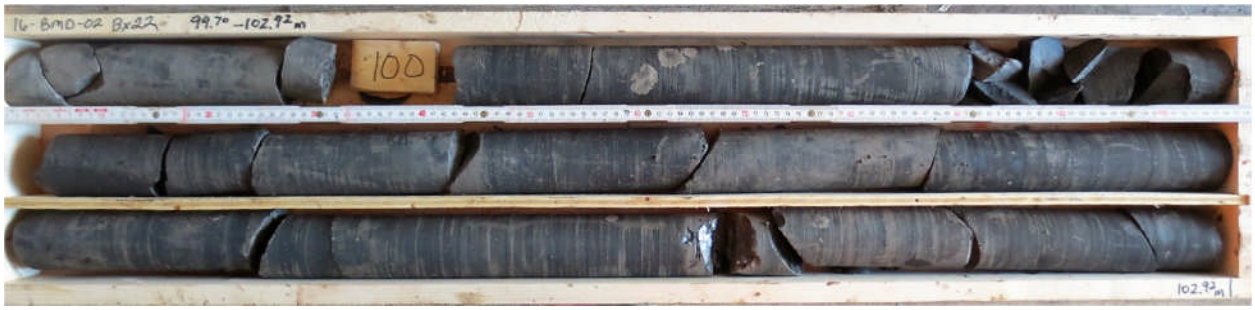
Box 17

Box 18

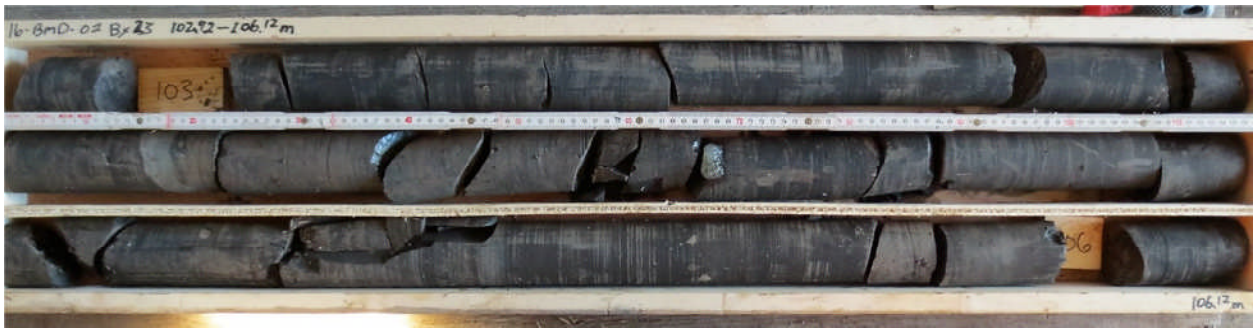
Box 19

Box 20

Box 21



Box 22

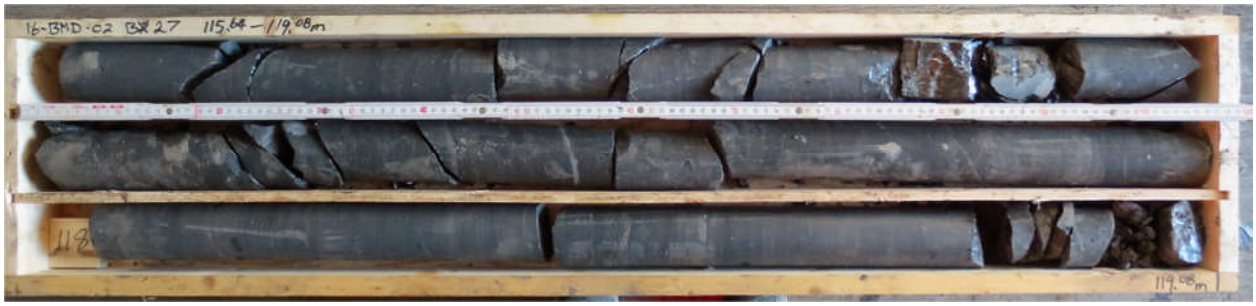


Box 23

Box 24

Box 25

Box 26



Box 27

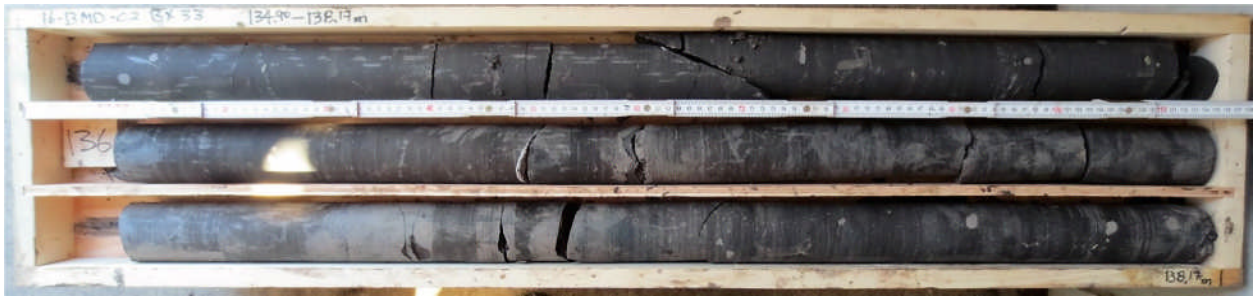
Box 28

Box 29

Box 30

Box 31

Box 32



Box 33

Box 34

Box 35

Box 36

Box 37 (TD=150.4m)

Bingay B Drilling and Trenching Report

March 2016

On March 8, 2016 the writer attended to the Centerpoint / Centermount Bingay coal property suite located some 21 km north of the village of Elkford, BC. The main purpose of the program was to act as a consultant during the diamond drill hole and trench activities on the Bingay B lease. However, additional duties included spotting drill holes and opening drill pads across the Bingay area.

The work was being supervised by Ted Nunn, P. Eng. and the drilling operations camp was located on Bingay Main at the site of the earlier (2010-13) campaigns. Bingay B was designated as a prospective mine dump zone so the drilling and trench work was designed to be begin the geotechnical assessment of that area.

The other parts of the drilling program had different processes and an assortment of drill types and methods were employed. The reporting on those activities will be done by others. The drilling was being ably conducted by Dorado Drilling under the direction of the owner, Matt Falkins. The weather conditions were quite wide ranging and the road conditions were problematic at best. Additional grading of the main Elk River FSR was required on March 23 just to make access possible due to the deep ruts and dangerous ice ridges.

The camp was well cared for by Dorado and Centerpoint management was on site each day. Part of the work in the early days (March 8) was to continue to set up the camp and services. Wide ranges in temperature and snow conditions caused many problems with drilling water lines freezing up during the entire program. Many hours of the Dorado crew's time were spent just keeping the lines and roads open. This time was a required aspect of the drill program and could not be helped.

At the end of the 4-hole program all the drill pad sites were reclaimed and cleaned to government standards. It should be noted that no coal was encountered in any of the holes.

The first drill hole to be done on Bingay B was identified as 16-BBDH1. All the location data was obtained using the writer's Garmin Oregon 550, set at NAD 83 -GRS 80 using UTM.

Hole 16-BBDH1 was collared at an elevation of 1407 m in the middle of the north/south road, east of the Elk FSR and leading to the south shore of Bingay Creek. The vertical drill hole was placed about 10 m south of the intersection of the N/S- E/W "Y" in the road system. The coordinates were noted as;

11 U 0644170 N
5561549 E

The hole has its sump dug on the east side of the road next to the hole. All the sumps in this program were competed with an excavator using safe and clean methods. The excavated material from the sump was stockpiled next to the hole and eventually pushed back into the sumps upon completion of the drilling.

Percolation testing was done by the writer using photographic records and time delays at each hole in the program. All of the holes in Bingay B provided excellent drainage results. There was a bit of ponded water in hole one due to the heavy glacial till content at surface but drain water still drained into the sump easily.

After the drill program was completed the core examined it was decided that the designation of "till" (while a valid term in the global textural sense) should be changed to glaciofluvial cover. The entire base of the Elk River has been re-worked many times during the deglaciation stages. While some outliers of solid alpine till are found in the valley a lot of the cover is better described as an imbricated to slightly imbricated glaciofluvial cover.

The process of deglaciation is very complex and leads to a variety of changes locally in surface presentation. However, the area covered by Bingay B is much more loose in compaction at depth. Deep zones of bedded and cross bedded layers were encountered in the drilling program.

This suggests that most of the area will present hydrologically as a glaciofluvial complex with intermittent harder till zone blocks and well consolidated bank edges from old kame terrace and scour zones.

The excavator bucket was used to compact the till stockpiled from the 2 m deep sump. When the flat part of the bucket was depressed against the loose till there was about a one -foot drop at the surface but the basal two feet below the top compressed layer did not move. It was also jumped on by Ted Nunn with no compression. These simple field tests indicate that the clayey till in that area will hold roughly 6 tonnes per square foot in service life. To develop a more complete compression analysis would require a full geotechnical program with specialized equipment.

The surface sump pit was monitored over a 24-hour period. Initially it was observed to have a percolation rate of roughly 0.5 inches per minute but once the area was saturated it held relatively steady and dropped to a rate of around 0.25 inches per minute.

Drilling was begun at 14:00 hrs. on March 9 but was stopped due to motor problems on the drill. This was later fixed by 18:00 hrs. and drilling continued on a 24- hour basis.

Hole 16-BBDH1 reached a total depth of 92.5 m at 19:30 hrs. on March 12, and produced 22 boxes of drill core and collected regolith from the surface cover. Bedrock was hit at 40m into the hole and varied glacial till cover layers were intersected. This is a very firm till cover above the bedrock and appears competent for mine dump purposes. Additional engineering testing should be done to confirm those visual observations. There was a slight odor of sulphur noted coming from hole 16-BBDH1. This is probably due to the fact that it was essentially found to have been driven into an existing near vertical shear zone in the bedrock.

A careful study of the drill log will provide a reader with a good sense of the till banding and silt/water zones. Some zones such as the 13-16 m zone carried a great deal of water and appeared very unstable. However, when confined between the till layers this zone may remain as a firm but wet zone.

The 16 m steel grey sticky rock flour/ silt zone presented only a slight grit between the teeth. However, it was very “sticky” and remained like soft taffy with each hit needed to get it out of the core barrel. Each hit moved only ½” to 1” of clay out of the barrel, but it still remained cohesive.

From 22-23.5 m we only recovered about 18” of material with a full drill hydraulic push and no water or rotation. From 23.5-25 m the conditions changed totally and a full recovery was obtained. Each of the holes drilled in the entire Bingay program required

a high level of skill from all the drill crews. Each drill platform visited during the program was well manned and maintained by very capable and experienced drillers.

Recovery changed by the restriction in use of drill water but there are many variations at depth in the surface till cover. From 33-34 m it felt like the stem was hitting boulders but in fact it was only “water grab” friction in the clays. Rock from the fault was not reached until 15:00 hrs. on March 10. Fault gouged black mudstone was recovered at the 40 m mark and from time to time down the hole. Slickensides and mylonization effects were noted in the recovered core right down to the 92.5 m TD.

By March 10, at 18:15 hrs. the drill was only down in till at the 49 m mark. What was of note was the array of different (non-local) sandstone and conglomerate pieces noted in the core. This is also consistent with the glaciofluvial nature of the strata.

As the drilling deepened it became evident that the hole was driven right into a vertical fault zone containing a significant amount of rotated and gouged blocks. Additional drilling at other locations or angled drilling from this pad will be required to better determine the true bedrock conditions.

Past regional mapping by the writer suggests that the fault is running essentially N/S and is sub-parallel to the main Elk River shear fault line. Looking north from the drill collar location, there is a distinct and sharp drop in elevation of about 5 m to the north. The drop crosses the road perpendicularly and runs or considerable distances to the east and west.

This drop in contour is thought to be a relic meander scar cut into the surficial tills along the valley bottom. They would have been cut during de-glaciation times and subsequent changes in the Elk River thalweg over time. The drop/ scar does not appear to be fault controlled.

The RQD calculations obtained from the core logging are a full range of values. Recovery ranged generally from 25% to 100% in this hole which was expected Once the faulted materials were noted in the core boxes.

During the Bingay B program, the writer was deeply involved in the scouting out and determining final locations for many of the holes across the entire Bingay suite. This involved pioneering in roads in deep snow and locating old drill pads from past campaigns. These efforts and the partial logging of some of that core for security control and selenium sampling control consumed much of the writer’s time during the field camp program. However, the holes off of Bingay B were not germane to the project scope so those duties were done as extra efforts for the company. All of the work, including the core logging, hole siting, reclamation and road pioneering in Bingay B, was done under the direction and control of Ted Nunn. Only the work done on Bingay B is commented upon in this report.

By 09:30 hrs. March 11, 2016 The writer walked out three drill holes and decided they are the best sites for the rock mechanics study on other parts of the Bingay property. The original plots were good in theory but problematic in real time.

The new spots plotted were:

16-BDM 6- 1415 m

644332. 5562793

16-BDM 7- 1399 m

644330 5562984

16-BDM 8- 1380 m

644337. 5563144

Once they plowed out the snow out and prepared the site the actual hole locations changed by a metre or two (N/S) and (E/W). The actual collar locations were located by GPS at the time of drilling.

At 13:00 hrs. March 12, 2016, the vertical drill hole 16-BBDH2 was started. The collar location was:

11 U 0644015 N
5560887

At an elevation of 1387 m

A percolation test at the bbdh2 sump during set up was done at 11:15 hrs. on March 11. We tried to flood the clean dry hole with 15 imp. Gallons per minute of clean water. After 20 min there was still only about 12" of water in it. We shut off the water and after only 15 min it was bone dry. The observed rate of percolation was noted as 1.25 inches/minute. This qualifies as good percolation.

By 22:00 hrs. on March 12 the drill was still in sand and gravel. This glaciofluvial stratum proved to be very difficult drilling with lots of stuck rod situations due to very loose gravel and sand. Drill water was constantly being lost at depth.

At 17:20 hrs. on March 13 a switch was made to use bentonite to try and control the water loss. By 30 m a switch was also made to a smaller core (NQ) to just try and reach bedrock. Bedrock was hit at 33.5 m. The hole was terminated at 50.0 m with 10 core boxes recovered. The black massive and badly fractured mudstones returned RQD values from 25% to 100%. It appeared significant faulting acting was also present under the sandy/gravel/till surficial cover. Original thoughts were that the mudstone was Fernie Formation but the writer is still not convinced. At the top of the bedrock encountered it looked like coarse grey/ pink sandstone attached to a metre of black mud stone. This is not the Fernie Contact lithology.

The writer began to pioneer the road to the third drill pad for 16-BBDH3 at 17:30 hrs. on March 13. It was located off the Branch A road running east/ SE off of the Elk FSR. (Intersection of Branch A and the FSR 11U 0643596 5560221)

It was also noted that once the bentonite was used in hole 16-BBDH2 the water began to pond. Drill water from 00:10 hrs on March 12 held its position as a constant when observed again at 14:00 hrs. on March 13. Obviously water was till passing the bentonite barrier constantly into the sand and gravel layers, but some perching of the micro water table occurred wit the bentonite.

The decision was made to try and cross over the suspected fault under 16-BBDH2 by moving the dip of the drill to 50 degrees West at the same collar location. The hole was drilled to 25 m and recovered 25m of gravel into 4 core boxes.

Both 16-BBDH2 and 16-BBDH2A were located on very sandy gravel strata in close proximity to major depressions called the DROPS. These three clusters of deep (+20 m deep in places) “craters” were hoped to be old collapsed coal mine traces but appear to be deep surface fault expressions of ancient sinkholes in the bedrock. Some of the “craters” could have been formed by weathering out of expanded fractures in the rock and/or by vertical water percolation during and after the alpine glaciation events. Other such drops/craters will probably be encountered across the valley floor but may be filled and sealed with till like materials.

East drops line (west side of depressions) .elev. 1392
644050
5560938

West drops line (West side of depressions). elev. 1395
644004
5560935

They run essentially N/S and E/W depending on how you plot their axis. In any eve, they were thought to be too deep and geo-technically unstable to try and dig them out. There was a great ear that there may be caverns below and could therefore pose a problem for a heavy equipment operator.

With at least 50 m of sand and gravel capping the bed rock at this location, the overall ground was felt to be generally stable but another look at those DROPS will have to be made prior to the ground being used as a dump.

On March 15, the 16-BBDH3, vertical drill hole started. Its collar location was;

11U 0666083 N
5560316 E

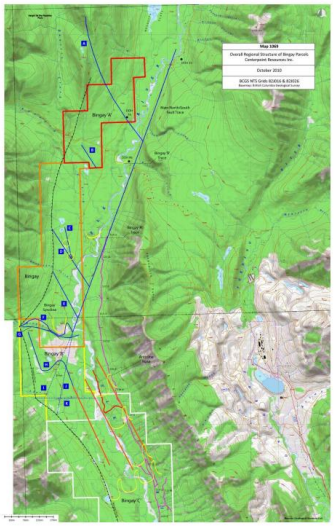
At an elevation of 1404 m

By Wednesday March 16 the hole had only advanced to 16 m on sandy/gravelly till. A sump pit had been dug to roughly 2m depth and remained dry until midday on March 16. The initial percolation rate was observed to be in the order of 0.5 inches per minute. The combination of fresh snow, freezing temperatures, bentonite and an ice sheet over the sump hole, caused the water to rise to the top once the general ground condition had become saturated.

The hole was stopped at 26 m still in gravelly boulder till as the drill was needed to begin at another location. Six core boxes were used in the collection of the vertical till sample. Additional deep drilling and further trenching is recommended at both the 16-BBDH@ and 16-BBDH3 locations.

All core is stored at the Bingay main camp site steel storage containers.

Bingay B drillhole plan view.pdf



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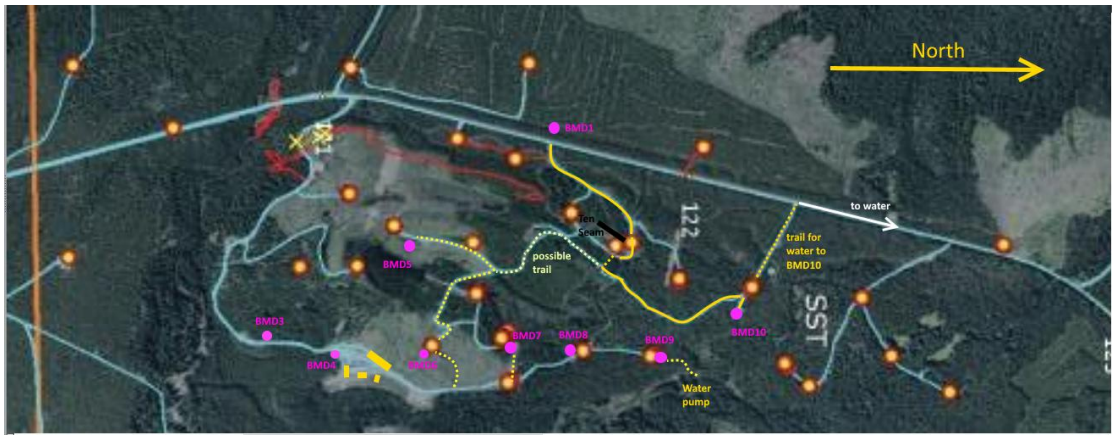


Additional drilling outside the scope of this writer's involvement was done on Bingay B. One of the holes was north of 16-BBDH1 and to the east at the end of the E/W trail. The location of hole 16- BMD 02 (on road) is:

11U 0644636 E

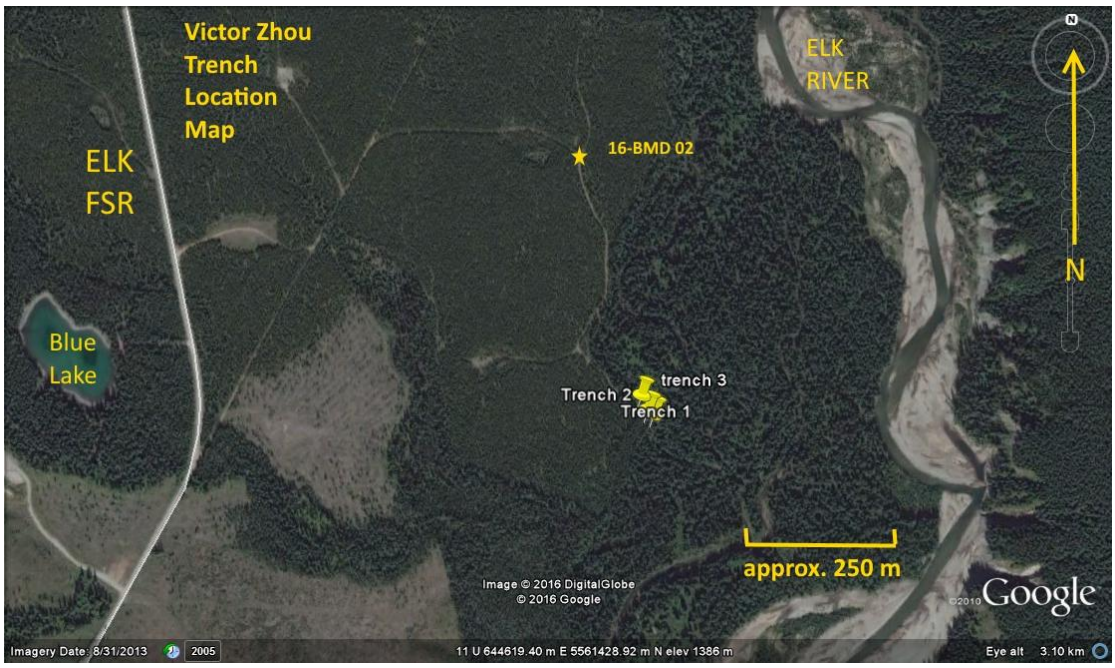
5561736 N

Dip is 80 degrees
300 AZ

It is located right in the fork in the road. The sump was to be on the road cut going North. Collar is located on the SE edge of the road right below the fork.

Water was to be supplied from the same location used for the 3 BB holes.
Along the N/S road that runs along the west side of Elk River, bedrock outcrops were observed in the road bed in the 2010 campaign.

Once the drilling of the 16-BMD 02 hole was completed, a short program to trench for rock outcrops was done along the road by the company geologist Victor Zhou. The following table and photographs show the road encountered just under the thin till cover along the road cut. The following image shows the location of the three trench along the roadway.



Victor Zhou Trench Location map

2016 Bingay B Trench Record

Trench No.	Coordinate	Lithology	Bedding Plane (see Photos) Strike/Dip
Trench 1	644795E, 5561273N, Elevation: 1388m.	Siltstone, dark grey, massive.	340/50. Photo 1-TR.1
Trench 2	644783E, 5561283N, Elevation: 1383m.	Siltstone, dark grey, massive.	340/45. Photo 2-TR. 2
Trench 3	644768E, 5561306N, Elevation: 1388m.	Siltstone, dark grey, massive.	355/40. Photo 3-TR 3

Photo 1: 2016 Trench 1

Photo 2: 2016 Trench 2

Photo 3: 2016 Trench 3

The writer was not on site for the trenching and has not seen the exposed trench locations in person. The location information and photographs were provided by Centerpoint staff. All drill pads were reclaimed and any trails cut into the previously logged areas were re-covered using proper forest recovery practices.

Any further data on the rest of the drill holes and their results will be reported upon by others. The core logs were scanned and are attached as an appendix to this report.

Richard Munroe, FGAC, P.Geo.
August 22, 2016

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