BC Geological Survey
Coal Assessment Report
1051

COAL ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Assessment Report - Flatbed Coal Project - 2017 Exploration Program

TOTAL COST: $1,407,102

AUTHOR(S): John H. Perry, P.Geo.
SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): CX-9-061 / August 14, 2014

YEAR OF WORK: 2017

PROPERTY NAME: Flatbed

COAL LICENSE(S) AND/OR LEASES ON WHICH PHYSICAL WORK WAS DONE:
418548, 418549 and 418550

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: not known

MINING DIVISION: Liard
NTS / BCGS: 93-I/15
LATITUDE: 54° 53' 59.86" N
LONGITUDE: 120° 47' 16.20" W
UTM Zone: NAD83/Zone10 EASTING: 641,849 NORTHING: 6,085,900

OWNER(S): Colonial Coal International Corp.
MAILING ADDRESS: 200-595 Howe St., Vancouver, BC, V6C 2T5

OPERATOR(S) [who paid for the work]: Colonial Coal Corp. (a subsidiary of Colonial Coal International Corp.)
MAILING ADDRESS: 200-595 Howe St., Vancouver, BC, V6C 2T5

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)
Coal, coaly zone, claystone, carbonaceous, shale, siltstone, sandstone, conglomerate, Cretaceous, Bullhead Group, Fort St John Group, Gething Formation, Gates Formation, Hulcross Formation, Boulder Creek Formation, Shaftesbury Formation, Dunvegan Formation, Paskapau Formation, Flatbed fault, Murray Syncline, Waterfall Creek Anticline, Waterfall Creek Syncline.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
Assessment reports filed by other companies on nearby properties include: (Report Number) 500, 602, 605, 897 and 910

SUMMARY OF TYPES OF WORK IN THIS REPORT		EXTENT OF WORK (in metric units)	ON WHICH TENURES
GEOLOGICAL (scale, area)			
	Ground, mapping	1: 2,500	418548, 418549
	Photo interpretation		
GEOPHYSICAL (line-kilometres)			
	Ground (Specify types)		
	Airborne		
	(Specify types)		
	Borehole:		
	Gamma	1,556.04 m	418548, 418549
	Density, Resistivity, Neutron	863.10 m	418548
	Caliper	1,556.04 m	418548, 418549
	Deviation	1,555.94 m	418548, 418549
	Dipmeter	692.94 m	418548, 418549
	Sonic	863.10 m	418548
	Core	2,831.84 m - HQ Core	
	Non-core		
SAMPLING AND ANALYSES			
Total # of Samples			
	Proximate (Ply Samples)	93	418548, 418549
	Ultimate	13	
	Petrographic	13	
	Vitrinite reflectance		
	Coking		
	Wash tests	14 - Total 9 - Seam Wash (HQ Core) 2 - Coaly Zone Wash (HQ core) 1 - J Upper Wash (HQ core) 2 - Alternative mining sections for Seam F Wash	
PROSPECTING (scale/area)		na	
PREPARATORY/PHYSICAL		na	
Line/grid (km)			
Trench (number, metres)			
Bulk sample(s)			

Colonial Coal Corp.

TSX-V: CAD

COLONIAL COAL CORP.

ASSESSMENT REPORT

GORDON CREEK PROJECT

(FLATBED COAL PROPERTY)

2017 EXPLORATION PROGRAM

British Columbia

Coal Licenses:
418547, 418548, 418549, 418550, 418551, 418552, 418553 and 418913

Owner: Colonial Coal International Corp.

Operator: Colonial Coal Corp.

Author: John H. Perry, P.Geo.

Effective Date: June 2018

March 29, 2019

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1 INTRODUCTION AND PROPERTY DESCRIPTION

1.1 Introduction

This report documents the coal exploration activities carried out by Colonial Coal Corp. (Colonial), during 2017, on its Gordon Creek Project (Flatbed Coal Property), located within the Peace River Regional District of northeastern British Columbia (BC). Field activities commenced in mid-July 2017 and were completed by mid-October 2017. Associated coal quality analyses, attrition, sizing and washability, together with database compilation, geological modelling and resource estimation extended to the end of 2017. This work culminated in the preparation and issuance of a National Instrument (NI) 43-101 and Form 43-101F1 (CSA, 2011) compliant report entitled "Technical Report – Flatbed Coal Project Gordon Creek Area" (Norwest, 2018). The Norwest report has been used either in whole or in part, or as otherwise modified (to include certain coal quality data obtained after issuance of that report), for the purpose of preparing this assessment report and forms Appendix I of this report; it may also be independently accessed on-line using the SEDAR website.

The Flatbed property is situated within the eastern foothills (Inner Foothills Belt) of the Rocky Mountains of northeastern BC, within an area that has been shown to contain thick coal seams with the potential to yield low to medium volatile coking coals.

During the months of July through October, 2017 Colonial conducted a program of geological mapping, drilling and sampling, together with associated surveying. A total of 2,831.84 metres (m) of drilling were completed which encompassed five helicopter-accessible diamond drill (core) holes on four widely-spaced drill sites. All 2017 drilling focused on the northwestern portion of the property in an area referred to as the Gordon Creek Project (or deposit).

1.2 Location

The Flatbed property is located in northeastern BC, within the Peace River Regional District, approximately 645 kilometres (km) north-northeast of Vancouver. The property lies within the Liard Mining Division and is located on National Topographic System (NTS) Map Sheet 93-I/15. It is situated approximately 27km south-southeast of the town of Tumbler Ridge and is centred on UTM NAD83 Zone 10 coordinates 641,270m E and 6,087,398m N. The general location of the property is shown in Figure 1.1.

The property is located within the Peace River Coalfield, in an area well known for producing metallurgical grade coal, ranging from hard coking coal (HCC) to coal for pulverized coal injection (PCI), from a number of surface mining operations. The currently idled Trend coal mine, owned by Peace River Coal Inc. (PRC), a subsidiary of Anglo American PLC, and the

Babcock Mountain deposit, that hosts the proposed Window Pit, owned by Teck Resources Ltd. (Teck), adjoin the Flatbed property to the southwest and west, respectively. The regional setting of the property, with respect to population centres, roads, rail lines, coal mines and other major coal deposits is shown in Figure 1.2. A localized project location map illustrating the location of the property in relation to the neighbouring Trend Mine and Teck's proposed Window Pit is presented in Figure 1.3.

1.3 Accessibility

The Flatbed property can be accessed by a network of provincial paved highways and un-paved, all-weather roads plus other trails built by forestry, oil and gas (O&G) and coal mining companies. The main access to all portions of the property from Tumbler Ridge is via Highway 52 (Heritage Highway) which is a paved secondary road.

Approximately 20km south-southeast of Tumbler Ridge, Highway 52 intersects the Core Lodge Road, an all-weather road originally constructed to access O&G wells on and around the southeastern and western flanks of Babcock Mountain. Until the relatively recent completion of PRC's dedicated mine haulage road (the Trend Bypass Road), the Core Lodge Road provided the main access route to the Trend coal mine; the mine entrance is located approximately 14km southwest of the Core Lodge Road's intersection with Highway 52. A second all-weather O&G access road extends from the mine gate to a shut-in well located atop Quintette Mountain, 7.2km to the southeast. The northern portion of this road has been incorporated into the Trend mine's internal access infrastructure. Some 6km from the mine gate, the Quintette Mountain road passes within 70m of the southwestern corner of the Gordon Creek deposit (see Figure 1.3). The Work Permit (Permit Number CX-9-061) that covered the 2017 exploration allowed for the construction of an access trail into the property from this location.

Four kilometres southeast of the entrance to the Core Lodge Road, another all-weather road extends westwards from the highway, to access two O&G wells located along the northern edge of the Gordon Creek deposit. This road, referred to as Petroleum Development Road (PDR) 527, trends west for approximately 1.8km before turning south-southwest for 6.3km to terminate at the well sites as shown in Figure 1.3.

Approximately 8km southeast of the entrance to PDR 527, Highway 52 intersects the Flatbed property and continues southeast through the eastern coal licences. Throughout this area, the highway intersects numerous forestry and O&G roads (in different states of repair), many of which extend westwards, deeper into the property.

Along with the main access routes there are numerous historic seismic lines, cleared of timber (but largely re-grown with shrubs, bushes and deciduous saplings), that run into and across the

property. Many of these seismic lines offer potential for partial use during the construction of future access trails.

1.4 Climate

The climate is typical of northeastern BC; that is, short, warm summers and long, cold winters interspersed with periods of very cold temperatures, in the range of -15 to -30 degrees Celsius (°C). The cold spells usually happen between January and March but may occur from late October, onwards. Frost can occur throughout the year and the frost-free period averages less than 60 days per year. At Tumbler Ridge, the average temperatures for July and January are +20.8°C and -5°C, respectively. The town averages 334mm of rain and 1.85m of snow per year although significantly more precipitation can be expected in and around the higher areas where the property is located. The prevailing wind direction is from the southwest; extended periods of high winds of more than 20km/h can occur at any time, but are common from October onwards. Throughout the foothills belt, coal exploration programs are typically conducted between June and October, although winter programs can be carried out where there is road access.

1.5 Local Resources and Infrastructure

The centre of the property is situated approximately 168km northeast of the city of Prince George and 131km west-southwest of the city of Grande Prairie, Alberta; the smaller cities of Fort St. John and Dawson Creek are located approximately 150km to the north and 101km to the north-northeast, respectively. Each of these cities is serviced by regularly scheduled flights from major western Canadian cities such as Vancouver, Edmonton and Calgary. The location of the property with respect to main population centres is shown in Figure 1.1.

The Flatbed property is situated in a region within which large-scale coal mining has been carried out over much of the past 35 years. The locations of various elements of mine and rail infrastructure built in support of surrounding coal mines and advanced coal mine development projects are shown in Figure 1.2. A rail line (operated by CN Rail) is located approximately 7km northwest of the Flatbed property where it terminates at the now-closed Quintette mine coal load-out facility. The wash plant for PRC's currently idled Trend mine is located 4km west-southwest of the southern boundary of the Gordon Creek deposit, while their rail loadout facility is located 9km north-northwest of the property. The PRC plant and rail loadout sites are linked by the western portion of the Core Lodge Road (that passes close to the western boundary of the Flatbed property) which connects to the Trend Bypass Road.

The operating Perry Creek surface mine, wash plant and rail loadout, owned by Conuma Coal Resources Ltd. and the decline for the Murray River underground coal mine development

(operated by HD Mining International Ltd. (HD Mining)) are both located northwest of the Flatbed property, by 25km and 10km respectively. The approximate locations of the Perry Creek (Wolverine) operation and the Murray River project are shown in Figure 1.2.

The Tumbler Ridge rail spur joins the CN Rail main line just north of Prince George and provides direct access to the coal export facility at Ridley Island, Prince Rupert, over a total distance of approximately 1,000km as indicated in Figure 1.1. The Tumbler Ridge Airport is located 7km north-northwest of the property as shown in Figure 1.3.

There have been no improvements made to the property.

The Flatbed property covers an area sufficient to host potential processing plant sites, tailings storage, waste disposal areas, settling ponds, and loadout facilities, subject to the acquisition of appropriate surface rights. However, the selection of sites would be subject to appropriate engineering and environmental studies and it is possible that some sites might be located outside, or extend beyond, the current property boundaries. The project is well located with respect to sources of mining personnel, power and water to support possible future mining.

1.6 Physiography

The property lies within the foothills (Inner Foothills Belt) of the Rocky Mountains, east of the Hart Ranges. The topography comprises a belt of gently sloping to steep-sided hills transected by a series of mature, easterly- to northeasterly-flowing rivers and major creeks that form the primary drainage system. The major rivers closest to the property are the Murray and Wolverine Rivers, which lie approximately 9km and 25km to the northwest, respectively, and the Wapiti River which is located approximately 18km to the southeast. In contrast to the regional pattern, several drainages flow against this regional trend. For example, south of the property, Kinuseo Creek flows west, then northwest while north of the property, Flatbed Creek flows northwesterly; both empty into the Murray River.

Five northerly-flowing creeks cut through the property; namely, Babcock Creek which, together with its tributary Gordon Creek, drains the northwestern portion of the property. The upper reaches of Flatbed Creek and its tributaries, Calamagrostis and Hambler Creeks, drain the central, southern and eastern parts of the property (see Figure 1.3). Approximately 8km northeast from where Babcock Creek leaves the property, it empties into the northwesterly flowing portion of Flatbed Creek.

The topography of the property varies from rolling hills in the north, east, and south, to more steeply-sided hills with moderately-sloping uplands in the west. Elevations range between 960m to 1460m above sea level. The highest elevations occur in the southern parts of the Gordon

Creek deposit and western portion of the overall Flatbed property. The lowest elevations are found around Flatbed Creek in the eastern portion of the property.

Vegetation in the area is predominantly boreal to sub-alpine coniferous forest. Tree line in this region varies between 1,550m and 1,600m; above these elevations the alpine vegetation consists of stunted and/or dwarf varieties of spruce and fir, juniper, moss, heather and other alpine tundra flora, and occasional sub-alpine meadows. The area is heavily forested at elevations below approximately 1,500m. The forest consists mostly of sub-alpine Engelmann and white spruce, sub-alpine fir, and lodgepole pine. Douglas fir, balsam poplar, aspen, willow, and alder are also found. Bogs and black spruce stands cover some lower areas. The timber on most of the property appears to be of little if any economic interest, although merchantable stands of timber may be present in areas of lower elevation. Recent logging, evidenced by mostly smaller-sized cut-blocks, has taken place in the northern and eastern parts of the property.

Exposed rock is common above tree line but is infrequently seen on treed slopes and hilltops; at lower elevations bedrock exposures are usually limited to the bottoms and steep sides of creeks. Various surface materials and soils are present, differing, to some degree, in relation to elevation and moisture supply. Benches of moraine deposits are sometimes present at lower elevations, and major valleys may contain areas of finer-textured lacustrine and scattered organic deposits (mostly as bogs), glacio-fluvial fans and terraces.

2 COAL TENURE AND OWNERSHIP

2.1 Coal Tenure

The Flatbed Coal Property consists of one contiguous block of 8 coal licenses covering 9,607 hectares (ha) located to cover a northwest-southeast-trending sedimentary succession that hosts prospective coal measures at depth. The recorded owner of the licenses is BC numbered company 0735513 B.C. Ltd., which is a wholly-owned subsidiary of Colonial.

The property lies within the Liard Mining Division and is covered by NTS Map Sheet 93-I/15. Coal license data and descriptions are summarized in Table 2.1 and the locations of the licenses are shown in Figure 2.1. Information pertaining to coal license tenure is posted on the BC Ministry of Energy and Mines web site. The posted records of the BC Ministry of Energy and Mines indicate that the coal licenses are in good standing.

Table 2.1 Coal License Information - Flatbed Coal Property

Tenure Number	Tenure Type	Area (ha)	Current Owner	Issue Date	Good To Date
418547	License	1,340	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418548	License	1,190	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418549	License	1,189	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418550	License	1,488	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418551	License	1,339	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418552	License	1,340	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418553	License	1,191	0735513 B.C. Ltd.	2014/Jun/09	2019/Jun/09
418913	License	530	0735513 B.C. Ltd.	2016/Sep/08	2019/Sep/08
Totals		**9,607**			

No legal surveys have been undertaken either as a requirement for, or subsequent to acquisition of, the coal licenses. Within BC, coal lands are acquired simply by application (paper “staking”); claim posts are not required. Colonial does not own surface rights over any of the property; there is no requirement to own surface rights to conduct mineral exploration within the Province. No search of land title, survey records, or surface rights has been undertaken for this report. However, it may reasonably be expected that the Crown retains surface rights over most of the property.

2.2 Prior Ownership

Portions of the Flatbed property have been held in the past by two different companies; namely, Denison Mines Limited (Denison) from the early 1970’s to mid-1980’s, and Kennecott Canada Exploration Inc. (Kennecott) between 2007 and 2009.

2.2.1 Denison Mines Limited

From the early 1970's to mid-1980's the area either side of Gordon Creek formed part of Denison's large Quintette coal property (Denison, 1973). The Quintette property's coal licenses extended as far as the drainage divide between Gordon and Calamagrostis Creeks, across an area that now forms part of Flatbed coal licenses 418548 and 418549 (see Figure 2.1). The original Denison coal licenses made up part of the Babcock area within the larger Quintette property. Denison reduced the size of the Quintette property sometime after 1984 (Gormley, 1986) and the old licenses that covered this part of the current Flatbed property were forfeited to the Crown. The residual part of the old Babcock block is now held by Teck, (as part of a smaller Quintette property) and hosts their proposed Window Pit on Babcock Mountain.

2.2.2 Kennecott Canada Exploration Inc.

In 2006 Kennecott acquired the core block of coal licenses for the Murray River Coal Property. In 2007, this block was expanded to the southeast to include an area now covered by most of the western, northern and eastern parts of the current Flatbed property; more specifically, portions of licenses 418548 through 418550 and 418913 plus all of licenses 418551 and 418553 (Kennecott, 2007). This southeastern extension of the Murray River property was forfeited to the crown in 2009. The current Murray River property is now held by HD Mining, who are developing an underground coal mine approximately 10km northwest of the Gordon Creek deposit (Norwest, 2010).

2.3 Current Ownership

The property is held beneficially for Colonial by a BC numbered company, 0735513 B.C. Ltd. This company is a wholly-owned subsidiary of Colonial.

Coal licenses 418547 to 418553 were issued on June 9, 2014 while coal license 418913 was issued on September 8, 2016.

The coal licenses are subject to a 1.5% production royalty, payable on all coal produced, to private stakeholders in the project, including certain directors of Colonial.

3 SUMMARY OF EXPLORATION ACTIVITIES

3.1 Previous Oil and Gas Exploration

The region within which the Flatbed property is situated has seen significant O&G exploration and development over the past 40 years; as a result, there are many O&G wells in the Flatbed property area. These wells were typically drilled to vertical depths of approximately 1,000m to 5,500m from surface (Norwest, 2012). Available data from these wells may include: well locations, deviations surveys, hard and digital copies of geophysical log profiles, plus approximate intervals of major formations and basic lithologic descriptions.

Within the property there are four O&G wells; two are situated in the northwest part of the property, close to Gordon Creek, while the other two are located in the southeastern portion of the property. Each of these wells intersected the coal-bearing Gates Formation and three have geophysical logs that show evidence of significant coal seams within the Gates Formation. However, due to the distance between the northwestern and southeastern wells, precise correlation of each of the coal seams between these two areas is difficult. In addition to the 2017 drillholes discussed later in this section, the 2017 exploration database contains information derived from the two above mentioned gas wells that are located within the Gordon Creek area; namely, B-030-K and B-029-K (see Figure 3.1). Data from these wells have been used to provide additional control for geological interpretation and resource estimation purposes.

There is evidence of numerous historic seismic lines both within and around the Flatbed property; the locations of these seismic lines are not shown on the diagrams, herein.

3.2 Previous Coal Exploration

Since the early 1970's, there has been significant coal exploration throughout the belt of coal measures that hosts the Flatbed property. Some of the main projects were carried out on properties that either adjoin, or are located in close proximity to the Flatbed property: namely; Duke Mountain (south), Trend (southwest), Quintette-Babcock (west), Murray River (northwest), and Wolverine (northwest). Many tens of exploration holes have been drilled on each of these properties, often on multiple targets within a single property. This work, together with excavation of exploration adits and trenches, has resulted in the development of several surface mines, a permitted surface mine awaiting development, and a permitted underground mining project. All but the Duke Mountain property have seen significant exploration and development since 2004.

Although, portions of the Flatbed property were once held by two different coal exploration companies very little exploration was carried out. The only work recorded is detailed geological mapping along Babcock and Gordon Creeks, carried out by Denison in the early 1970's (Mitsui, 1974). No previous coal resource estimates have been determined for any part of the Flatbed property.

3.3 Colonial Exploration (2010-2013)

Colonial personnel spent a total of five days over the summers of 2010 (three days) and 2013 (two days) performing reconnaissance and 1:2,500 scale geological mapping on the property as well as inspecting proposed access routes in support of a future drilling program. The geological mapping focused primarily on the western part of the property, along the mid- and lower reaches of Gordon Creek and around the confluence of Gordon and Babcock Creeks. Selected exposures in the east of the property, along Flatbed Creek and Hambler Creek, were also examined.

3.4 Colonial Exploration (2017)

The first significant exploration program conducted by Colonial on Flatbed was in the summer-autumn period of 2017; fieldwork commenced in mid-July and was completed by mid-October. Exploration personnel were housed at a hotel in Tumbler Ridge.

The primary objectives of the 2017 exploration work were to identify potentially underground mineable, NI 43-101 compliant, coal resources within the Gates Formation and to establish initial coal quality parameters. Activities focused on the Gordon Creek deposit, located in the northwestern portion of the property, which hosts one of the main targets identified by an earlier review of O&G well data (Norwest, 2012).

The exploration program primarily focussed upon the drilling of five diamond HQ3 drillholes. Associated activities included: drill site and helicopter landing site timber clearing; drill pad and helicopter pad construction; drill site and helicopter landing site reclamation; down-hole geophysical logging; geological core description; coal seam plus seam roof and floor core sampling; geotechnical logging, sampling, and on-site testing; drillhole collar surveying; plus limited geological mapping.

3.4.1 Oil and Gas 3D Seismic Survey

Prior to the field program, Colonial acquired O&G 3D seismic information that extended across the Gordon Creek area. It was hoped that these data could provide information on the depths from surface of prospective coal seams and highlight any large structural discontinuities that might be present. However, the data were poorly resolved at the

relatively shallow depths of the targeted coal seams. As such the seismic data were of limited use for the correlation of coal seams and structural interpretation.

3.4.2 Geological Mapping

Three days of detailed (1:2,500 scale) geological mapping was carried out by Colonial personnel along Gordon Creek to further define outcrop locations and strata geometry to aid in structural interpretations.

3.4.3 Drilling

The exploration program consisted of five diamond HQ3 drillholes on four widely-spaced drill sites for a total of 2,831.84m of drilling. All the drill sites were accessed and supported by helicopter.

All drillhole angles were vertical (-90°); deviation logs showed only minor amounts of variation from vertical at the bottom of the drillhole or at the base of the logged interval, in those instances where the bottom of the drillhole could not be reached. All drillholes were strategically positioned to target Gates Formation coal seams, provide appropriately spaced data for coal seam correlation and structural interpretation, and to ensure that subsequent resource estimates would be compliant with NI 43-101 guidelines. Drillhole FD17-03 encountered poor drilling conditions and the drillhole was abandoned before reaching the Gates Formation; the rig was re-positioned on the same drill pad and the hole re-drilled as FD17-03A. Of the five drillholes, FD17-01 intersected the entire Gates Formation coal sequence while FD17-03A intersected only the two upper seams before drilling issues forced abandonment of the drillhole. While holes FD17-02 and FD17-04 were terminated short of the coal seams, they still provided geological control for the geological interpretation of the deposit and for the resource modelling.

Table 3.1 summarizes the 2017 Gordon Creek drillholes while full drillhole details are presented in Appendix II. Drillhole locations are shown in Figure 3.1.

Table 3.1 2017 Drilling Summary

Drillhole	Core Size	Metres Drilled	Gates Coal Seams Intersected	Notes
FD17-01	HQ3	866.39	B, D, E, F1, F2, G, J, K	
FD17-02	HQ3	608.38	-	Terminated in Boulder Creek Formation
FD17-03	HQ3	297.79	-	Terminated in Boulder Creek Formation
FD17-03A	HQ3	513.08	B, D*	Terminated in Seam D
FD17-04	HQ3	546.20	-	Terminated in Shaftesbury Formation
Total		**2,831.84**		

*Notes: * = seam only partially penetrated*

3.4.4 Geophysical Logging

Downhole geophysical surveys were performed by Century Wireline Services. Three of the five 2017 drillholes (FD17-01, FD17-03A and FD17-04) were geophysically logged to provide a combination of density, gamma, neutron, calliper, bit size, focused resistivity (or, short guard resistivity), deviation, sonic and dipmeter logs. Due to down-hole complications in holes FD17-03A and FD17-04, it was not possible to geophysically log the entire depth of the drillholes; additionally, holes FD17-02 and FD17-03 were not logged.

The geophysical logs were run at a general scale of 1: 100 and supplemented by detailed density logs (calliper, bit size, density, gamma, and focused resistivity) generated over coal bearing intervals at a scale of 1: 50. For better definition of coal seam tops and bottoms as well as the intra-seam rock bands, a short spaced version of the detailed density logs were also obtained.

Downhole geophysical logs undertaken for each of the 2017 drillholes are presented below in Table 3.2.

Table 3.2 2017 Geophysical Logs Summary

Drillhole	Geophysical Logs
FD17-01	d,g,n,c,fr,dev,s
FD17-02	-
FD17-03	-
FD17-03A	*g,c,dev,dm
FD17-04	*g,c,dev,dm
Total	

*Notes: i) * = not geophysically logged to total depth; ii) d,g,n,c,fr,dev,s,dm = density, gamma, neutron, calliper, focussed resistivity, deviation survey, sonic, and dipmeter logs.*

Paper log prints were prepared in the field to assist in core logging and correlation. A complete set of geophysical logs are presented in Appendix III.

3.4.5 Drill Core Logging and Sampling

Core handling and sampling followed these general procedures: at the drill rig, cores were placed in numbered wooden boxes that were covered prior to transport to the core yard for description and sampling. Plastic liners were used in the boxes that held coal core sections. At the core yard, drill cores were washed (with water) and photographed prior to being described for general lithology, bed thickness and collection of structural and geotechnical data. Selected intervals of core underwent point-load testing.

Coal seams were logged in detail with specific coal intervals being characterized according to their 'brightness' (i.e. the amount of bright coal present). Coal seam samples were placed into plastic bags, with all samples being double-bagged. Samples taken for additional geotechnical testing were wrapped in tin-foil, shrink wrap and bubble wrap and then placed into plastic bags. The various sample bags were then placed into 20-litre plastic buckets and shipped to the selected laboratories for testing. Each bag contained a sample tag that recorded the sample number and drillhole ID; for coal seam samples, the seam designation was also written on the sample tag. The sample number and drillhole ID was also written on the outside of the bags and buckets. A second set of sample tags was retained by the company. All core boxes containing coal plus all coal seam samples were stored in a -15°C walk-in freezer from the time they arrived in the core yard until the time they were shipped to the laboratory.

The procedures used by Colonial for coal core handling, description and sampling were as follows:

- All core samples were sent to independent laboratories for testing.
- For each sample interval, the entire core was submitted for analysis. For coal seams, immediate roof and floor lithologies were also sampled to determine the nature of potential out-of-seam dilution that could occur during mining.
- Core recoveries were obtained by comparing the lithological logs to the detailed density geophysical logs. For the coal seams, recoveries ranged from 53% to 100%; all but one were 68% or greater.
- Coal seam samples were shipped by Greyhound CDA Trans Corp (Greyhound) to Birtley Coal & Mineral Testing (Birtley) (a division of GWIL Industries) in Calgary,

Alberta. Simulated clean coal samples were subsequently sent by Birtley to Pearson & Associates (Victoria, B.C.), for coal petrographic analysis.

- Geotechnical samples were shipped by Greyhound to Golder Associates Ltd. (Golder) in Burnaby, BC.

- Coal and geotechnical core logging and sampling followed prescribed guidelines to ensure a consistent approach by each geologist. The approach used for sample selection is consistent with industry standards.

Detailed descriptive logs for each of the 2017 diamond drillholes are included in Appendix II.

3.4.6 Drill Core Analysis

Sample preparation and analysis was carried out at recognized commercial laboratories experienced with requirements for coal and geotechnical testing, and can be summarized accordingly:

For coal seam core samples, the laboratory sample preparation and analytical procedures are summarized below. In addition to the coal seams, a number of seam roof and floor samples also underwent testing and analysis although testing of these samples were often less comprehensive than that performed on the coal seams. Laboratory procedures were as follows:

- All ply samples were air-dried and crushed to -9.5mm; retains were re-crushed until 100% passed the 9.5mm screen. One-eighth by weight was taken for preliminary tests and for subsequent head raw analysis (if required), while the remainder was retained for float-sink (washability) tests and succeeding analyses.

- Initial analyses were then performed on both coal and rock ply samples. For coal plies, these included: as received moisture, and, on an air-dried basis, Proximate (moisture, ash, volatiles, and fixed carbon), total sulphur (S), Free Swelling Index (FSI) and Specific Gravity (SG). Rock samples either underwent the same set of analyses or an abbreviated set that included: as received moisture, and, on an air-dried basis, moisture, ash, S and SG.

- Selected coal seam and certain coaly zone ply samples were proportionally combined (by weight), using the retained (⅞) fraction, to form a seam composite.

- Head raw analysis comprising air-dried Proximate, S, SG & FSI was performed on each seam composite.

- The composites were divided into two screen size fractions. These were 9.5mm x 0.25mm and 0.25mm x 0. Screen sizing analysis (on an air-dried basis) was run for each size fraction, where weight, ash, S and FSI were determined.

- Float-sink tests were conducted for the 9.5mm x 0.25mm size fractions using all, or a selection, of the following SGs: 1.30, 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.70 and 1.80, to test general washability characteristics of the coals and to target a specific range for washed ash content. The 0.25mm x 0 size fraction underwent time-limited froth flotation process using a Wemco flotation machine with speed of 1200 rpm. Flotation tests were performed for specified times at 30-, 60-, and 90-second intervals, using kerosene and Methyl Isobutyl Carbinol (MIBC) as reagents, and at 5% - 10% pulp density. The pulps went through a conditioning time of one minute before skimming.

- For each float-sink and froth/ tail, weight, Proximate and FSI analyses were completed.

- Clean coal composites (CCCs) were generated by compositing float and froth products primarily targeting ash contents in the 8% - 9% range, but also taking into account yield and FSI values. For the 9.5mm x 0.25mm material, floats were selected over the 1.45 to 1.60 SG range. For those coal seams that returned enough material to have froth flotation performed, froths were selected using the 60-seconds frothing time except for Seam B from FD17-01, where the 30 second froth time was used.

- Most CCCs were subjected to the following tests: Proximate analysis, S, FSI, Hardgrove Index (HGI), Calorific Value, phosphorous-in-coal, Ultimate Analysis, Gieseler Fluidity, Ruhr Dilatation, Mineral Analysis of Ash, carbon forms, As, Hg and F. Split samples taken from the CCCs were submitted for petrographic analysis. Due to sample size or elevated ash contents, some samples may not have undergone all of the analyses listed above.

The results of the coal quality analyses and testing performed on the coal core samples obtained during the 2017 exploration program at Gordon Creek are presented in Appendix IV.

3.4.7 Surveying

During the 2017 exploration program all drillhole collar locations were surveyed by KMD Surveying Services. The easting and northing locations in the Universal Transverse Mercator (UTM) system and the elevations were recorded to sub-centimetre accuracy and can be found listed in Table 3.3.

Table 3.3 2017 Drillhole Locations

Drillhole	UTM NAD83 Zone 10		Elevation (m)
	Easting (m)	Nothing (m)	
FD17-01	635,351.620	6,088,447.782	1,211.887
FD17-02	635,419.162	6,086,618.073	1,240.396
FD17-03	636,168.671	6,089,995.099	1,235.996
FD17-03A	636,169.421	6,089,996.091	1,236.007
FD17-04	637,147.413	6,088,568.996	1,277.451

3.4.8 Drill Site Construction

In 2017, a total of nine proposed drill sites (with helicopter pads included) plus one stand-alone helicopter pad (to access a water supply pump), were constructed. These sites covered an area of approximately 0.68 ha. Six timber drill pads with associated hand-dug sumps were constructed. All the sumps had silt fencing installed on the downslope side. Four of these six sites were used during 2017 for drilling. The only excavated ground disturbance that took place on any of the sites was for the hand dug sumps and drill pad footings.

All proposed and utilized drill sites and helicopter landing sites can be seen in Figure 3.1.

3.4.9 Drill Site Reclamation

All 2017 utilized and proposed drill sites were reclaimed at the end of the exploration program. All fallen timber and timber used for drill pad construction was limbed, bucked and scattered on site. Sumps were backfilled and silt fencing was removed along with all other foreign material. Drillhole casing was cut at surface level and then plugged.

4 GEOLOGICAL SETTING

The Flatbed property lies within a belt of Mesozoic strata that form part of the Rocky Mountain Foothills of northeastern BC. Coal seams of greatest potential are found within Lower Cretaceous strata, consisting of the Bullhead and Fort St. John Groups. The relative location of the various formations that comprise the Bullhead and Fort St. John Groups can be viewed in Figure 4.1. The stratigraphy of this succession broadly represents an alternating sequence of marine shales as well as marine and non-marine clastic lithologies deposited from a series of transgressive and regressive cycles in response to periodic uplift of the Cordillera. On the Flatbed property, only the coal seams of the Gates Formation are considered to offer any potential for mining due to depth considerations.

4.1 Regional Stratigraphy

The following geologic formations of relevance to the coal resources identified in the Gordon Creek deposit of the Flatbed property are discussed below from oldest to youngest.

4.1.1 Gates Formation

The Gates Formation conformably overlies the Moosebar Formation, which comprises the lowest formation of the Fort St. John Group. The Gates contains the largest systematically explored coal resources within the Northeast Coal Block and is the main coal-bearing unit within the project area. Within the Tumbler Ridge region, the Gates Formation is divided into three informal sub-divisions; namely, Quintette member, middle Gates and upper Gates. The main coal seams occur within the middle Gates although thinner, usually non-economic, coal seams are present within the upper Gates. In the Flatbed property, the Gates Formation ranges between 250m and 310m in thickness. A generalized stratigraphic section through the Gates Formation is illustrated in Figure 4.1.

The lower portion of the formation is informally referred to as the Quintette member. It comprises resistive, massive, light grey, medium-grained sandstone, with minor carbonaceous and conglomeratic horizons, that form prominent cliffs and ridges when cut by the topography. These physical features can often be used to outline the various structural configurations of the coal measures. Within the Flatbed property, the Quintette member has an approximate thickness of 75m.

The Quintette member is overlain by several cycles of coal deposition represented by fining-upward sequences culminating with coal deposition. This sequence is referred to as the middle Gates and ranges between 90m and 160m in thickness. Typically, in the

Tumbler Ridge region, the only Gates Formation coal seams of economic interest are found within the middle Gates. These coal seams often display consistent thicknesses and internal seam characteristics across significant distances and are relatively easy to correlate.

The middle Gates is commonly overlain by a massive, medium-to-coarse-grained, conglomeratic sandstone and pebble conglomerate sequence informally called the Babcock member. The member is also very resistant to weathering and forms an important marker horizon when exposed. The pebble-conglomerate phases may come and go laterally, but the sandstone appears always to be represented. The Babcock member is overlain by predominantly finer grained lithologies consisting mostly of intercalating fine-grained sandstone, siltstone and claystone with several thin coal seams; taken together, this sequence is referred to as the upper Gates. Atypically, in the Gordon Creek area, the upper Gates contains a coal seam of potential economic importance (Seam B). A thin bed of large granule to pea-size conglomerate, set within a clean sandstone matrix, marks the contact with the overlying marine sediments of the Hulcross Formation.

4.1.2 Hulcross Formation

The Hulcross Formation is a marine sequence, predominantly composed of blocky, light to medium grey, sandy shale with thin interbeds of siltstone and very fine- to fine-grained, often laminated or cross-laminated sandstone. Across the Flatbed property, the Hulcross Formation varies in thickness from approximately 68m to 91m. The contact between the Hulcross and Boulder Creek Formations lies at the top of a thin (5m to 10m) sequence of interbedded platy sandstone, siltstone and shale, where it is abruptly overlain by continuous, thick-bedded sandstone belonging to the Boulder Creek Formation.

4.1.3 Boulder Creek Formation

The Boulder Creek Formation ranges between 122m and 147m in thickness and can be divided into three lithological units. The lower unit consists mainly of light grey, fine-grained sandstone and conglomerate with minor siltstone beds, ranging from 14m to 40m thick. The middle unit is approximately 45m to 84m in thickness and is predominantly made up of medium to dark grey claystone and siltstone with occasional thin coaly and carbonaceous horizons. Many fine- to medium-grained sandstone beds, up to 2.20m in thickness, are also present. The upper 24m to 70m of this formation consist mostly of fine- to medium-grained, grey, interbedded sandstone and siltstone; multiple thin conglomeratic beds are also present. In the Gordon Creek area, the

contact between the Boulder Creek Formation and the overlying Shaftesbury Formation is well defined by a layer of conglomerate, sometimes containing a thin siltstone or claystone parting, which ranges in thickness from 0.5m to 0.85m which sits atop approximately 10m of light grey, medium grained sandstone.

The thickness of the Boulder Creek Formation tends to increase as the Hulcross thins; in the Flatbed area the combined Boulder Creek – Hulcross sequence is approximately 213m to 215m thick.

4.1.4 Shaftesbury Formation

In the region of the Flatbed property, Shaftesbury Formation strata are undivided whereas a few tens of kilometres to the northwest these strata are sub-divided into three units which are referred to, in ascending stratigraphic order, as the Hasler, Goodrich, and Cruiser Formations (Stott, 1968).

The lower unit (the Hasler Formation) consists of light to medium grey, claystone, siltstone, minor sandstone and sideritic concretions. The unit is often homogenous with bedding only being discernible through occasional appearance of thin beds of sandstone.

The middle unit (The Goodrich Formation) is predominantly a grey to brown, medium-grained, laminated to medium-bedded to massive, micaceous sandstone. Carbonaceous claystone and siltstone occur as interbeds.

The upper unit (The Cruiser Formation) comprises dark grey to black, laminated to thinly interbedded silty claystone, siltstone and fine-grained sandstone. Pebble bands occur locally. This unit is characteristically light orange to red in colour due to weathering of ferruginous beds.

Shaftesbury Formation lithologies penetrated by cores within the Gordon Creek deposit appear to represent only the lower (Hasler equivalent) of the formations found further northwest.

4.2 Coal Seam Development

Within the Northeast Coal Block, the coal seams of greatest economic potential are found within Lower Cretaceous strata of the Gething and Gates Formations. The coal seams of the Gates Formation are well established as the most prolific coal-bearing strata in the southern portion of the Block while the coal seams of the Gething Formation are the most prolific in the northern half. Consequently, exploration carried out in the Tumbler Ridge region has primarily targeted

coal seams within the Gates Formation, although some projects have also examined the potential for economic coal seams in the Gething Formation. In the project area, it is the Gates coal seams that have provided the impetus for local mine development. All 2017 drilling on the Flatbed property targeted Gates Formation coal seams. Consequently, only Gates coal seams are discussed in this report.

4.2.1 Gates Coal Seams

Significant thicknesses of Gates coal first occur in the Bullmoose Mountain area and continue southeast to the B.C./Alberta border, a distance of almost 140km, and beyond. Adjacent to the Gordon Creek deposit, at Babcock Mountain and Roman Mountain, the aggregate economic coal seam thicknesses of 15m to 18m (Perry, 2004) are common. Total thickness of the main coal seams within the Gordon creek deposit is approximately 21m.

The main Gates Formation coal seams can be correlated across the entire Gordon Creek deposit. Seam correlations are also well established with the adjoining Babcock property, situated to the west, and Trend property, to the southwest. From youngest to oldest the coal seams have been called B, C, D, E, F1, F2, G, J and K. Seam C, which together with Seam B is found within the upper Gates, is not sufficiently well developed to present economic potential.

4.3 Structure

The structural geology of the area around the Flatbed property is dominated by a series of folds and thrust faults typical of Canadian Rocky Mountain Foothills structures. The nature of the regional folding and faulting, together with the distribution of main stratigraphic units, is illustrated in Figure 4.2 (Cui et al, 2017).

To the southwest of the property, the Roman Mountain and Trend areas are defined by a large-scale syncline-anticline-syncline triplet (from west to east: the Murray Syncline; Waterfall Creek Anticline; and, the Waterfall Creek Syncline). The Babcock Mountain area comprises an asymmetrical anticline, having a short, steep western limb as its paired limb with the Waterfall Creek Syncline, and a broad, gently westerly-dipping crest. The foregoing structures are illustrated in Figure 4.3. The common limb of the Waterfall Creek Anticline - Syncline pair trends along the southwest boundary of the property and hosts PRC's Trend coal mine. The Babcock Mountain structure extends into the northwest corner of the Flatbed property. Regional maps prepared by BC Government geologists (Cui et al, 2017) indicate that the frequency of major folds appears to lessen towards the northeast although several major thrusts may be present.

4.4 Flatbed Property Geology

Definition of the geology to the east of Trend mine and Babcock Mountain is complicated by a lack of exposed rock and recognisable marker horizons. Regional mapping (Cui et al, 2017) has incorporated information from widely-spaced O&G wells which has allowed broad geological interpretations to be presented. The southwestern half of the property appears to host generally shallow-dipping strata while a broad, shallow syncline, containing Upper Cretaceous strata of the Dunvegan and Paskapau Formations is shown to be present in the south. In the eastern part of the property, the core of a tight anticline exposes strata of the Hulcross and Boulder Creek Formations. The fold axis of this anticline trends NW-SE and plunges in both directions. The Gordon Creek area is located southwest of the axial trace of the eastern anticline and may be separated from it by other, as yet unrecognised, geological structures. Within the Gordon Creek deposit, strata dip at approximately 11° towards the southwest. A major high-angle thrust fault separates this area from the geology to the east. The surface trace of this fault, herein called the Flatbed fault, parallels the NW-SE regional structural trend. Geology specific to the Gordon Creek deposit is discussed in Section 5.2 below.

The thickness of unconsolidated overburden observed in the various drillholes ranges between approximately 11.28m (FD17-02) and 92.15m (FD17-01). Most of this appears to consist of glacio-fluvial or glacio-lacustrine material. At its contact with bedrock, the Shaftesbury lithologies are often weathered, highly broken, and form semi-coherent beds for the first 3.05m (FD17-02) to 13.64m (FD17-01).

5 GORDON CREEK DEPOSIT GEOLOGY

5.1 Coal Seam Descriptions

The following summary of coal seam descriptions focuses on those coal seams intersected during the 2017 drilling program and by the two O&G wells located near the northern end of the Gordon Creek deposit. One of the O&G wells falls within the defined resource area while the other is located on the downthrown side of the Flatbed fault.

A total of 8 main coal seams are present within the Gordon Creek deposit; one minor seam (Seam C) is also present. The seam nomenclature used in this report essentially follows that used since the 1970's for the Trend and Babcock properties. In ascending order, the main seams are labelled as K, J, G, F2, F1, E, D, and B.

All seams, except for Seam C, provide potentially mineable coal intervals. Although not considered to be mineable, Seam C can still be traced geologically throughout the deposit. Since it is not considered to hold any economic importance it is not discussed further, herein.

The main characteristics of each of the main coal seams are summarized below. Overall seam true thickness ranges for the Gordon Creek deposit are outlined in Table 5.1; these true thicknesses, taken from Norwest's coal resource model, were all calculated using a southwest dip of 11°. True thickness ranges and interseam true thicknesses are taken from the 2017 drillholes plus the two O&G wells, while internal seam characteristics are taken from drillhole FD17-01.

Table 5.1 Gordon Creek Deposit Coal Seam Thickness Ranges

Seam	True Thickness (m)	
	Minimum	Maximum
B	1.26	3.69
D	2.28	2.65
E	1.19	1.71
F1	1.28	1.65
F2	2.55	4.49
G	1.69	3.16
J	3.38	5.30
K	1.95	3.17

5.1.1 Seam K

Seam K ranges in true thicknesses from 1.95m (B-30-K) to 3.17m (FD17-01). It is characterized by comparatively clean lower (2.34m) and upper (0.45m) sections

separated by a 0.38m claystone band. This seam appears to correlate with Seams K2 and K3 at Trend South.

The stratigraphic interval between Seam K and the overlying Seam J increases northward, ranging from 22.29m (FD17-01) to 29.48m (B-030-K).

5.1.2 Seam J

The true thickness of Seam J ranges from 3.38m (FD17-01) to 5.30m (B-30-K). It is characterized by relatively clean lower (1.75m) and upper (1.37m) sections, separated by a carbonaceous rock band that is approximately 0.26m thick.

A thin (0.51m) clean coal split is situated approximately 1.2m above Seam J and is separated from the main seam by a zone of carbonaceous claystone and poor coal bands. This upper section is referred to herein as J upper (JU) as it does not meet the necessary criteria for resource determination to be included with the main part of the seam. It is possible that JU correlates with Seam I at Trend and Babcock.

The stratigraphic interval between Seam J (inclusive of JU) and the overlying Seam G increases northward, ranging from 21.89m (FD17-01) to 52.27m (B-029-K).

5.1.3 Seam G

Seam G true thickness ranges from 1.69m (B-029-K) to 3.16m (FD17-01). It is characterized by a thin, relatively clean lower coal section (0.79m) and a thicker (2.04m) upper section, separated by a 0.33m siltstone band. The upper part contains two distinct, thin, poor coal and rock partings.

The stratigraphic interval between Seam G and the overlying Seam F2 decreases northward from 17.48m (FD17-01) to 7.81m (B-029-K).

5.1.4 Seam F2

Seam F2 ranges in true thickness from 2.55m (B-030-K) to 4.49m (FD17-01). It is characterized by a thick (3.46m), relatively clean, lower section with a thinner (1.03m) upper section that contains two thin, poor coal and rock partings.

Seam F2 is separated from the overlying Seam F1 by approximately 0.40m (B-029-K) to 3.46m (FD17-01). This thickness interval decreases towards the northern end of the deposit such that the two seams essentially coalesce in B-029-K to form a single, thicker “Seam F” although, for resource definition purposes, the seams have been picked as F1 and F2. At the adjoining Babcock property, both F1 and F2 are sometimes present, although only one of these seams is present at the equivalent horizon at Trend.

5.1.5 Seam F1

Seam F1 true thickness ranges from 1.28m (B-030-K) to 1.65m (FD17-01). It is characterized by a relatively clean bottom third (0.64m) which contains just one parting of high-ash coal. The rest of the seam (1.01m) contains several thin poor coal and rock partings throughout, the most prominent of which is near the top of the seam.

The separation between Seam F1 and the overlying Seam E increases slightly towards the north, ranging from 7.77m (FD17-01) to 10.65m (B-030-K).

5.1.6 Seam E

Seam E true thickness ranges from 1.19m (FD17-01) to 1.71m (B-029-K). It is the thinnest of the seams intersected during the 2017 drilling and is characterized by relatively clean lower and upper coal sections (0.63m and 0.38m, respectively) that are separated by a thin (0.18m) poor coal/carbonaceous rock band.

The inter-seam thickness between Seam E and the overlying Seam D decreases significantly towards the north, ranging from 23.41m in FD17-01 to 9.35m in B-030-K.

5.1.7 Seam D

Seam D true thickness ranges from 2.28m (FD17-01) to 2.65m (B-030-K). The bottom half of the seam contains higher ash coal near the floor while the upper half is characterized by two rock partings ranging between 0.11m and 0.21m in thickness. The roof of this seam is composed of conglomerate.

The inter-seam thickness between Seam D and the overlying Seam B is fairly consistent across the deposit, decreasing only slightly northwards from 64.95m (FD17-01) to 61.28m (B-029-K).

5.1.8 Seam B

Seam B is atypical for this region in that this seam has not been reported to reach potentially economic seam thicknesses or be of sufficient coal quality on adjoining projects. At Gordon Creek, Seam B ranges in true thickness from 1.26m (B-029-K) to 3.69m (FD17-03A). The seam contains a number of high-ash coal and rock partings that increase in thickness and frequency upwards. In FD17-01, the roof of this seam is composed of very high ash (stony) coal to very highly carbonaceous claystone; this horizon appears to be replaced by good coal in FD17-03A, to yield a thicker coal seam.

5.2 Structure

The structural interpretation for the Gordon Creek area presented herein was determined through observation of coal exploration drilling results, O&G well logs, and from regional

structural plans compiled by the BC Government geologists (Cui et al, 2017). Other data of potential benefit to the project included surface mapping within the property and O&G exploration seismic data. These data were ultimately not used in the geologic model for the following reasons:

- Surface mapping was observed to be ineffective due to surface exposure being limited to non-coal bearing Shaftesbury Formation mudstones along Gordon Creek. The bed orientation measurements of weathered mudstone along the creek bed were considered too inaccurate to be used in the geologic model other than confirming an overall northwest regional strike of overburden units.

- The seismic reflection survey data acquired by Colonial from prior O&G exploration programs was found to be poorly resolved at the relatively shallow depths of the target coal seams. As such, the seismic data were of limited use for the correlation of coal seams or for structural interpretation.

Within the Gordon Creek area there is no potential for coal seams of interest to crop out. Within the deposit, the depths at which coal seams of interest have been intersected by drilling vary from approximately 390m (Seam B, in the north) to 840m (Seam K, in the south). Figures 5.1 and 5.2 show the overburden depths to the uppermost Seam B and lowermost Seam K, respectively, while the structural geology of the deposit is illustrated by oblique- and cross-sections in Figure 5.3.

The contact between the Shaftesbury and Boulder Creek Formations (SB-contact), located above the Gates Formation, was used as a reference point from which to interpret the structural trend and depth intervals of the coal beds. The SB-contact described in Section 4.1.3 is easily recognisable in the exploration drill cores and on the geophysical natural gamma logs.

Correlation of the SB-contact, penetrated in three of Colonial's exploration drillholes (FD17-01, FD17-02 and FD17-03A), was used to define a reference dip plane. Grid estimates of apparent (vertical) thicknesses of coal beds and intervening waste rock were stacked below this reference plane to develop a geological model; the coal seams within the defined resource area dip towards the southwest (striking northwest) at 11°. Structure contour maps for the two confining coal seams, Seam B and Seam K are shown on Figures 5.4 and 5.5, respectively.

A major resource-limiting fault is located between drillhole FD17-03A/well B-030-K and well B-029-K as shown in Figures 5.4 and 5.5. This fault, called the Flatbed fault, is interpreted to follow the regional structural trend and strike northwest. The displacement along the Flatbed fault is estimated to be approximately 1,200m, downthrown towards the northeast. Between drillholes FD17-03A and FD17-04, the fault is interpreted to split, with the split rotated to a north-

northwest orientation. No marker bed horizon was penetrated in drillhole FD17-04 and the near vertical bed orientations observed at depth indicate that the drillhole was collared atop a major fault zone likely associated with the Flatbed fault.

There is insufficient exploration data to determine the orientation of the Flatbed fault at depth. However, exploration and mining activities in the region have shown major faults to have a near vertical orientation near surface. Consequently, the Flatbed fault and its associated splay are interpreted to be vertical. The impact of the Flatbed fault on the coal seams can be observed in Figure 5.3.

6 COAL QUALITY

All Gordon Creek 2017 coal quality and coal washability testing was conducted using samples taken from HQ-size drill core. Coal quality testing was completed at Birtley (Calgary, Alberta).

6.1 Raw Coal Quality

A total of 93 ply samples covering coal, rock partings and immediate seam roof and floor intervals were analysed on a raw basis at Birtley. All coal and coal zone plies were analysed for the following parameters: Proximate analysis (i.e., moisture, ash, volatiles, and fixed carbon), total sulphur (S), FSI and SG. In-seam rock partings plus roof and floor rock samples were either analysed for the same parameters or may have had volatile content determinations omitted.

Coal and rock ply samples came from drillholes FD17-01 and FD17-03A. Samples from FD17-03A were limited to Seam B and the upper section of Seam D only, due to drilling complications that prevented the drillhole from penetrating the remaining Gates Formation coal seams. Composite raw coal quality results, derived from weight averaging individual seam ply data, for each coal seam fully penetrated by drillholes FD17-01 and FD17-03A are presented in Table 6.1, below. The raw coal quality results include adjustments for core loss intervals using analytical results either from the same seam in adjacent drillholes or from other sample plies within the same coal seam that displayed similar geophysical log signatures.

Table 6.1 Gordon Creek Deposit Raw Coal Quality - Air Dried Basis (adb)

Seam ID	Core Recovery (%)	Moisture (%)	Ash (%)	Volatiles (%)	Fixed Carbon (%)	Sulphur (%)	Dmmf Volatiles (%)	Coal Rank (ASTM)
B*	83	0.71	32.57	20.08	46.63	0.90	26.90	mvb
D	68	0.57	19.74	22.47	57.22	0.98	26.43	mvb
E	83	0.58	14.98	21.78	62.66	1.44	24.26	mvb
F1	100	0.31	22.83	19.85	57.01	0.45	23.86	mvb
F2	100	0.55	15.85	20.40	63.20	0.35	23.12	mvb
G	78	0.62	33.48	16.22	49.68	0.47	21.21	lvb
J	99	0.64	17.99	17.40	63.97	0.32	19.85	lvb
K	53	0.77	24.35	15.70	59.18	0.35	18.71	lvb

*Notes: * weighted average of FD17-01 and FD17-03A i) dmmf = dry mineral matter free; ii) mvb = medium volatile bituminous; iii) lvb = low volatile bituminous*

Volatile matter on a dry, mineral matter free (dmmf) basis ranges from 18.71% to 26.90% indicating that the coal seams range in rank from low volatile bituminous (lvb) to medium volatile bituminous (mvb), according to ASTM coal rank classification (Standard D388). Seam G is situated close to the division between these two ranks (specified at 22%).

7 RESOURCE ESTIMATES

7.1 Approach

Resource estimates were completed in accordance with the requirements of NI 43-101, Standards of Disclosure for Mineral Projects (CSA, 2011). The Geological Survey of Canada (GSC) Paper 88-21 "A Standardized Coal Resource/Reserve Reporting System for Canada" (Hughes, et al, 1989) was referred to for the classification, estimation and reporting of coal resources. GSC Paper 88-21 was written in 1988 and is now obsolete with respect to certain technical parameters. This document was used only as a guideline for resource estimation. Total underground mineable resource estimates, using a 1.0m minimum thickness, are: 298.0Mt of in-situ Inferred resources. Resource estimates are rounded to one decimal place.

The following approach was used to estimate the resources in the Gordon Creek deposit:

- Construct a grid model to form the basis for reporting resources
- Establish the level of geological complexity based on the geological interpretation
- Perform an independent resource estimate using the grid model
- Identify a maximum depth below surface limit for resource estimation
- Use spatial distribution of drillhole data points to classify resource assurance.

7.2 Geological Model

The extent of the Gordon Creek deposit grid model is outlined in Table 7.1. The Gordon Creek model extent in relation to the lease boundary can be observed on Figure 7.1.

Table 7.1 Gordon Creek Deposit Resource Model Parameters

Coordinates	UTM Zone 10 NAD83 Datum			2D Grid Spacing (m)
	Minimum	Maximum	Origin	
Easting (X)	634,200	641,000	634,200	20
Northing (Y)	6,085,500	6,093,300	6,085,500	20
Elevation (m)	-600	1,500	-600	-

The geologic model was compiled using MineSight® and Carlson® software. A grid modeling method was selected based on the observation of the exploration drilling results that indicated a constant, shallow, seam dip for the resource area that did not warrant the application of more

complex block modeling methods. MineSight® software was used for the first phase of the grid modeling process due to the software's advanced 3D viewing capabilities to aid in the structural interpretation and correlations of the coal seams. MineSight® model grid data were later imported into Carlson® software for the reporting of coal resources and to prepare the model for subsequent underground mine planning using Carlson® software, should that be desired in the future. Carlson® software is used extensively throughout North America for coal resource and reserve evaluation.

The modelled structural interpretation for the Gordon Creek deposit, described in detail in Section 5.2 of the report, was determined through observation of coal exploration drilling results, O&G well logs, and from regional structural maps compiled by the BC Government geologists (Cui et al, 2017). The SB-contact, located above the Gates Formation that hosts the target coal seams, was used as a reference point from which to interpret the structural trends and depth intervals of the coal beds.

Correlation of the SB-contact, penetrated in three of Colonial's exploration drillholes (FD17-01, FD17-02 and FD17-03A), was used to define a reference dip plane. Grid estimates of apparent (vertical) thicknesses of coal beds and intervening waste rock were stacked below this reference plane to develop a geologic model comprising grid estimates of seam roof and floor elevations and apparent thickness. To complete the model, grid estimates of the surface topography, derived from public domain topographic surveys and depth of unconsolidated overburden, measured from exploration drillholes, were also added.

Eight (8) Gates Formation coal seams were identified in the geologic model as having reasonable prospects for eventual economic extraction. These are, from top to bottom, Seams B, D, E, F1, F2, G, J and K. The relative location of these coal seams within the Gates Formation can be viewed in Figure 4.1. The coal seams within the defined resource area are dipping towards the southwest (striking northwest) at 11°. Structure contour maps for the two confining coal seams, Seam B and Seam K are shown on Figures 5.4 and 5.5, respectively.

A major resource-limiting fault, called the Flatbed fault, has been identified from drillhole and O&G well logs. The fault follows regional structural trends and strikes northwest. The displacement along the Flatbed fault is estimated to be approximately 1,200m, downthrown towards the northeast. In the southeast of the Gordon Creek deposit the Flatbed fault is interpreted to develop a north-northwest orientated split. The locations of the Flatbed fault and its associated fault split are shown in Figures 5.4 and 5.5.

There is insufficient exploration data to determine the orientation of the Flatbed fault at depth however, exploration and mining in the region has shown major faults to have a near vertical orientation near surface. Given the available information, the resource-limiting Flatbed fault is

interpreted to be vertical. A southwest oriented geologic cross-section illustrating the impact of the Flatbed fault on the coal seams can be observed in Figure 5.3. There are no other resource limiting faults identified in the Gordon Creek deposit.

7.3 Basis For Resource Determination

NI 43-101 (CSA, 2011) specifies that the definitions of the CIM Guidelines be used for the identification of resources. The CIM Resource and Reserve Definition Committee produced the following statement:

"Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource."

The CIM Definition of Resources is as follows:

"A Mineral Resource is a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

"Material of economic interest refers to diamonds, natural inorganic material, or natural fossilized organic material including base and precious metals, coal, and industrial minerals."

The committee went on to state the following:

"The term Mineral Resource covers mineralization and natural material of intrinsic economic interest which has been identified and estimated through exploration and sampling and within which Mineral Reserves may subsequently be defined by the consideration and application of technical, economic, legal, environmental, socio-economic and governmental factors. The phrase 'reasonable prospects for eventual economic extraction' implies a judgment by the Qualified Person in respect of the technical and economic factors likely to influence the prospect of economic extraction. Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However, for many gold deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time."

These definitions and statements clearly show that coal material can only be considered a resource if there is a clear identification of the economic potential of the deposit. For coal deposits, this means that the nature of the database, technology for mining and mine planning, some degree of practical recovery constraints and the economic potential in current markets have to be considered in order to identify a coal resource, and while the strict conditions for the definition of a reserve may not be needed to identify a resource, consideration should still be given to the same key issues.

7.4 Classification

Reserves and resources are classified according to the confidence level that can be placed in each estimate. In accordance with the criteria of the CIM Guidelines applying to coal deposits, resources are classified in Measured, Indicated and Inferred categories, proceeding from that with the highest confidence level to the lowest. Besides the reserve and resource classification scheme of the CIM Guidelines, NI 43-101 (CSA, 2011) suggests that the criteria of GSC Paper 88-21 (Hughes, et al, 1989) be referred to if necessary. The distinction between different classes of resources in that paper is based on the spacing of valid data points which, in this case, are coal seams intersected by drillholes. The concept is that the closer the drillholes are spaced, the higher the confidence that can be placed in the resource estimate.

GSC Paper 88-21 also utilizes criteria adapted to reflect the differing assurance levels associated with varying levels of geologic complexity. Four levels of increasing geologic complexity are addressed and include:

- Low
- Moderate
- Complex
- Severe.

The interpretation of the Geology Type for the Gordon Creek deposit of the Flatbed property is Moderate. GSC Paper 88-21 describes Moderate Geology Type as: “characterised by homoclines or broad open folds (wavelength greater than 1.5km) with bedding inclinations generally less than 30°. Faults may be present, but are relatively uncommon and generally have displacements of less than ten metres.”

7.5 Coal Resource Estimate

The term "resource" is utilized to quantify coal contained in seams occurring within specified limits of thickness and depth from surface. The resource estimations contained herein are on a geological in-situ basis, i.e. as an in-situ tonnage and not adjusted for mining losses or dilution. However, minimum mineable seam thickness and maximum removable parting thickness are considered. Coal intervals not meeting these criteria are not included in the resource estimates.

Table 7.2 shows the criteria used for coal resource estimates for the Gordon Creek deposit.

Table 7.2 Gordon Creek Deposit Coal Resource Estimation Criteria

Underground Resources	
Maximum depth from surface	900m
Minimum seam thickness	1.0m
Maximum mineable parting thickness	0.5m

Coal resource estimates as reported from the grid model for the Gordon Creek deposit are summarized in Table 7.3. Resources are estimated for underground deposit types only. The resource statement is current as of January 10, 2018. Using ASTM criteria, coal rank varies from medium volatile bituminous (mvb) to low volatile bituminous (lvb). Coal quality and washability test results described in Section 6 indicate that the coal has coking properties after beneficiation.

Table 7.3 Gordon Creek Deposit In-Place Inferred Coal Resource Estimate (Effective Date: January 10, 2018)

Seam ID	Thickness (m)	Coal Rank	Volume (m^3'000)	Density (SG) GSC 88-21	Resource (Mt)
B	2.93	mvb	32,400	1.61	52.2
D	2.45	mvb	24,564	1.49	36.6
E	1.40	mvb	13,295	1.44	19.1
F1	1.48	mvb	13,795	1.52	21.0
F2	3.67	mvb	33,960	1.45	49.2
G	2.40	lvb	21,512	1.62	34.8
J	4.40	lvb	36,881	1.47	54.2
K	2.56	lvb	20,223	1.53	30.9
				Total	**298.0**

Notes: Mt = Million Tonnes

SG used for coal tonnage estimates outlined in Table 7.3 were derived using GSC Paper 88-21's Table 1 (in-situ bulk density guidelines) in conjunction with the raw ash estimates outlined in Table 6.1 in Section 6.

The plan view surface footprint of the resource area is depicted in Figures 7.1. The areas of resource assurance were delineated using the distance from data point guidelines in GSC Paper 88-21 that defines an Inferred resource of Moderate geology type to be between 900m and 2,400m from the nearest data point. For the Gordon Creek deposit, the distance from data point varied relative to the quality of the available information from each coal seam penetration. The distance surrounding coal seam penetrations in drillhole FD17-01 was extended to the maximum range of 2,400m on account of the high-quality data acquired from the drillhole, notably high-resolution geophysical log signatures, detailed drill core descriptions and a comprehensive suite of coal assay test results. Seam penetrations around drillhole FD17-03A, as well as O&G wells B-030-K and B-029-K were limited to 1,650m, half the distance between 900m and 2,400m. This shorter range was applied due to the lower resolution geophysical log signatures acquired from the O&G wells and incomplete penetration of the target coal seams from drillhole FD17-03A due to drilling complications.

The accuracy of resource estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analyses available after the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

Mineral resources are not mineral reserves and there is no assurance that any mineral resources will ultimately be reclassified as proven or probable reserves. Mineral resources which are not mineral reserves do not have demonstrated economic viability.

8 EXPENDITURES

The expenditures for the 2017 Gordon Creek exploration program are summarized in the Table 8.1 below. This table does not include any costs associated with geological data compilation and reporting, office-based geological consulting, geological modelling, mine engineering, environmental and archaeology report preparation, and associated support activities.

Table 8.1 Costs Summary For The 2017 Gordon Creek Exploration Program

Drilling	$	568,909
Helicopter	$	230,704
Drill/Helicopter Site Construction	$	70,930
Meals	$	35,796
Accommodation	$	28,379
Colonial Personnel	$	245,410
Geophysical Logging	$	30,174
Fuel	$	27,149
Rental Vehicles	$	25,478
Core Logging/Storage Area Rental	$	4,949
Travel	$	7,999
Materials and Supplies	$	37,961
Communication	$	3,101
Surveying	$	1,500
Freight	$	7,042
Coal Analysis	$	44,563
Geotechnical Testing	$	2,810
Field Consulting	$	34,248
Total:	**$**	**1,407,102**

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10 STATEMENT OF QUALIFICATION: JOHN H. PERRY, P.GEO.

I, John H. Perry, P.Geo., do hereby certify that:

- I am Chief Operating Officer for Colonial Coal International Corp., with offices at 200-595 Howe Street, Vancouver, B.C., V6C 2T5
- I hold the following academic qualifications:
  - B. Sc. (Hons) Geology, University of Exeter, UK – 1972
  - Post-Graduate studies in Geology, University of Calgary, Alberta – 1972-1976
- I am a registered Professional Geoscientist with the Association of Professional Engineers and Geoscientists of British Columbia, (Member #19598) and I am a fellow of the Geological Society, London, UK.
- I have practiced my profession for over 42 years on coal, metallic and industrial mineral and gemstone projects within Canada and internationally. My experience with coal projects is extensive; it ranges from early exploration through resource/reserve delineation and includes multiple feasibility-level studies and work conducted within a producing coal mine. Coal projects have been undertaken throughout western Canada and internationally; this includes many projects located in northeast B.C.
- I have overseen the preparation of this Coal Assessment Report entitled: "Flatbed Coal Project: 2017 Exploration Program. Effective June 2018.

Dated: March 29, 2019

(Signed) "John H. Perry"

_____

JOHN H. PERRY, P.Geo.

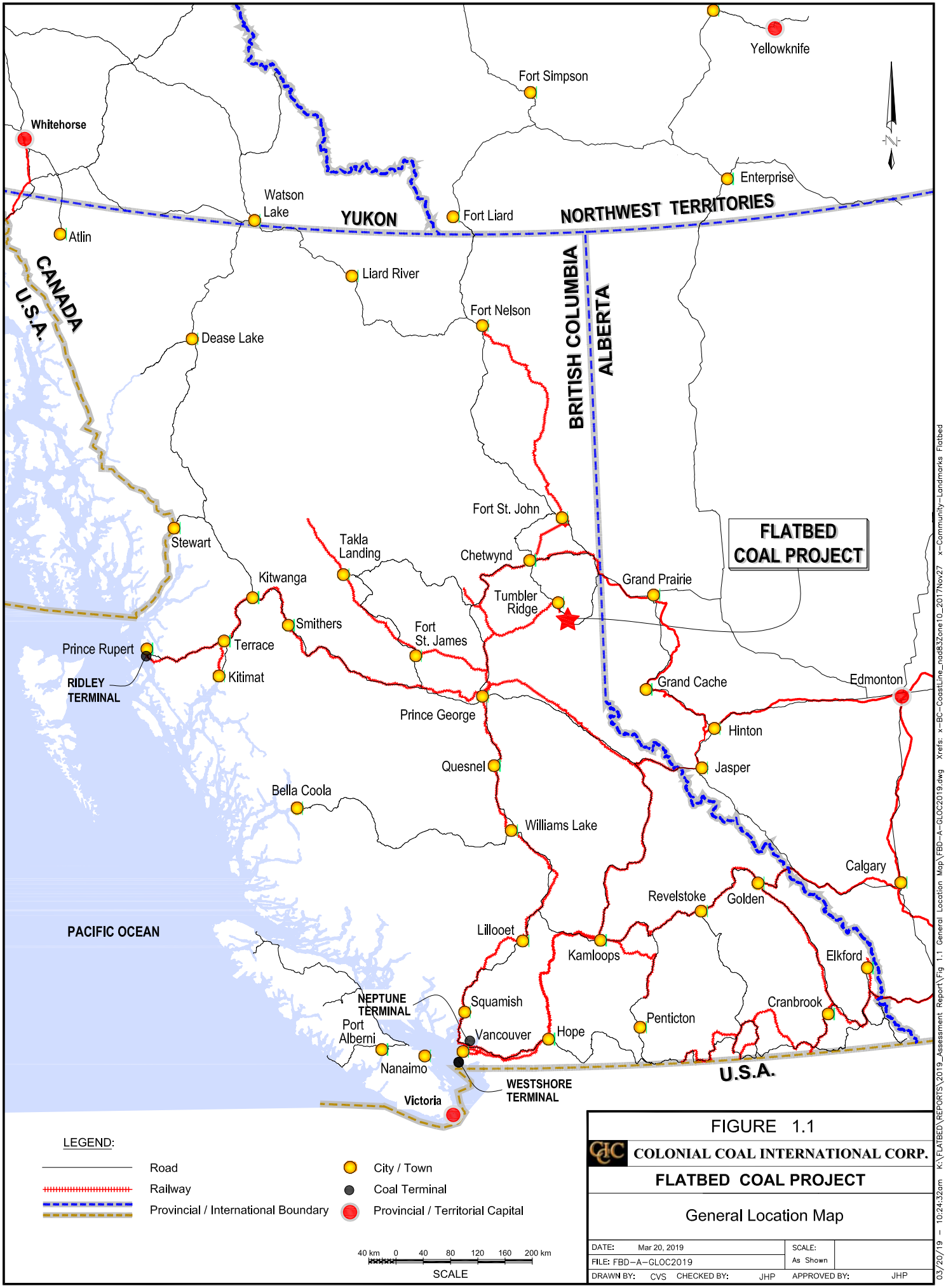

FIGURE 1.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

General Location Map

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FILE: FBD-A-GLOC2019			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

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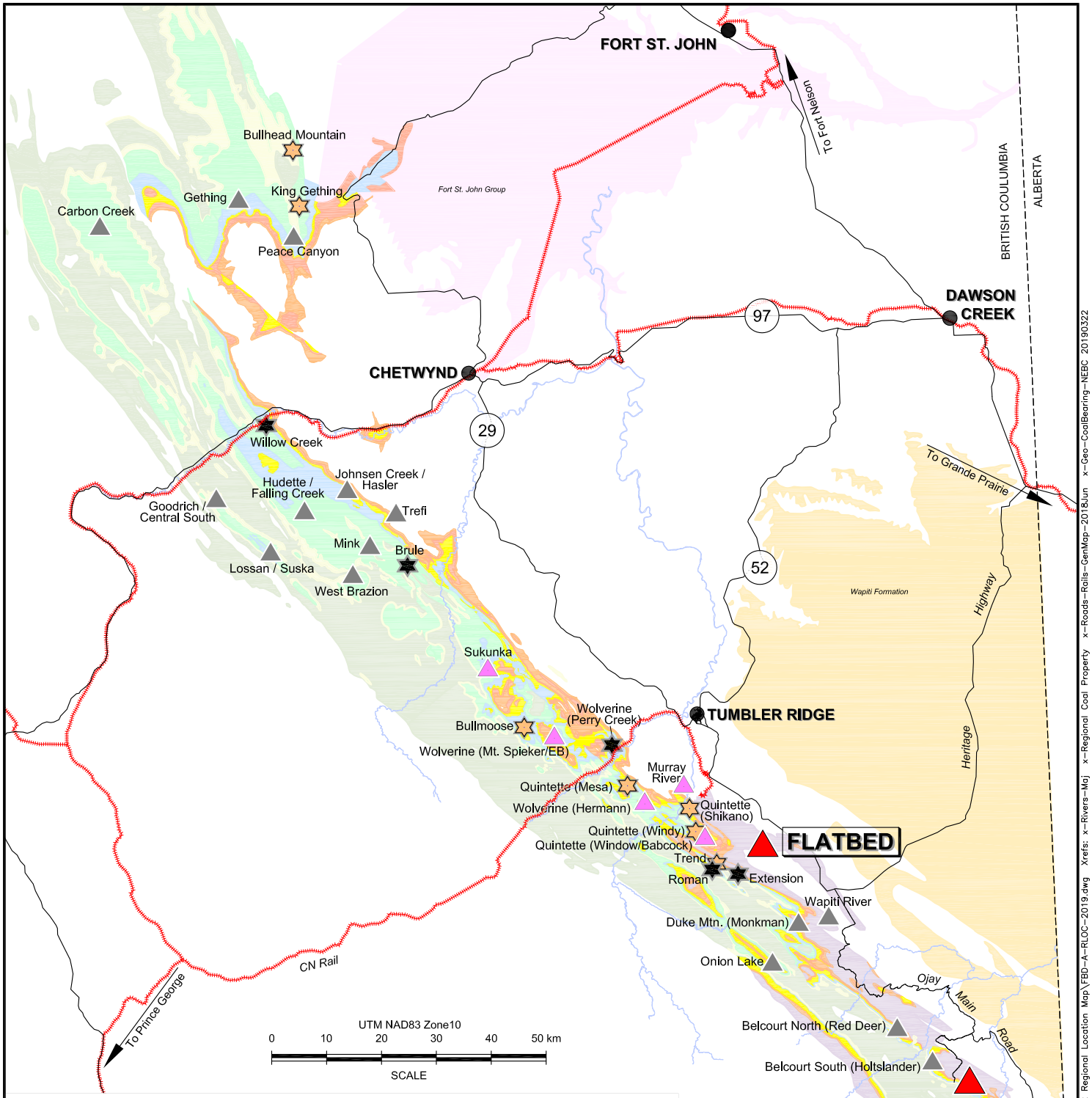

Source:
Cui, Y., Miller, D., Schiarizza, P., and Diakow, L.J., 2017. British Columbia digital geology. BC Ministry of Energy, Mines & Petroleum Resources, BC Geological Survey Open File 2017-8, 9p. Data version 2018-04-05.

FIGURE 1.2

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Regional Location Map

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FILE: FBD-A-RLOC-2019			
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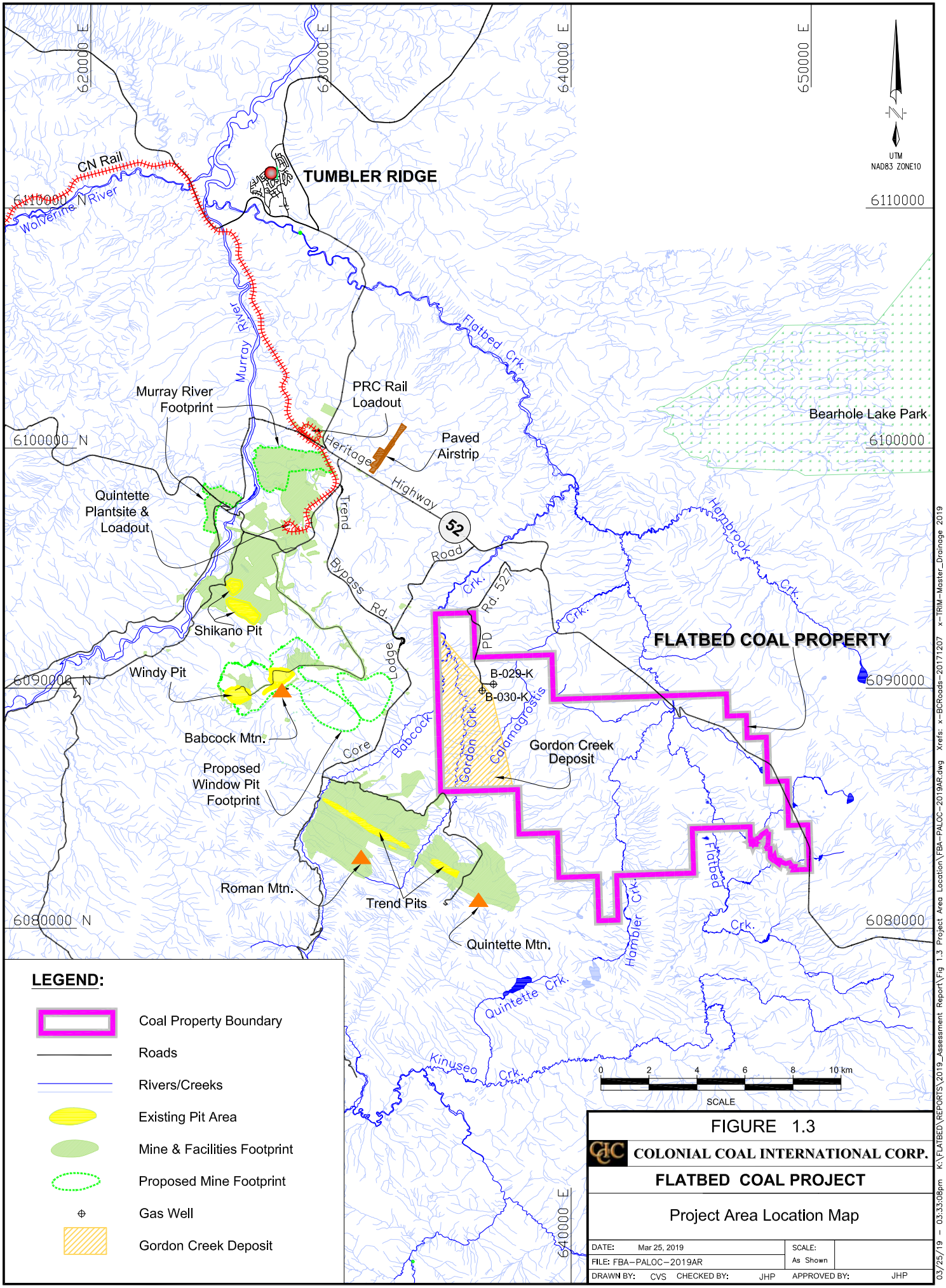

FIGURE 1.3

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Project Area Location Map

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FILE: FBA–PALOC–2019AR			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

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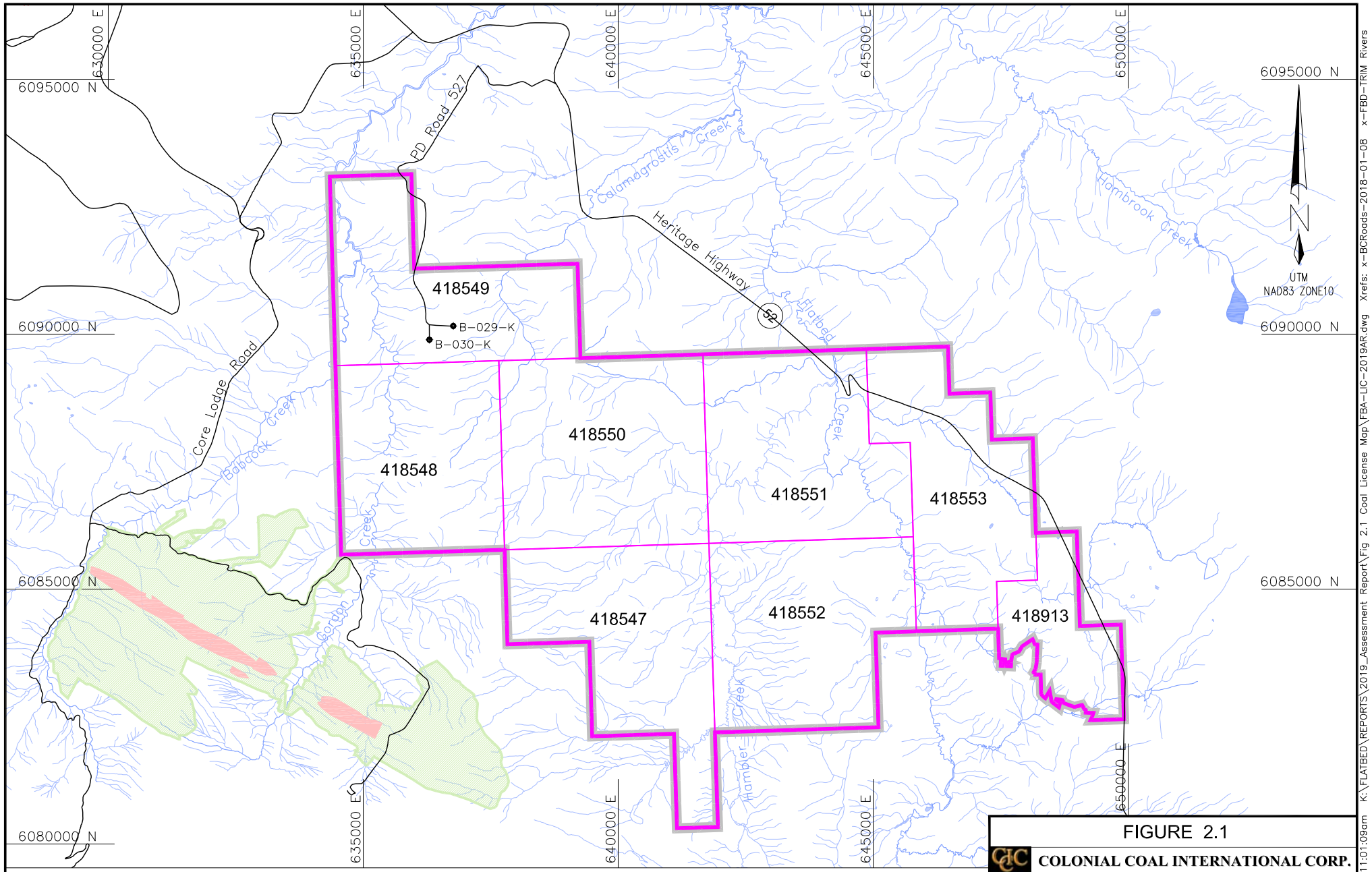

LEGEND:

- Coal License Boundary
- Road
- River/Creek
- PRC Trend Mine
- Old Gas Well

0 1 2 3 4 5 km

SCALE 1:100

FIGURE 2.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Coal License Map

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FILE: FBA-LIC-2019AR			
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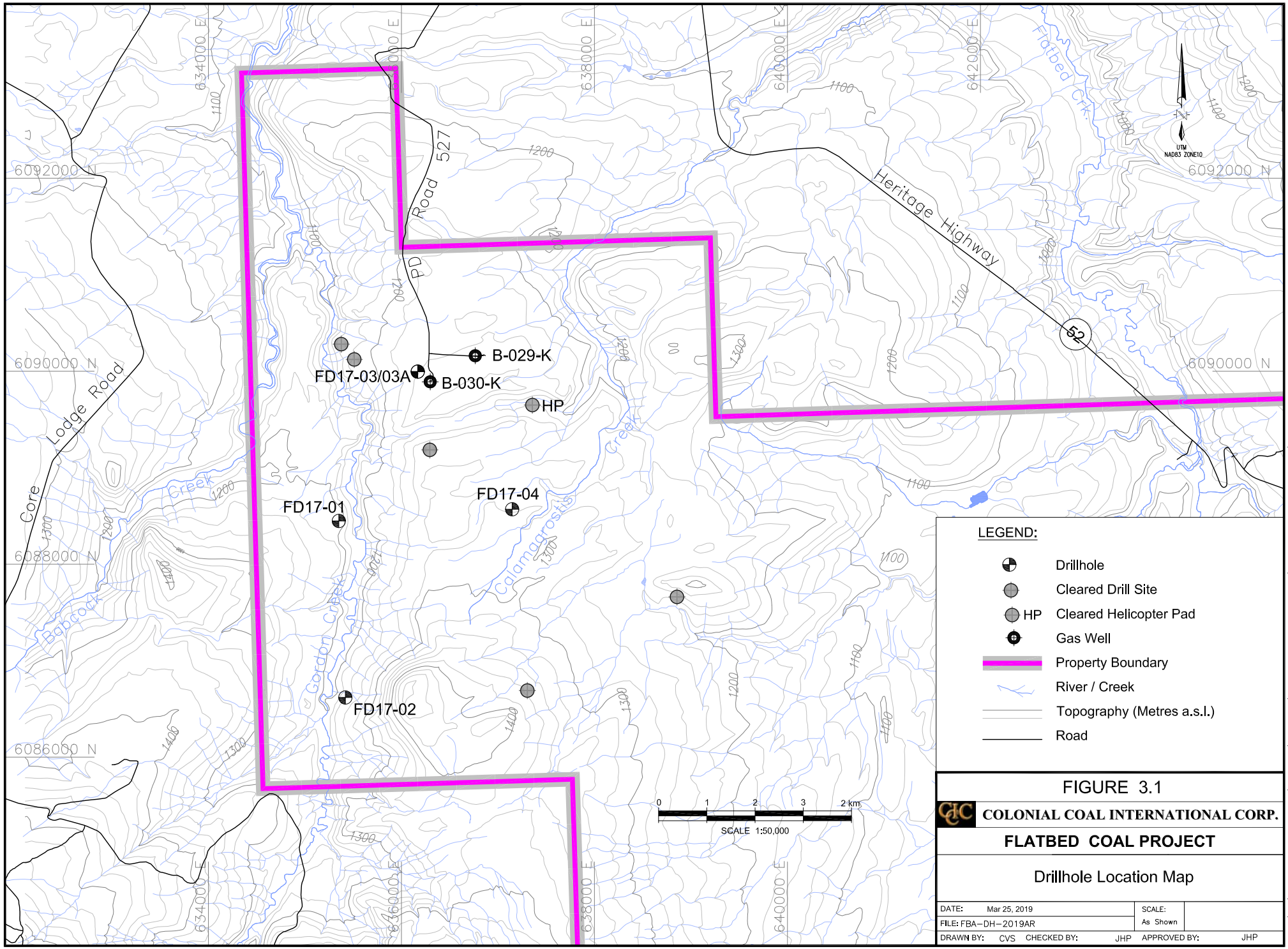
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638000 E
640000 E
642000 E
6092000 N
6090000 N
6088000 N
6086000 N
Flatbed Crk.
Heritage Highway
52
PD Road 527
Lodge Road
Core
Babcock Creek
Gordon Creek
Calamagrostis Creek
B-029-K
B-030-K
FD17-03/03A
HP
FD17-01
FD17-04
FD17-02
UTM
NAD83 ZONE10
0 1 2 3 2 km
SCALE 1:50,000
LEGEND:
Drillhole
Cleared Drill Site
HP Cleared Helicopter Pad
Gas Well
Property Boundary
River / Creek
Topography (Metres a.s.l.)
Road
FIGURE 3.1
COLONIAL COAL INTERNATIONAL CORP.
FLATBED COAL PROJECT
Drillhole Location Map
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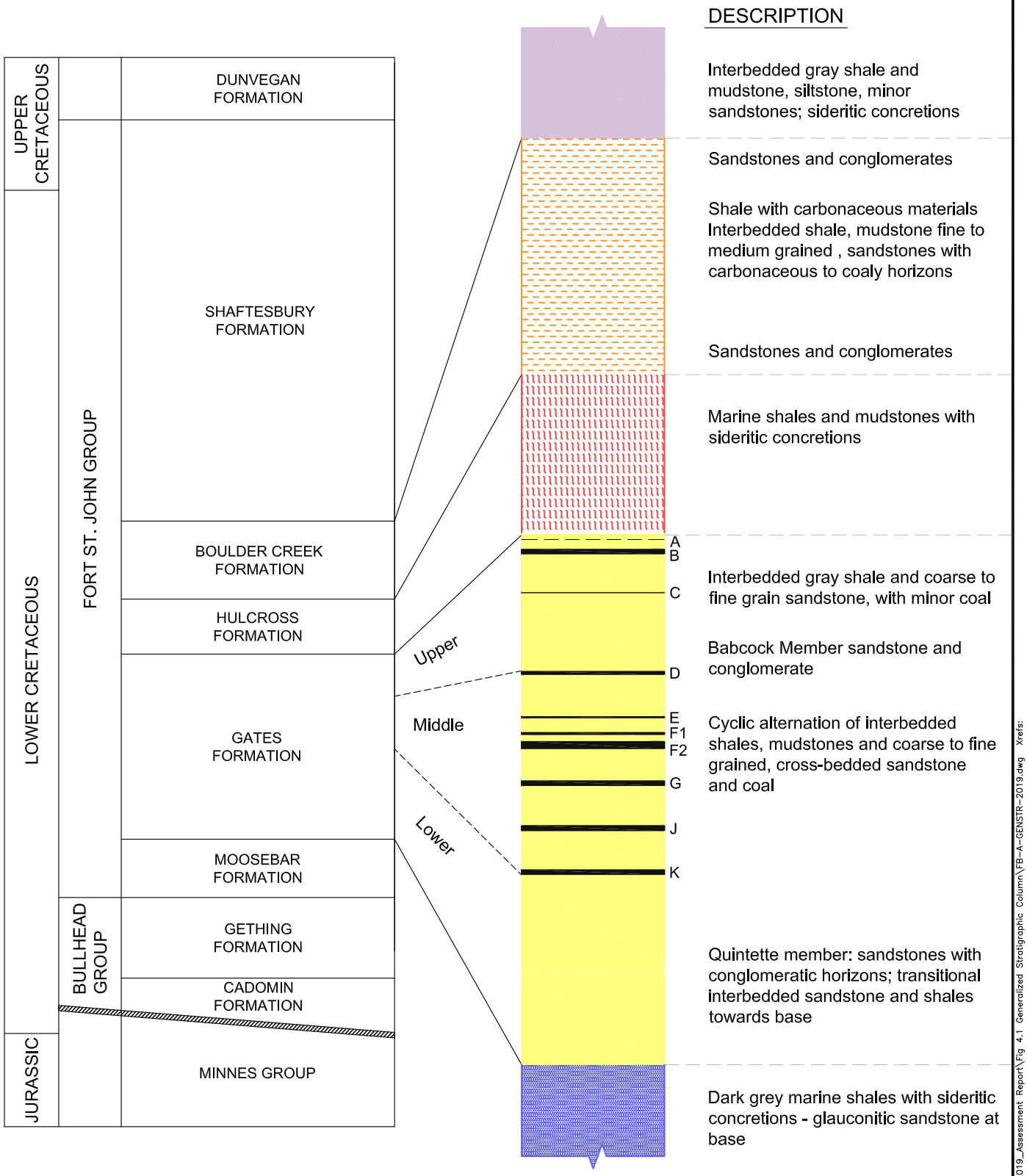

FIGURE 4.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Generalized Stratigraphic Column

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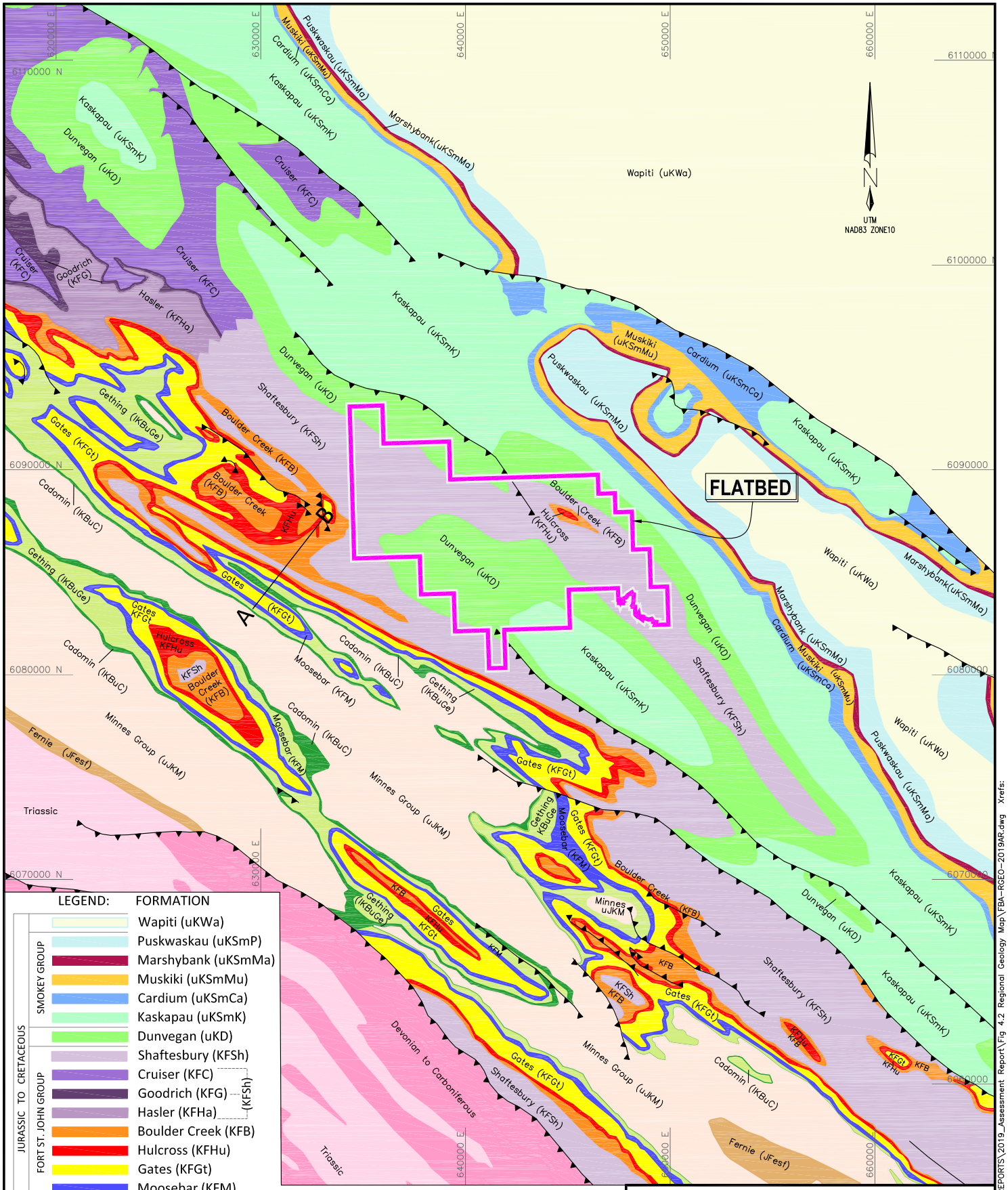

FIGURE 4.2

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Regional Geology Map

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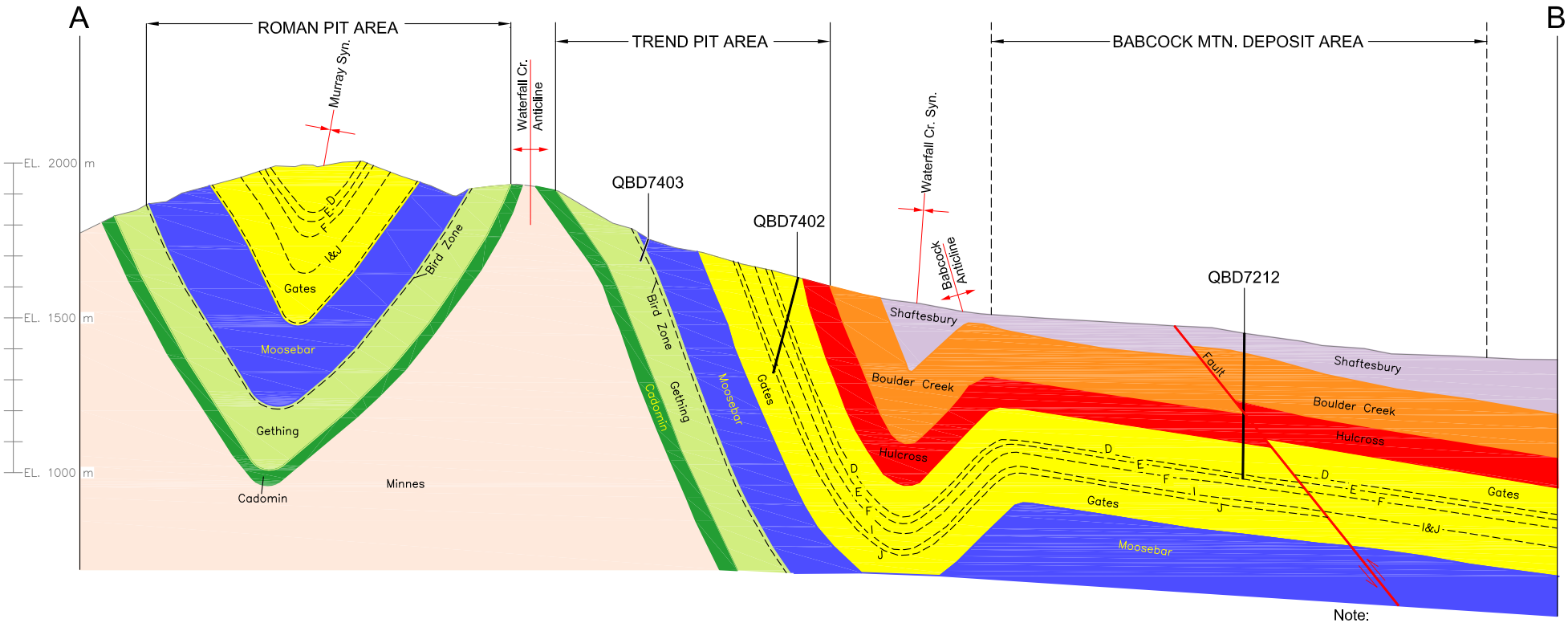
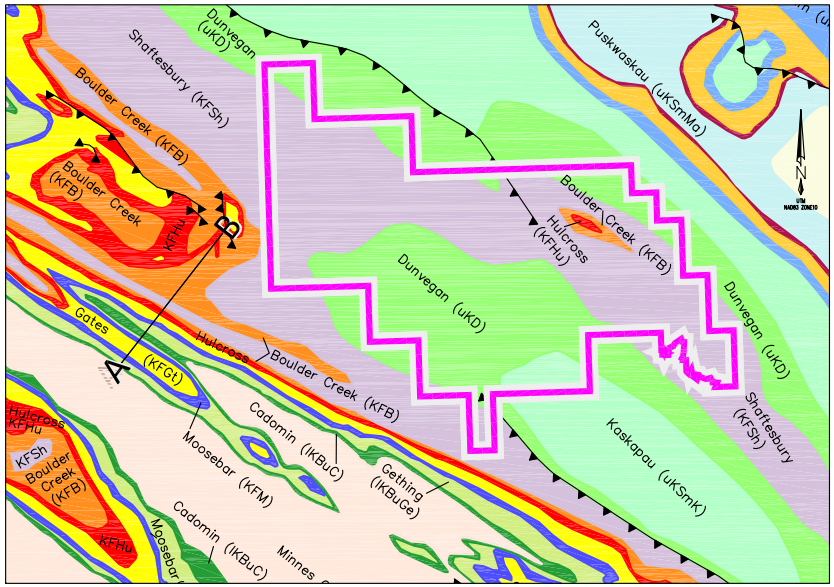


Note:
Taken from Perry (2004)



Modified from:
Cui, Y., Miller, D., Schiarizza, P., and Diakow, L.J., 2017. British Columbia digital geology.
BC Ministry of Energy, Mines & Petroleum Resources, BC Geological Survey Open File 2017-8, 9p. Data version 2018-04-05.

LEGEND:	FORMATION		
	Shaftesbury (KFSh)		Bird Zone
	Boulder Creek (KFB)		Coal Seam
	Hulcross (KFHu)		Fault
	Gates (KFGt)		Anticline (Axis)
	Moosebar (KFM)		Syncline (Axis)
	Gething (IKBuGe)		
	Cadomin (IKBuC)		
	Minnes Group (uJKM)		

FIGURE 4.3

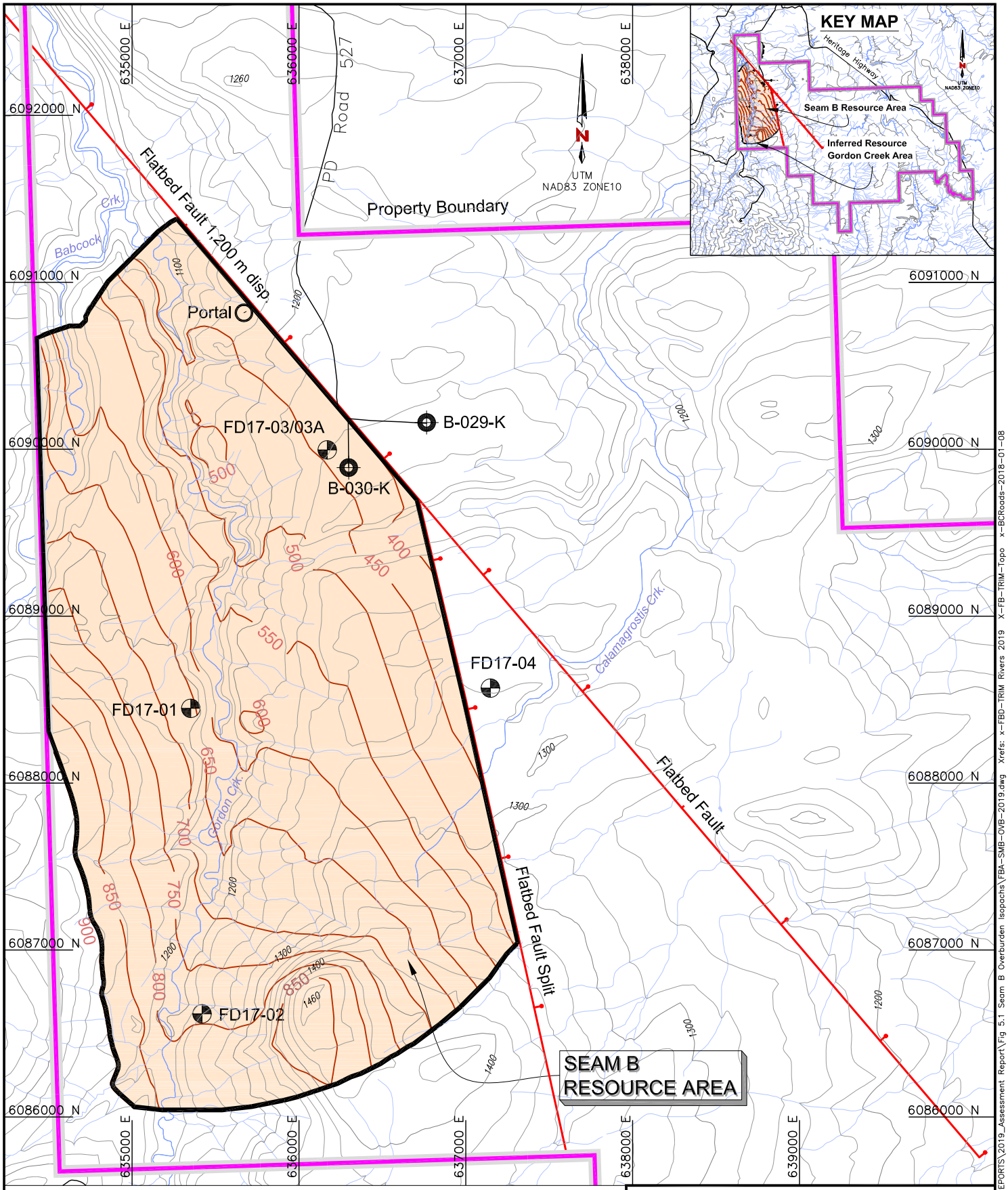
COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Regional Schematic Cross-Section

DATE: Mar 26, 2019		SCALE: As Shown	
FILE: FBA-SCHXSEC-2019			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

03/26/19 – 01:31:21pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 4.3 Regional Schematic Cross-Section\FBA-SCHXSEC-2019.dwg Xrefs: x-Geology-CentralBC



LEGEND:

- Colonial Coal Drillhole
- Old Gas Well
- River/Creek
- 1200 Topography (Metres a.s.l.)
- Road
- Seam B Resource Area
- 500 Overburden Isopach (Metres)
- Fault (downthrown side indicated)
- Property Boundary

0 200 400 600 800 1000 m
SCALE

FIGURE 5.1

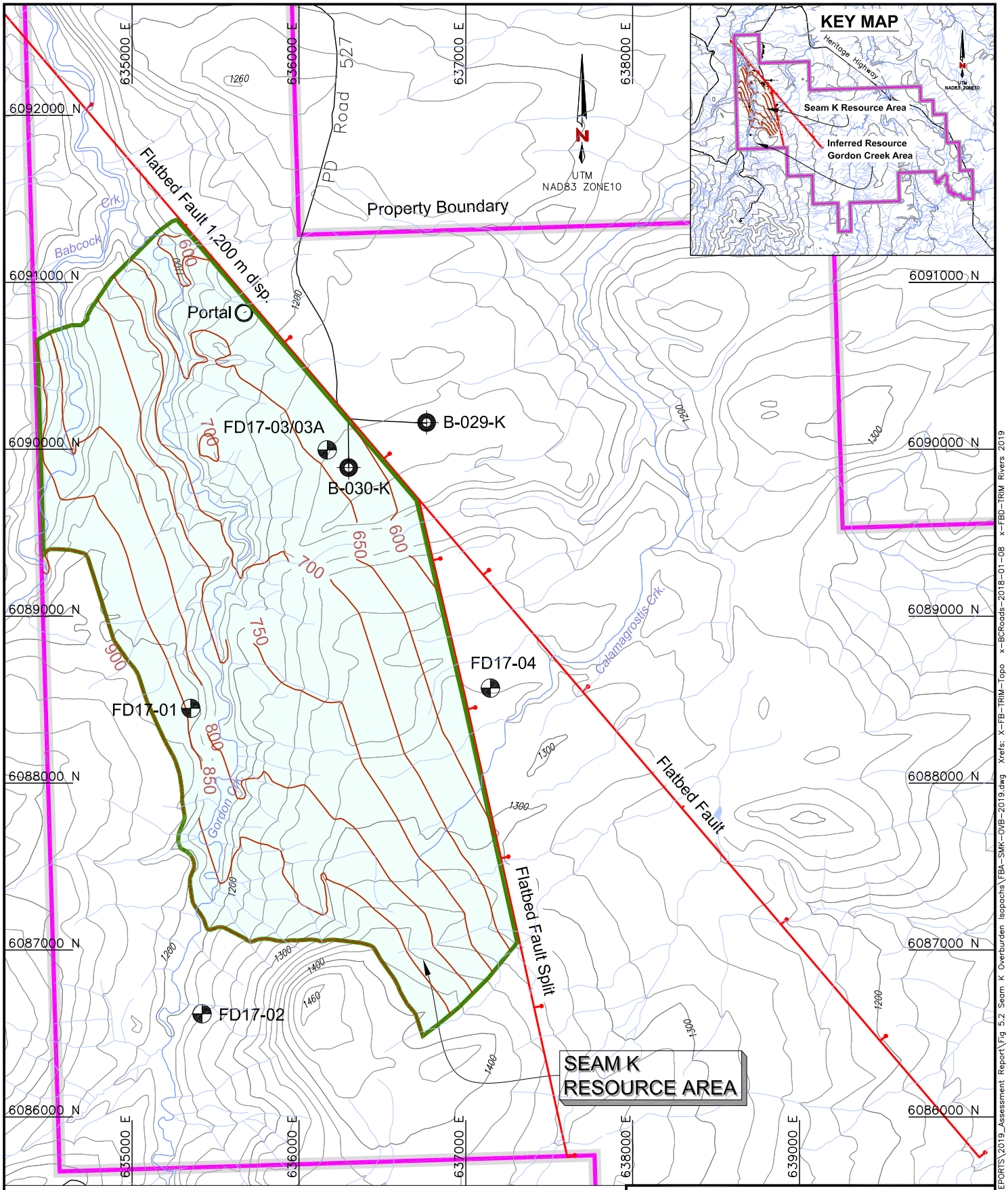
COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam B Overburden Isopachs

DATE: Mar 25, 2019		SCALE: As Shown	
FILE: FBA–SMB–OVB–2019			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

03/25/19 – 05:28:32pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 5.1 Seam B Overburden Isopachs\FBA–SMB–OVB–2019.dwg Xrefs: x–FBD–TRIM Rivers 2019 X–FB–TRIM–Topo x–BCRoads–2018–01–08



LEGEND:

- Colonial Coal Drillhole
- Old Gas Well
- River/Creek
- 1200 Topography (Metres a.s.l.)
- Road
- Seam K Resource Area
- 500 Overburden Isopach (Metres)
- Fault (downthrown side indicated)
- Property Boundary

0 200 400 600 800 1000 m
SCALE

FIGURE 5.2

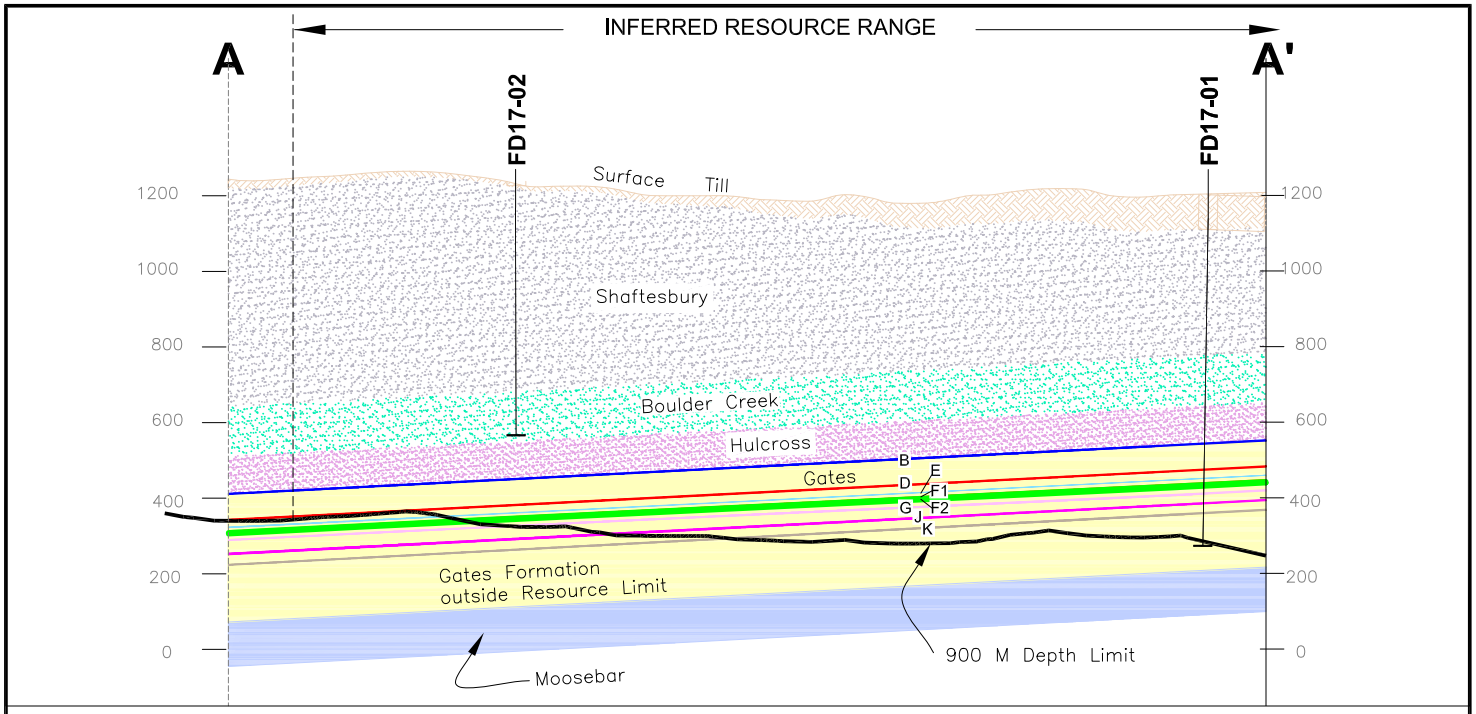
COLONIAL COAL INTERNATIONAL CORP.

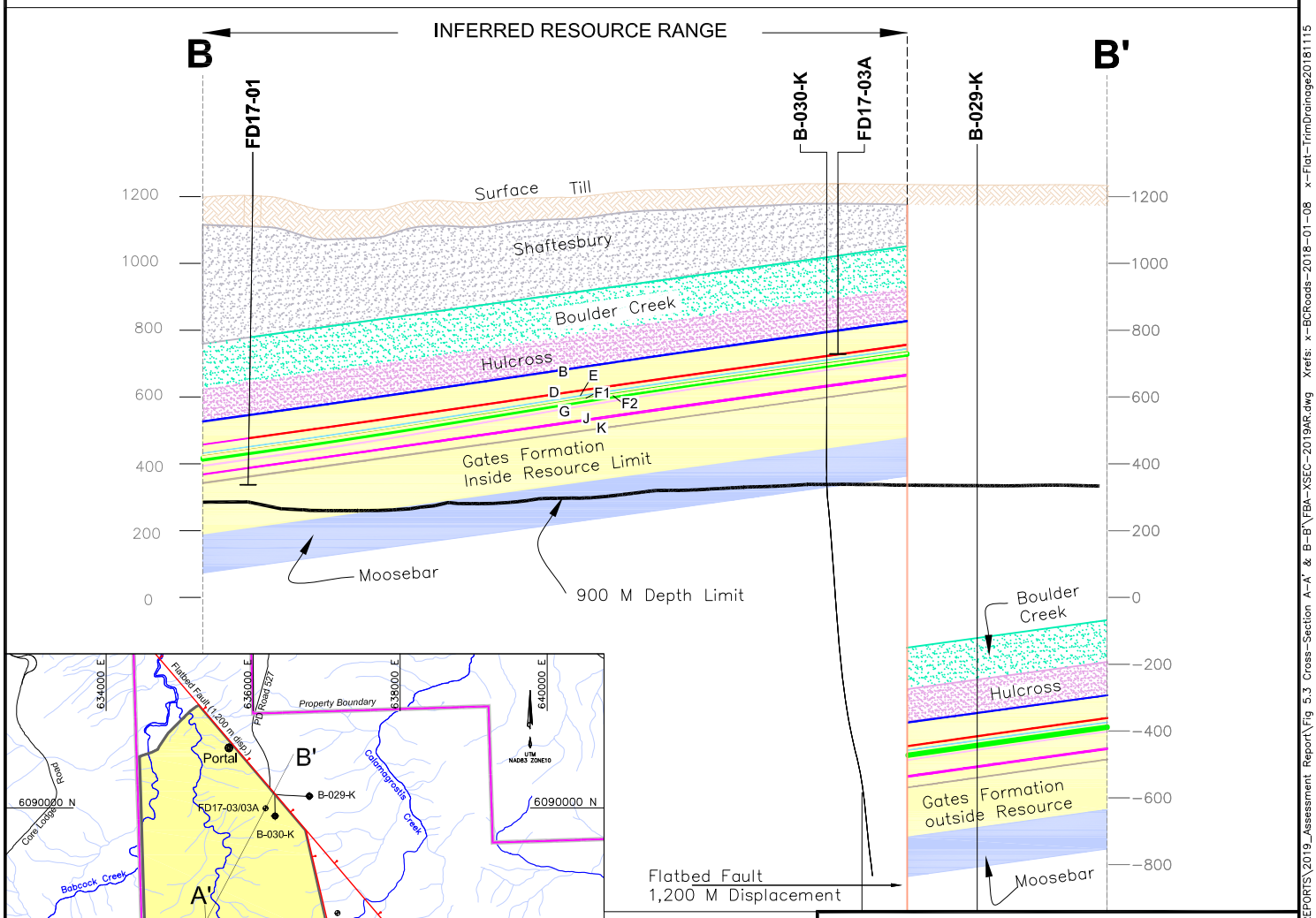
FLATBED COAL PROJECT

Seam K Overburden Isopachs

DATE: Mar 25, 2019		SCALE: As Shown	
FILE: FBA-SMK-OVB-2019			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

03/25/19 – 05:31:28pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 5.2 Seam K Overburden Isopachs\FBA-SMK-OVB-2019.dwg Xrefs: X-FB-TRIM-Topo x-BCRoads-2018-01-08 x-FBD-TRIM Rivers 2019





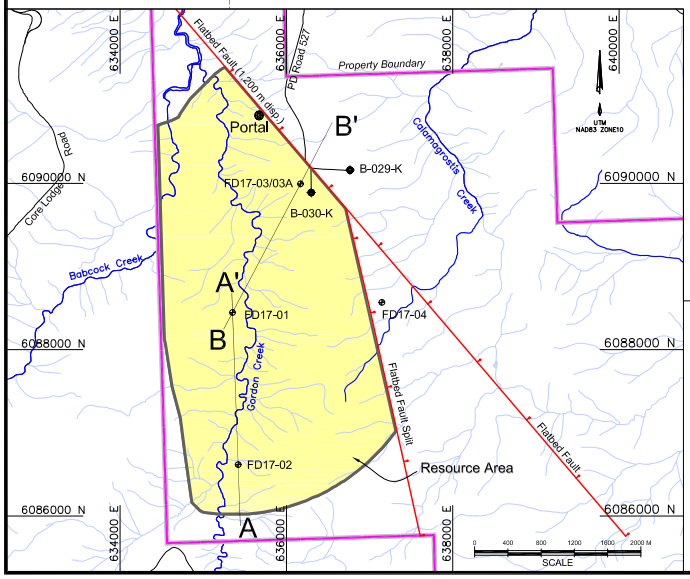


FIGURE 5.3

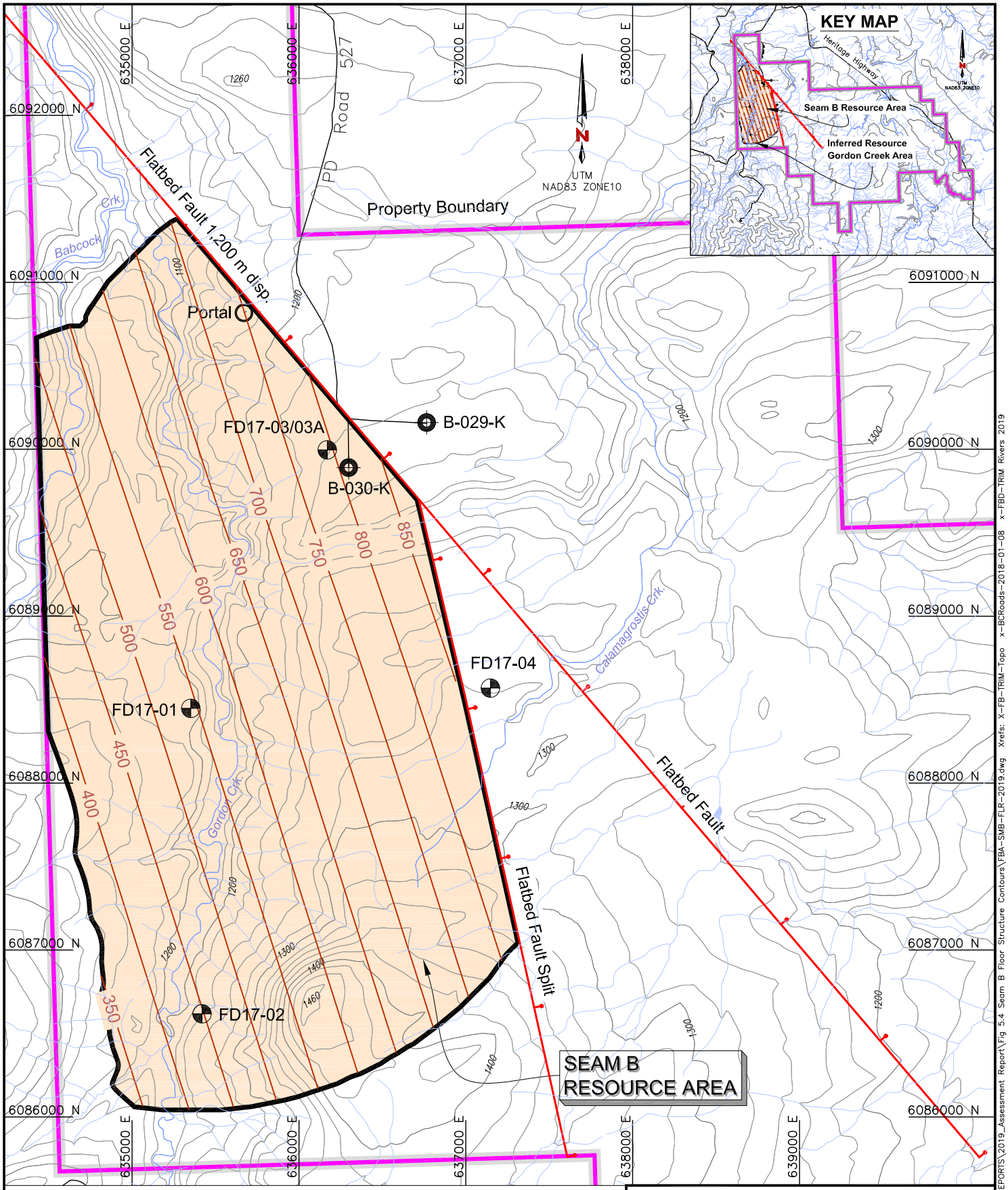
COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Cross-Sections A-A' and B-B'

DATE: Mar 25, 2019		SCALE: As Shown	
FILE: FBA–XSEC–2019AR			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

03/25/19 – 03:47:24pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 5.3 Cross-Section A-A' & B-B'\FBA-XSEC-2019AR.dwg Xrefs: x-BCRoads-2018-01-08 x-Flat-TrimDrainage20181115



LEGEND:

- Colonial Coal Drillhole
- Old Gas Well
- River/Creek
- 1200 Topography (Metres a.s.l.)
- Road
- Seam B Resource Area
- 500 Floor Structure Contour (Metres a.s.l.)
- Fault (downthrown side indicated)
- Property Boundary

0 200 400 600 800 1000 m
SCALE

FIGURE 5.4

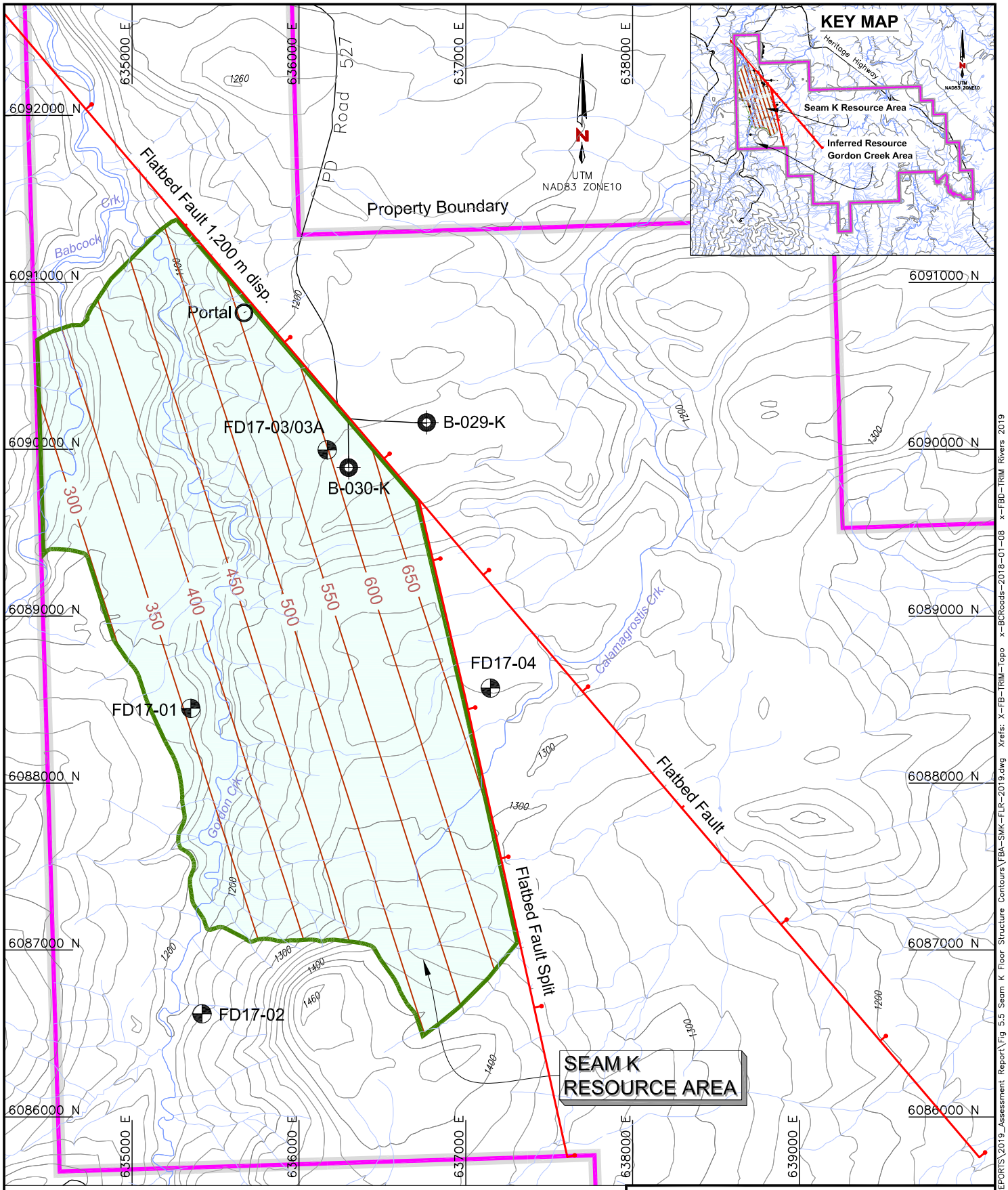
COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam B Floor Structure Contours

DATE: Mar 25, 2019		SCALE: As Shown	
FILE: FBA–SMB–FLR–2019			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

03/25/19 – 03:56:09pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 5.4 Seam B Floor Structure Contours\FBA–SMB–FLR–2019.dwg Xrefs: X–FB–TRIM–Topo x–BCRoads–2018–01–08 x–FBD–TRIM Rivers 2019



LEGEND:

- Colonial Coal Drillhole
- Old Gas Well
- River/Creek
- Topography (Metres a.s.l.)
- Road
- Seam K Resource Area
- 500 — Floor Structure Contour (Metres a.s.l.)
- Fault (downthrown side indicated)
- Property Boundary

0 200 400 600 800 1000 m
SCALE

FIGURE 5.5

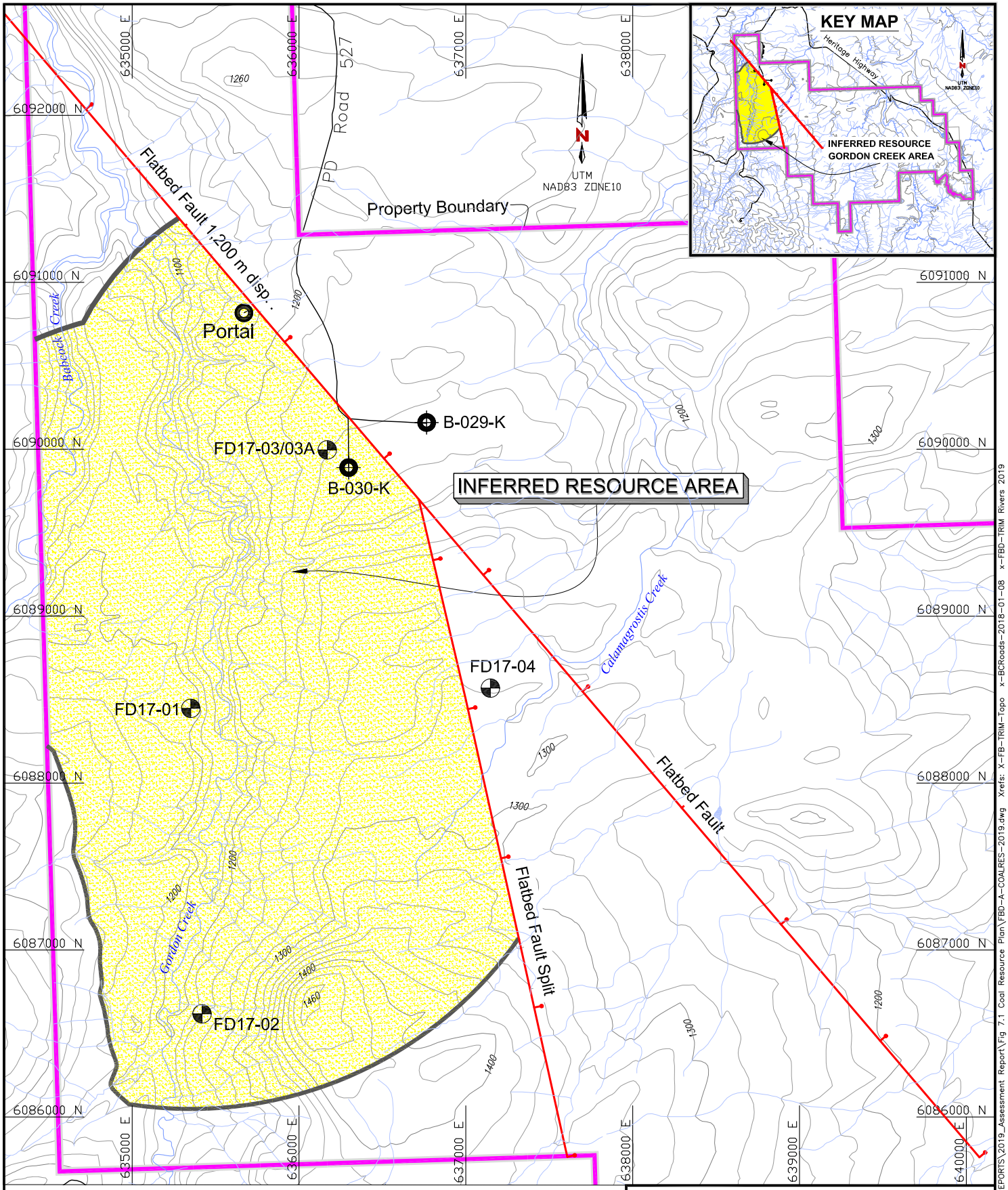
COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam K Floor Structure Contours

DATE: Mar 25, 2019		SCALE: As Shown	
FILE: FBA-SMK-FLR-2019			
DRAWN BY: CVS	CHECKED BY: DJL	APPROVED BY:	JHP

03/25/19 – 04:00:07pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 5.5 Seam K Floor Structure Contours\FBA-SMK-FLR-2019.dwg Xrefs: X-FB-TRIM-Topo x-BCRoads-2018-01-08 x-FBD-TRIM Rivers 2019



LEGEND:

- Colonial Coal Drillhole
- Old Gas Well
- River/Creek
- Property Boundary
- 1200 Topography (Metres a.s.l.)
- Road
- Inferred Resource Area
- Fault (downthrown side indicated)

0 200 400 600 800 m
SCALE

FIGURE 7.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Coal Resource Plan

DATE: Mar 25, 2019		SCALE: As Shown	
FILE: FBD-A-COALRES-2019			
DRAWN BY: CVS	CHECKED BY: JHP	APPROVED BY: JHP	

03/25/19 – 04:09:55pm K:\FLATBED\REPORTS\2019_Assessment Report\Fig 7.1 Coal Resource Plan\FBD-A-COALRES-2019.dwg Xrefs: X-FB-TRIM-Topo x-BCRoads-2018-01-08 x-FBD-TRIM Rivers 2019

Technical Report

Flatbed Coal Project
Gordon Creek Area

Submitted to:
Colonial Coal International Corp.

Project Number: 497-7

Report Date:
January 10, 2018

Report Effective Date:
January 10, 2018

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NORWEST
CORPORATION

CERTIFICATE OF QUALIFICATIONS

I, Derek J. Loveday, P.Geo., of Salt Lake City, Utah, do hereby certify that:

1. I am currently employed as Project Manager by Norwest Corporation, American Plaza II Suite 500, 57 West 200 South Salt Lake City, Utah 84101.
2. I graduated with a Bachelor of Science Honours Degree in Geology from Rhodes University, Grahamstown, South Africa in 1992.
3. I am a licensed Professional Geoscientist in the Province of Alberta, Canada, #159394. I am registered with the South African Council for Natural Scientific Professions (SACNASP) as a Geological Scientist #400022/03.
4. I have worked as a geologist for a total of twenty-three years since my graduation from university, both for mining and exploration companies and as a consultant specializing in resource evaluation for minerals, coal and industrial minerals.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101), and past relevant work experience, I meet the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of all sections of the technical report titled: "Flatbed Coal Project Gordon Creek Area" dated January 10, 2018, with effective date of January 10, 2018.
7. I personally inspected the property between October 10 and October 13, 2017.
8. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
9. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated January 10, 2018

Derek J. Loveday, P.Geo.
Project Manager, Norwest Corporation

NORWEST
CORPORATION

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1 SUMMARY

The following Technical Report was prepared by Norwest Corporation (Norwest) for Colonial Coal International Corp. (Colonial), a mineral exploration and development company with corporate offices in Vancouver, British Columbia (BC), Canada. This Technical Report summarizes the findings of Colonial's 2017 exploration program located at the Gordon Creek area of their 100% owned Flatbed Coal Project (Flatbed property) and presents estimates of coal mineral resources therein. This Technical Report has been prepared in accordance with National Instrument (NI) 43-101 and Form 43-101F1.

1.1 Location, Access and Tenure

The Flatbed property is in northeastern BC, approximately 645km north-northeast of Vancouver. The centre of the property is situated approximately 27km south-southeast of the town of Tumbler Ridge and 131km west-southwest of the city of Grande Prairie (Alberta).

Access into the project area is provided by a network of provincial paved highways and un-paved, all-weather roads plus other trails built by forestry, oil and gas (O&G) and coal mining companies. The property is located approximately 7km southeast of a rail line which terminates at the Quintette Mine coal washing plant and load-out facility. This rail line joins the CN Rail main line just north of Prince George and provides direct access to the coal export facility at Ridley Island, Prince Rupert, over a total distance of approximately 1,000km.

The property covers a total area of 9,607 hectares (ha) and consists of one contiguous block of 8 coal licenses. These licenses are held beneficially for Colonial by British Columbia numbered company, 0735513 B.C. Ltd., which is a wholly-owned subsidiary of Colonial. A royalty of 1.5 percent (%) is payable on all coal production from the property.

1.2 History

Adjoining the Flatbed Project are properties that have seen significant historic coking coal exploration, namely, the Duke Mountain (south), Trend (southwest), Quintette - Babcock (west), and Murray River (northwest) properties. The currently idled Trend coal mine, owned by Peace River Coal Inc. (PRC) a subsidiary of Anglo American PLC, was in production as recently as 2014.

Portions of the current Flatbed property were at one time held by other coal exploration companies; specifically, Denison Mines Limited (Denison) from the early 1970's to mid-1980's (Denison Mines Limited, 1973), and Kennecott Canada Exploration Inc. (Kennecott) between 2007 and 2009 (Kennecott Canada Exploration Inc., 2007).

1.3 Geology

The Flatbed Coal Project lies within a belt of Mesozoic strata that forms part of the Rocky Mountain Foothills of northeastern British Columbia. The stratigraphy of this succession broadly represents an alternating sequence of marine shales, as well as marine and non-marine clastic lithologies deposited from a series of transgressive and regressive cycles. The structural geology of the area is dominated by a series of folds and thrust faults typical of Canadian Rocky Mountain Foothills structures.

The coal seams of greatest potential are found within Lower Cretaceous strata of the Gates Formation. At Flatbed, the Gates Formation contains eight main coal seams, in ascending order they are K, J, G, F2, F1, E, D, and B.

1.4 Exploration

Although portions of the current Flatbed property were previously held by other mining companies, other than some limited geological mapping along Gordon Creek, no other previous coal exploration occurred on the property before 2017. The property has seen significant O&G exploration over the past 40 years and there are currently four O&G wells and numerous seismic lines within the property. Exploration conducted by Colonial in 2017 focused on the Gordon Creek area and consisted of 5 HQ core holes (2,831.84m) and detailed geological mapping along the creek.

1.5 Mineral Resources

Prior to this report there had been no coal resource estimates calculated for the Flatbed property.

Norwest has conducted a review of data collection procedures, data validation, geological interpretation, formatting and treatment of data to support geological model development for the area under consideration. This work provides the basis for Norwest's independent coal resource estimate and coal resource classification for the Gordon Creek area.

Using a 1.0m minimum seam thickness, and depth of cover limit of 900m, an in-situ underground mineable Inferred resource of 298 million tonnes (Mt) was estimated for the Gordon Creek area of the Flatbed property. The coal resources associated with each of the coal seams are shown in Table 1.1.

Table 1.1 Coal Resources Gordon Creek Area - Flatbed Property

Seam ID	Formation	Classification	Resource (Mt)
B	Gates	Inferred	52.2
D	Gates	Inferred	36.6
E	Gates	Inferred	19.1
F1	Gates	Inferred	21.0
F2	Gates	Inferred	49.2
G	Gates	Inferred	34.8
J	Gates	Inferred	54.2
K	Gates	Inferred	30.9
Total		**Inferred**	**298.0**

The resource estimate has been prepared in accordance with the requirements of NI 43-101, Standards of Disclosure for Mineral Projects (Canadian Securities Administrators, 2011). The Geological Survey of Canada Paper 88-21 "A Standardized Coal Resource/Reserve Reporting System for Canada" (Hughes, et al, GSC Paper 88-21, 1989) has been referred to for the classification, estimation and reporting of coal resources. GSC Paper 88-21 was written in 1988 and is now obsolete with respect to certain technical parameters. This document has been used only as a guideline for resource estimation.

Analytical results indicate that the Gates coal seams within the Gordon Creek area are metallurgical coals that would yield a coking coal product after beneficiation in a wash plant at an 8% to 9% ash air dried basis (adb) product range. Dry mineral matter free volatile (dmmf) contents indicate that the seams range in rank from low volatile bituminous (lvb) to medium volatile bituminous (mvb), according to ASTM coal rank classification. Raw seam ash values range from approximately 14.98% to 33.48% (adb), with most of the raw coal seam ash values below 25% (adb). Raw seam total sulphur content ranges from 0.32% to 1.44% (adb). All seams but one, Seam E, returned results of less than 1.0%.

After crushing to pass 9.5mm, size analysis indicates that between 95.89% and 98.31% of the coal reports to the coarse (9.5mm x 0.25mm) fraction. Float-sink analysis indicates that washing to approximately an 8% to 9% ash product (adb) is possible. From the coarse fraction floats, estimated clean coal free swelling indices (FSI) range between 4.0 and 8.0. Associated laboratory-determined theoretical yields (adjusted for core loss) range between 58.3% and 83.2%.

Clean coal composite (CCC) samples using both floats and froths from each seam, targeting ash contents in the 8% - 9% (adb) range, typically clean to a low sulphur product, with sulphur contents ranging between 0.37% and 1.32%. Seven of the eight seams report less than 1%

sulphur, with the exception of Seam E at 1.32%. The phosphorus-in-coal contents for all CCC's range from 0.002% to 0.089%. FSI values range from 3.5 to 8.5, although the majority are equal to or greater than 6. Maximum fluidity values range between 1 to 1140 dial divisions per minute (ddpm) and dilatation ranges from minus 13 to 117. CCC base/acid ratios range from 0.08 to 0.23, although the majority are less than 0.13. Mean maximum vitrinite reflectance (RoMax) values range from 1.17 to 1.43

1.6 Conclusions and Recommendations

It is concluded that the Gordon Creek area of the Flatbed property contains a substantial in situ Inferred coal resource of 298Mt that includes potentially economic mineable coking coal. To further advance the project, additional coal exploration on the property is required to increase the resource confidence to higher classification levels from the current Inferred level.

It is recommended that Colonial proceeds with an internal high-level mining study as part of a selection process on whether to proceed with a Preliminary Economic Assessment (PEA) for public disclosure using existing data and models. It is further recommended that additional exploration be conducted within the Gordon Creek area to further advance the definition of the geology, resource, and coal quality potential. It is expected that such exploration would include 2D seismic surveys, designed to identify coal seams and geological structures at relatively shallow depths, in addition to more drilling. It is further recommended that exploration be initiated on a second target located in the eastern portion of the property, to include an initial 2D seismic survey and detailed geological mapping. The cost for the above recommended work is estimated to be $2.6M.

The accuracy of resource estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

Mineral resources are not mineral reserves and there is no assurance that any mineral resources will ultimately be reclassified as proven or probable reserves. Mineral resources which are not mineral reserves do not have demonstrated economic viability.

2 INTRODUCTION

This report was prepared for Colonial Coal International Corp. (Colonial) by Norwest Corporation (Norwest) and focuses of the Gordon Creek area of the Flatbed Coal Project. Colonial owns a block of coal licences in northeastern British Columbia, collectively referred to as the Flatbed Coal Project (Flatbed property). The company retained Norwest for the preparation of a Technical Report, in accordance with National Instrument (NI) 43-101, Form 43-101F1 (Canadian Securities Administrators (CSA), 2011). Mr. Derek Loveday, P.Geo is the Norwest Qualified Person (QP). Mr. Loveday has undertaken a review of Colonial's work within the project area, including data obtained and interpretations generated by Colonial, and takes responsibility for this report. Verification of the geology and coal development was completed through a site visit and data review. In addition, Norwest has constructed the geologic grid model for the project area using validated data provided by Colonial and completed an independent resource estimate for the Gordon Creek area of the Flatbed property.

The purpose of this report is to provide Colonial an independent estimate of the coal resources contained within those coal licences of the Flatbed property that were the subject of an exploration program conducted in 2017, referred to herein as the Gordon Creek area. It is prepared in a manner consistent with Canadian Securities Commission requirements as laid out in NI 43-101 (op. cit.), by personnel who have substantial experience with the coal deposits of western Canada, and northeast British Columbia in particular.

The report provides estimation and classification of coal resources for the Gordon Creek area of the Flatbed property. Resource estimations are based on Colonial's geologic database for the property which has been generated from their 2017 drilling program plus past work carried out by oil and gas (O&G) companies on two O&G tenures that are located within the exploration area. To prepare this report, the author has relied on data collected by others and on exploration data collected by Colonial in 2017. A full set of references is presented in Section 27.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

3 RELIANCE ON OTHER EXPERTS

The technical information and resource estimates outlined in this report are based on Colonial's geologic database for the property which has been generated from their 2017 drilling program plus work carried out by previous O&G drilling operations. To prepare this report, the author has relied on data collected by others and on exploration data collected by Colonial in 2017. A full set of references is presented in Section 27.

Norwest did not conduct field work, other than a site visit, and did not independently drill or complete geophysical logs on drillholes or take samples. A current site visit was conducted by Derek Loveday, P. Geo. between October 10 and October 13, 2017.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Flatbed Coal Project is situated within the eastern foothills (Inner Foothills Belt) of the Rocky Mountains of northeastern British Columbia, within the Peace River Regional District. The property lies within the Liard Mining Division and is located on NTS Map Sheet 93-I/15. It is situated approximately 27km south-southeast of the town of Tumbler Ridge and is centred on UTM NAD83 Zone 10 coordinates 641,270m E and 6,087,398m N. The general location of the property is shown in Figure 4.1, located in Section 28, which contains all figures and illustrations of this report,

The property is located within the Peace River Coalfield, in an area well known for producing metallurgical grade coal, ranging from hard coking coal (HCC) to coal for pulverized coal injection (PCI), from predominantly surface mining operations. The currently idled Trend coal mine, owned by Peace River Coal Inc. (PRC), a subsidiary of Anglo American PLC, and the Babcock Mountain deposit, that hosts the proposed Window Pit, owned by Teck Resources Ltd. (Teck), adjoin the Flatbed property to the southwest and west, respectively. The regional setting of the property, with respect to population centres, roads, rail lines, coal mines and other major coal deposits is shown in Figure 4.2. A localized project location map illustrating the location of the property in relation to the neighbouring Trend Mine and Teck's proposed Window Pit is presented in Figure 4.3.

4.2 Coal Licenses

The Flatbed Coal Project consists of one contiguous block of 8 coal licenses covering 9,607 hectares (ha) located to cover a northwest-southeast-trending sedimentary succession that hosts prospective coal measures at depth. The recorded owner of the licenses is British Columbia numbered company 0735513 B.C. Ltd., which is a wholly-owned subsidiary of Colonial.

The property lies within the Liard Mining Division and is covered by NTS Map Sheet 93-I/15. Coal license data and descriptions are summarized in Table 4.1 and the locations of the licenses are shown in Figure 4.4. Information pertaining to coal license tenure is posted on the British Columbia Ministry of Energy and Mines web site. The posted records of the British Columbia Ministry of Energy and Mines indicate that the coal licenses are in good standing.

Table 4.1 Coal License Information - Flatbed Coal Project

Tenure Number	Tenure Type	Area (ha)	Current Owner	Issue Date	Good To Date
418547	License	1,340	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418548	License	1,190	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418549	License	1,189	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418550	License	1,488	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418551	License	1,339	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418552	License	1,340	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418553	License	1,191	0735513 B.C. Ltd.	2014/Jun/09	2018/Jun/09
418913	License	530	0735513 B.C. Ltd.	2016/Sep/08	2018/Sep/08
Totals		**9,607**			

No legal surveys have been undertaken either as a requirement for, or subsequent to acquisition of, the coal licenses. Within British Columbia, coal lands are acquired simply by application (paper “staking”); claim posts are not required. Colonial does not own surface rights over any of the property; there is no requirement to own surface rights to conduct mineral exploration within the Province. No search of land title, survey records or surface rights has been undertaken for this report. However, it may reasonably be expected that the Crown retains surface rights over most of the property. O&G exploration and development has been carried out across the region over the past several decades and a number of wells have been drilled within and surrounding the Flatbed property. Most of these wells are situated along the property’s eastern boundary, although four are located within the property itself. One well site is situated just inside the northern boundary of the Gordon Creek area while a second lies just outside this area; both are located on coal license 418,549. Two other well sites are present near the eastern boundary of the property, on coal licenses 418,553 and 418,912. The status of each well has not been determined; however, field observations indicate that none of the wells on the property are producing. A number of retired forest harvest licenses are located within the property but, currently, there are no active or pending licenses. Other tenures or tenure applications that might be present could include un-drilled O&G, forestry, wind farm, guide outfitting, and trapping tenures plus tenure applications.

Under the Coal Act of British Columbia, a licensee has the exclusive rights to explore for and develop coal on the license and, with the approval of the Chief Inspector of Mines, to mine and remove those quantities of coal that may reasonably be required for testing, to a maximum of 100,000 tonnes. The holder of a license is entitled to enter, occupy and use the surface of the location for exploring and developing coal and, subject to obtaining a free use

permit or a license to cut under the Forest Act to use and remove timber that is on the location. Further, a licensee has the non-exclusive right to use sand, gravel and rock from the location, for use on the location for a construction purpose approved under the Mines Act, without the necessity of obtaining under the Land Act a license, lease, permit or other authorization.

A coal license is valid for a term of one year from the date of its issue and, subject to complying with the provisions of the license and the Coal Act, the coal license can be extended for further one year terms on application by the licensee. Such application must be made before the license expires (although a 30-day grace period is available) and must be accompanied by a rental fee and certain information or data respecting the exploration, development and production of coal. Coal licenses will expire if renewal applications are not made in accordance with the provisions set out above. In addition, the government may suspend operations, refuse to renew a coal license, or terminate a coal license for failure to comply with the Coal Act, the license, the Mines Act or a permit under it. A restriction on the use of surface rights may be imposed by the British Columbia government if the surface area is so situated that it should be used for purposes other than mining. Lands may also be expropriated under the Park Act (British Columbia).

The only financial obligation required on the part of the licensee to keep the coal licenses in good standing are the yearly renewal fees. For the first 5 years these are set at $7/ha. This increases to $10/ha for the second 5-year term and by an additional $5/ha at the end of each 5-year period beginning with the 11th year. There is no financial or other obligation required from Colonial to retain the property. The current annual rental fee, paid to the Crown, for Colonial to keep the coal license in good standing is $67,249.00.

Occasional areas of merchantable timber may be present at lower elevations and a number of logged areas are present both on, and in the general vicinity of, the property. Apart from those areas that have been the focus of O&G and forestry activities, current land use appears limited to hunting, trapping, and recreational activities such as snowmobiling and driving ATVs. The property lies within an active guide-outfitter area and hosts active trap-lines.

As far as can be reasonably ascertained, the property appears to be free of any environmental liabilities associated with previous mineral exploration activities. Disturbances associated with previous O&G drilling and logging operations would have been reclaimed according to the regulations that govern such activities. No mining has been undertaken within any of the licenses, consequently, there are no tailings ponds or waste

dumps. Colonial has advised Norwest that reclamation was carried out on all drill sites during the 2017 exploration program. Norwest has not revisited the site to verify the reclamation.

Colonial was issued Mineral & Coal Exploration Activities & Reclamation Permit CX-9-061 on August 14th, 2014; this permit expires December 31st, 2018. The permit authorizes Colonial to perform work on coal licenses 418547 through 418551 and 418553.

4.3 Ownership

The property is held beneficially for Colonial by a British Columbia company, 0735513 B.C. Ltd. This company is a wholly-owned subsidiary of Colonial.

Coal licenses 418547 to 418553 were issued on June 9th, 2014 while coal license 418913 was issued on September 8th, 2016.

The coal licenses are subject to a 1.5 percent (%) production royalty, payable on all coal produced, to private stakeholders in the project, including certain directors of Colonial. Disclosure of this royalty is provided in Colonial's past and current initial TSX-V listing documents and is continually disclosed in all of Colonial's quarterly MD&A filings on SEDAR and in the company's year-end reports.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

The Flatbed property can be accessed by a network of provincial paved highways and un-paved, all-weather roads plus other trails built by forestry, O&G and coal mining companies. The main access to all portions of the property from Tumbler Ridge is via Highway 52 (Heritage Highway) which is a paved secondary road.

Approximately 20km south-southeast of Tumbler Ridge, Highway 52 intersects the Core Lodge Road, an all-weather road originally constructed to access O&G wells on and around the southeastern and western flanks of Babcock Mountain. For a long period, this road provided the main access route to the Trend coal mine, the entrance to which is approximately 14km southwest of its intersection with Highway 52. A second all-weather O&G access road extends from the mine gate to a shut-in well located atop Quintette Mountain, 7.2km to the southeast. The northern portion of this road has been incorporated into the Trend mine's internal access infrastructure. Some 6km from the mine gate, the Quintette Mountain road passes within 70m of the southwestern corner of the Gordon Creek area of the Flatbed property as indicated in Figure 4.3. Colonial's current Work Permit allows for the construction of an access trail into the property from this location.

Four kilometres southeast of the entrance to the Core Lodge Road, another all-weather road extends from the highway to access two O&G wells located along the northern edge of the Gordon Creek area. This road, referred to as Petroleum Development Road (PDR) 527, trends westerly for approximately 1.8km before turning south-southwest for 6.3km to terminate at the well sites as shown in Figure 4.3.

Approximately 32km south of Tumbler Ridge, Highway 52 intersects the northeastern portion of the Flatbed property as indicated in Figure 4.3. From here the highway continues south through the eastern portion of the property. Within this eastern portion of the property, Highway 52 intersects numerous forestry and O&G roads, in different states of repair, many of which head westward, deeper into the property.

Along with the main access routes there are numerous historic seismic lines, cleared of timber, that run into and across the property. Many of these seismic lines offer potential for partial use during the construction of future access trails.

5.2 Climate

The climate is typical of northeastern British Columbia; that is, short, warm summers and long, cold winters interspersed with periods of very cold temperatures, in the range of -15 degrees Celsius (°C) to -30°C. The cold spells usually happen between January and March, but may occur as early as late October. Frost can occur throughout the year and the frost-free period averages less than 60 days per year. At Tumbler Ridge, the average temperatures for July and January are +20.8°C and -5°C, respectively. The town averages 334mm of rain and 1.85m of snow per year although significantly more precipitation can be expected in and around the higher areas within which the property is located. The prevailing wind direction is from the southwest and extended periods of high winds of more than 20km/h can occur at any time but are common from October onwards. Throughout the foothills belt, coal exploration programs are typically conducted between June and October, although winter programs can be carried out where there is road access.

5.3 Local Resources and Infrastructure

The centre of the property is situated about 168km northeast of the city of Prince George and 131km west-southwest of the city of Grande Prairie, Alberta; the smaller cities of Fort St. John and Dawson Creek are located approximately 150km to the north and 101km to the north-northeast, respectively. Each of these cities is serviced by regularly scheduled flights from major western Canadian cities such as Vancouver, Edmonton and Calgary. The location of the property with respect to main population centres is shown in Figure 4.1, General Location Map.

The Flatbed property is situated in a region within which large-scale coal mining has been carried out over much of the past 35 years. The locations of various elements of mine and rail infrastructure built in support of surrounding coal mines and advanced coal mine development projects are shown in Figure 4.2, Regional Location Map. A rail line (operated by CN Rail) is located approximately 7km northwest of the Flatbed property where it terminates at the now closed Quintette coal load-out facility. PRC's wash plant for their currently idled Trend surface mine is located 4km west-southwest of the southern boundary of the Gordon Creek area, while their rail loadout facility is located 9km north-northwest of the property. The PRC plant and rail loadout sites are connected by the Core Lodge Road that leads to a dedicated haul road that passes close to the Flatbed property's western boundary.

The operating Perry Creek surface mine, wash plant and rail loadout, owned by Conuma Coal Resources Ltd (Conuma), and the surface facilities and decline for the Murray River

underground coal mine development (operated by HD Mining International Ltd) are both located northwest of the Flatbed property, by 25km and 10km respectively. The approximate location of the HD Mining and Perry Creek operations are indicated in Figure 4.2 and Figure 4.3 respectively.

The Tumbler Ridge rail spur joins the CN Rail main line just north of Prince George and provides direct access to the coal export facility at Ridley Island, Prince Rupert, over a total distance of approximately 1,000km as indicated in Figure 4.1, General Location Map. The Tumbler Ridge Airport is located 7km north-northwest of the property whose location is shown in Figure 4.3, Project Location Map.

There have been no improvements made to the property.

The Flatbed property covers an area sufficient to host potential processing plant sites, tailings storage, waste disposal areas, settling ponds, and loadout facilities, subject to the acquisition of appropriate surface rights. However, the selection of sites would be subject to appropriate engineering and environmental studies and it is possible that some sites might be located outside, or extend beyond, the current property boundaries. The project is well located with respect to sources of mining personnel, power and water to support possible future mining.

5.4 Physiography

The property lies within the foothills (Inner Foothills Belt) of the Rocky Mountains, east of the Hart Ranges. The topography comprises a belt of gently sloping to steep-sided hills transected by a series of mature, easterly- to northeasterly-flowing rivers and major creeks that form the primary drainage system. The major rivers closest to the property are the Murray and Wolverine Rivers, which lie approximately 9km and 25km to the northwest, respectively, and the Wapiti River which is located approximately 18km to the southeast. In contrast to the regional pattern, a number of drainages flow against this regional trend. For example, south of the property, Kinuseo Creek flows west, then northwest, while north of the property Flatbed Creek flows northwesterly; both empty into the Murray River.

Five northerly-flowing creeks cut through the property; namely, Babcock Creek which, together with its tributary Gordon Creek, drains the northwestern portion of the property. The upper reaches of Flatbed Creek and its tributaries, Calamagrostis and Hambler Creeks, drain the central, southern and eastern parts of the property (see Figure 4.3). Approximately 8km northeast from where Babcock Creek leaves the property it empties into the northwesterly flowing portion of Flatbed Creek.

The topography of the property varies from rolling hills in the north, east, and south, to more steeply-sided hills with moderately-sloping uplands in the west. Elevations range between 960m to 1460m above sea level (asl). The highest elevations occur in the southern parts of the Gordon Creek area and western portion of the overall Flatbed property. The lowest elevations are found around Flatbed Creek in the eastern portion of the property.

Vegetation in the area is predominantly boreal to sub-alpine coniferous forest. Tree line in this region varies between 1,550m and 1,600m; above these elevations the alpine vegetation consists of stunted and/or dwarf varieties of spruce and fir, juniper, moss, heather and other alpine tundra flora, and occasional sub-alpine meadows. The area is heavily forested at elevations below approximately 1,500m. The forest consists mostly of sub-alpine Engelmann and white spruce, sub-alpine fir, and lodgepole pine. Douglas fir, balsam poplar, aspen, willow, and alder are also found. Bogs and black spruce stands cover some lower areas. The timber on most of the property appears to be of little if any economic interest, although merchantable stands of timber may be present in areas of lower elevation. Recent logging, evidenced by mostly smaller-sized cut-blocks, has taken place in the lower, northern and eastern parts of the property.

Exposed rock is common above tree line but is infrequently seen on treed slopes and hilltops; at lower elevations bedrock exposures are usually limited to the bottoms and steep sides of creeks. Various surface materials and soils are present, differing, to some degree, on elevation and moisture supply. Benches of moraine deposits are sometimes present at lower elevations, and major valleys may contain areas of finer-textured lacustrine and scattered organic deposits (mostly as bogs), glacio-fluvial fans and terraces.

6 HISTORY

6.1 Introduction

Although coal was first discovered in the Peace River region in 1793, subsequent operations were limited to small tonnages to serve local needs. The expansion of steel production in the mid-1960s, led by the Japanese steel mills, stimulated worldwide exploration for metallurgical (or coking) coal. In western Canada, exploration focused largely on coal deposits located within the Rocky Mountain Foothills of British Columbia and Alberta. By the mid-1970s, most of the land within the Peace River Coalfield that contained a potential for surface and underground mineable coal had been acquired by various mining and O&G companies. The town of Tumbler Ridge and the rail spur connecting with the main CN rail line were constructed to support production from the Quintette (1983 to 2000) and Bullmoose (1984 to 2003) coal mines. Coal mining in the Tumbler Ridge region re-started in 2006 with the opening of the Perry Creek (Wolverine) and Trend Mines, with the Brule Mine entering production in 2007 (MEMPR, 2007 and 2008). Although the downturn in coal markets in 2013 through 2016 caused each mine to be put into care and maintenance, the Brule and Wolverine Mines re-started operations in 2016 and 2017, respectively (MEM, 2015 and 2017).

6.2 Prior Ownership

Portions of the Flatbed property have been held in the past by two different companies; namely, Denison Mines Limited (Denison) from the early 1970's to mid-1980's, and Kennecott Canada Exploration Inc. (Kennecott) between 2007 and 2009.

6.2.1 Denison Mines Limited

From the early 1970's to mid-1980's the area either side of Gordon Creek formed part of Denison's large Quintette coal property (Denison, 1973). Quintette's coal licences extended as far as the drainage divide between Gordon and Calamagrostis Creeks, across an area that now forms part of Flatbed coal licenses 418,548 and 418,549 (see Figure 4.4). The original Denison coal licenses made up part of the Babcock area within the larger Quintette property. Denison reduced the size of the Quintette property sometime after 1984 (Gormley, 1986) and the old licenses that covered this part of the current Flatbed property were forfeited to the Crown. The residual part of the old Babcock block is now held by Teck, (as part of a smaller Quintette property) and hosts their proposed Window Pit on Babcock Mountain.

6.2.2 Kennecott Canada Exploration Inc.

In 2006 Kennecott acquired the core block of coal licenses for the Murray River Coal Property. In 2007, this block was expanded to the southeast to include an area now covered by most of the western, northern and eastern parts of the current Flatbed property; more specifically, portions of licenses 418,548 through 418,550 and 418,913 plus all of licenses 418,551 and 418,553 (Kennecott, 2007). This southeastern extension of the Murray River property was forfeited to the crown in 2009. The current Murray River property is now held by HD Mining International Ltd., who is developing an underground coal mine approximately 10km northwest of the Gordon Creek area (Norwest, 2010).

6.3 Summary of Previous Exploration

Very little previous exploration for coal has been conducted on the Flatbed property. In the early 1970's Denison carried out geological mapping along Babcock and Gordon Creeks (Mitsui, 1974). Kennecott did not perform any exploration on the Flatbed property.

6.4 Historical Resources

No previous resource estimates have been determined for any part of the Flatbed property.

7 GEOLOGICAL SETTING AND MINERALIZATION

The Flatbed Coal Project lies within a belt of Mesozoic strata that form part of the Rocky Mountain Foothills of northeastern British Columbia. Coal seams of greatest potential are found within Lower Cretaceous strata, consisting of the Bullhead and Fort St. John Groups. The relative location of the various formations that comprise the Bullhead and Fort St. John Groups can be viewed in Figure 7.1. The stratigraphy of this succession broadly represents an alternating sequence of marine shales as well as marine and non-marine clastic lithologies deposited from a series of transgressive and regressive cycles in response to periodic uplift of the Cordillera. On the Flatbed property, only the coal seams of the Gates Formation are considered to offer any potential for mining due to depth considerations.

7.1 Regional Stratigraphy

The following geologic formations of relevance to the coal resources identified in the Gordon Creek area of the Flatbed property are discussed below from oldest to youngest.

7.1.1 Gates Formation

The Gates Formation conformably overlies the Moosebar Formation, which comprises the lowest formation of the Fort St. John Group. The Gates contains the largest systematically explored coal resources within the Northeast Coal Block and is the main coal-bearing unit within the project area. Within the Tumbler Ridge region, the Gates Formation is divided into three informal sub-divisions; namely, Quintette member, middle Gates and upper Gates. The main coal seams occur within the middle Gates while thinner, usually non-economic, coal seams are present within the upper Gates. In the Flatbed property, the Gates Formation ranges between 250m and 310m in thickness. A generalized stratigraphic section through the Gates Formation is illustrated in Figure 7.1.

The lower portion of the formation is informally referred to as the Quintette member. It comprises resistive, massive, light grey, medium-grained sandstone, with minor carbonaceous and conglomeratic horizons, that form prominent cliffs and ridges when cut by the topography. These physical features can often be used to outline the various structural configurations of the coal measures. Within the Flatbed property, the Quintette member has an approximate thickness of 75m.

The Quintette member is overlain by several cycles of coal deposition represented by fining-upward sequences culminating with coal deposition. This sequence is referred to as the middle Gates and ranges between 90m and 160m in thickness. Typically, in the

Tumbler Ridge region, the only Gates Formation coal seams of economic interest are found within the middle Gates. These coal seams often display consistent thicknesses and internal seam characteristics across significant distances and are relatively easy to correlate.

The middle Gates is commonly overlain by a massive, medium-to-coarse-grained, conglomeratic sandstone and pebble conglomerate sequence informally called the Babcock member. The member is also very resistant to weathering and forms an important marker horizon when exposed. The pebble-conglomerate phases may come and go laterally, but the sandstone appears always to be represented. The Babcock member is overlain by predominantly finer grained lithologies consisting mostly of intercalating fine-grained sandstone, siltstone and claystone with several thin coal seams; taken together, this sequence is referred to as the upper Gates. Atypically, in the Gordon Creek area, the upper Gates contains a coal seam of potential economic importance (Seam B). A thin bed of large granule to pea-size conglomerate, set within a clean sandstone matrix, marks the contact with the overlying marine sediments of the Hulcross Formation.

7.1.2 Hulcross Formation

The Hulcross Formation is a marine sequence, predominantly composed of blocky, light to medium grey, sandy shale with thin interbeds of siltstone and very fine- to fine-grained, often laminated or cross-laminated sandstone. Across the Flatbed property, the Hulcross Formation varies in thickness from approximately 68m to 91m. The contact between the Hulcross and Boulder Creek Formations lies at the top of a thin (5m to 10m) sequence of interbedded platy sandstone, siltstone and shale, where it is abruptly overlain by continuous, thick-bedded sandstone belonging to the Boulder Creek Formation.

7.1.3 Boulder Creek Formation

The Boulder Creek Formation ranges between 122m and 147m in thickness and can be divided into three lithological units. The lower unit consists mainly of light grey, fine-grained sandstone and conglomerate with minor siltstone beds, ranging from 14m to 40m thick. The middle unit is approximately 45m to 84m in thickness and is predominantly made up of medium to dark grey claystone and siltstone with occasional thin coaly and carbonaceous horizons. Many fine- to medium-grained sandstone beds, up to 2.20m in thickness, are also present. The upper 24m to 70m of this formation consist mostly of fine- to medium-grained, grey, interbedded sandstone and siltstone; multiple thin conglomeratic beds are also present. In the Gordon Creek area, the

contact between the Boulder Creek Formation and the overlying Shaftesbury Formation is well defined by a layer of conglomerate, sometimes containing a thin siltstone or claystone parting, which ranges in thickness from 0.5m to 0.85m which sits atop approximately 10m of light grey, medium grained sandstone.

The thickness of the Boulder Creek Formation tends to increase as the Hulcross thins; in the Flatbed area the combined Boulder Creek – Hulcross sequence is approximately 213m to 215m thick.

7.1.4 Shaftesbury Formation

In the region of the Flatbed property, Shaftesbury Formation strata are undivided whereas a few tens of kilometres to the northwest these strata are sub-divided into three units which are referred to, in ascending stratigraphic order, as the Hasler, Goodrich, and Cruiser Formations (Stott, 1968).

The lower unit (the Hasler Formation) consists of light to medium grey, claystone, siltstone, minor sandstone and sideritic concretions. The unit is often homogenous with bedding only being discernible through occasional appearance of thin beds of sandstone.

The middle unit (The Goodrich Formation) is predominantly a grey to brown, medium-grained, laminated to medium-bedded to massive, micaceous sandstone. Carbonaceous claystone and siltstone occur as interbeds.

The upper unit (The Cruiser Formation) comprises dark grey to black, laminated to thinly interbedded silty claystone, siltstone and fine-grained sandstone. Pebble bands occur locally. This unit is characteristically light orange to red in colour due to weathering of ferruginous beds.

Shaftesbury Formation lithologies penetrated by cores in the Gordon Creek area appear to represent only the lower (Hasler equivalent) of the formations found further northwest.

7.2 Coal Occurrences

Within the Northeast Coal Block, the coal seams of greatest economic potential are found within Lower Cretaceous strata of the Gething and Gates Formations. The coal seams of the Gates Formation are well established as the most prolific coal-bearing strata in the southern portion of the Block while the coal seams of the Gething Formation are the most prolific in the northern half. Consequently, exploration carried out in the Tumbler Ridge region has primarily targeted

coal seams within the Gates Formation, although some projects have also examined the potential for economic coal seams in the Gething Formation. In the project area, it is the Gates coal seams that have provided the impetus for local mine development. All 2017 drilling on the Flatbed property targeted Gates Formation coal seams. Consequently, only Gates coal seams are discussed in this report.

7.2.1 Gates Coal Seams

Significant thicknesses of Gates coal first occur in the Bullmoose Mountain area and continue southeast to the B.C./Alberta border, a distance of almost 140km, and beyond. Adjacent to the Gordon Creek area, at Babcock Mountain and Roman Mountain, the aggregate economic coal seam thicknesses of 15m to 18m (Perry, 2004) are common. Total thickness of the main coal seams on the Flatbed property is approximately 21m.

The main Gates Formation coal seams can be correlated throughout the entire Gordon Creek area of the Flatbed property. Seam correlations are also well established with the adjoining Babcock property, situated to the west and Trend property to the southwest. From youngest to oldest the coal seams have been called B, C, D, E, F1, F2, G, J and K. Seam C, found together with Seam B within the upper Gates, is not sufficiently well developed to present economic potential.

7.3 Structure

The structural geology of the area around the Flatbed property is dominated by a series of folds and thrust faults typical of Canadian Rocky Mountain Foothills structures. The nature of the regional folding and faulting, together with the distribution of main stratigraphic units, is illustrated in Figure 7.2 (Legun, 2002).

To the southwest of the property, the Roman Mountain and Trend areas are defined by a large-scale syncline-anticline–syncline triplet (from west to east: the Murray Syncline; Waterfall Creek Anticline; and, the Waterfall Creek Syncline). The Babcock Mountain area comprises an asymmetrical anticline, having a short, steep western limb as its paired limb with the Waterfall Creek Syncline, and a broad, gently westerly-dipping crest. The foregoing structures are illustrated in Figure 7.3. The common limb of the Waterfall Creek Anticline - Syncline pair trends along the southwest boundary of the property and hosts PRC's Trend coal mine. The Babcock Mountain structure extends into the northwest corner of the Flatbed property. Regional maps prepared by British Columbia Government geologists (Legun, 2002) indicate that the frequency of major folds appears to lessen towards the northeast although several major thrusts may be present.

7.4 Flatbed Property Geology

Definition of the geology to the east of Trend mine and Babcock Mountain is complicated by a lack of exposed rock and recognisable marker horizons. Regional mapping (Legun, 2002) has incorporated information from widely-spaced O&G wells which has allowed broad geological interpretations to be presented. The southwestern half of the property appears to host generally shallow-dipping strata while a broad, shallow syncline, containing Upper Cretaceous strata of the Dunvegan and Paskapau Formations is shown to be present in the south. A sharp, anticline cored by strata of the Hulcross and Boulder Creek Formations is present in the eastern part of the property. The fold axis of this anticline trends NW-SE and plunges in both directions.

The Gordon Creek area of the Flatbed property, where the coal resources have been defined, is located along the southwestern limb of the anticline. The strata along the southwestern limb dip approximately 11° towards the southwest. A major high-angle thrust fault bisects the Gordon Creek area. This fault, herein called the Flatbed fault, strikes parallel to the NW-SE regional structural trend. Geology specific to the Gordon Creek area is discussed in the Mineralization subsection below.

The thickness of unconsolidated overburden observed in the various drillholes ranges between approximately 11.28m (from drillhole FD17-02) and 92.15m (from drillhole FD17-01). Most of this appears to consist of glacio-fluvial or glacio-lacustrine material. At its contact with the unconsolidated overburden, Shaftesbury Formation lithologies are often weathered and highly broken to semi-coherent for the top 3.05m (FD17-02) to 13.64m (FD17-01).

7.5 Mineralization

The following summary of coal seam descriptions focuses on those coal seams intersected during the 2017 drilling program and from O&G wells at the Flatbed property's Gordon Creek area.

A total of 8 main coal seams are present within the Gordon Creek area; one minor seam (Seam C) is also present. Seam nomenclature used in this report follows that used currently at the Trend operation and at Babcock. In ascending order, the main seams are labelled as K, J, G, F2, F1, E, D, and B. These seams correlate directly with similarly designated coal seams on adjoining properties.

All seams, except for Seam C, provide potentially mineable coal intervals. Although not considered to be mineable, Seam C can still be traced geologically throughout the deposit area. Since it is not considered to hold any economic importance it is not discussed further, herein.

The main characteristics of each of the main coal seams are summarized below. Overall seam thickness ranges for the Gordon Creek area are outlined in Table 7.1. These true thickness ranges, together with interseam true thicknesses discussed below, are taken from Colonial's exploration drillholes and the two O&G wells. The internal seam characteristics are taken from exploration drillhole FD17-01.

Table 7.1 Gordon Creek Area Coal Seam Thickness Ranges

Seam	True Thickness (m)	
	Minimum	Maximum
B	1.26	3.69
D	2.28	2.65
E	1.19	1.71
F1	1.28	1.65
F2	2.55	4.49
G	1.69	3.16
J	3.38	5.30
K	1.95	3.17

SEAM K

Seam K ranges in true thicknesses from 1.95m (B-30-K) to 3.17m (FD17-01). It is characterized by comparatively clean lower (2.34m) and upper (0.45m) sections separated by a 0.38m claystone band.

Regionally, this seam is often referred to as Seam K1, as there is another coal seam that often sits below K1 that is called K2. In O&G wells B-029-K and B-030-K, Seam K2 is situated approximately 50m below K1. At the Trend mine and on Babcock Mountain, the separation between the two K seams is often less than 10m. Due to drillhole depth limitations, Seam K2 was not penetrated and tested during 2017 to determine if it is of economic interest.

The stratigraphic interval between Seam K and the overlying Seam J, increases northward within the Gordon Creek area, ranging from 22.29m (FD17-01) to 29.48m (B-030-K).

SEAM J

The true thickness of Seam J ranges from 3.38m (FD17-01) to 5.30m (B-30-K). It is characterized by relatively clean lower (1.75m) and upper (1.37m) sections, separated by a carbonaceous rock band that is approximately 0.26m thick.

A thin (0.51m) clean coal split is situated approximately 1.2m above Seam J and is separated from the main seam by a zone of carbonaceous claystone and poor coal bands. This upper section is referred to herein as J upper (JU) as it does not meet the necessary criteria to be included with the main part of the seam for resource determination. It is possible that JU correlates with Seam I at Trend and Babcock.

Within the Gordon Creek area, the stratigraphic interval between Seam J (inclusive of JU) and the overlying Seam G, increases northward, ranging from 21.89m (FD17-01) to 52.27m (B-029-K).

SEAM G

Seam G true thickness ranges from 1.69m (B-029-K) to 3.16m (FD17-01). It is characterized by a thin, relatively clean lower coal section (0.79m) and a thicker (2.04m) upper section, separated by a 0.33m siltstone band. The upper part contains two distinct, thin, poor coal and rock partings.

The stratigraphic interval between Seam G and the overlying Seam F2 decreases northward from 17.48m (FD17-01) to 7.81m (B-029-K).

SEAM F2

Seam F2 ranges in true thickness from 2.55m (B-030-K) to 4.49m (FD17-01). It is characterized by a thick (3.46m), relatively clean, lower section with a thinner (1.03m) upper section that contains two thin, poor coal and rock partings.

Seam F2 is separated from the overlying Seam F1 by approximately 0.40m (B-029-K) to 3.46m (FD17-01). This thickness interval decreases towards the northern end of the Gordon Creek deposit area, such that the two seams essentially coalesce in B-029-K to form a thicker F seam although, for resource definition purposes, the seams have been picked as F1 and F2. At the adjoining Babcock property, two seams (F1 and F2) are sometimes present at the F Seam horizon, although only one seam is present at the equivalent horizon at Trend.

SEAM F1

Seam F1 true thickness ranges from 1.28m (B-030-K) to 1.65m (FD17-01). It is characterized by a relatively clean bottom third (0.64m) which contains just one parting of high-ash coal. The rest of the seam (1.01m) contains several thin poor coal and rock partings throughout, the most prominent of which is near the top of the seam.

The separation between Seam F1 and the overlying Seam E increases slightly towards the north, ranging from 7.77m (FD17-01) to 10.65m (B-030-K).

SEAM E

Seam E true thickness ranges from 1.19m (FD17-01) to 1.71m (B-029-K). It is the thinnest of the seams intersected during the 2017 drilling and is characterized by relatively clean lower and upper coal sections (0.63m and 0.38m, respectively) that are separated by a thin (0.18m) poor coal/carbonaceous rock band.

The inter-seam thickness between Seam E and the overlying Seam D decreases significantly towards the north, ranging from 23.41m in FD17-01 to 9.35m in B-030-K.

SEAM D

Seam D true thickness ranges from 2.28m (FD17-01) to 2.65m (B-030-K). The bottom half of the seam contains higher ash coal near the floor while the upper half is characterized by two rock partings ranging between 0.11m and 0.21m in thickness. The roof of this seam is composed of conglomerate.

The inter-seam thickness between Seam D and the overlying Seam B is fairly consistent across the Gordon Creek area, decreasing only slightly northward from 64.95m (FD17-01) to 61.28m (B-029-K).

SEAM B

Seam B is atypical for this region in that this seam has not been reported to reach potentially economic seam thicknesses or be of sufficient coal quality on adjoining projects. At Gordon Creek, Seam B ranges in true thickness from 1.26m (B-029-K) to 3.69m (FD17-03A). The seam contains a number of high-ash coal and rock partings that increase in thickness and frequency upwards. In FD17-01, the roof of this seam is composed of very high ash (stony) coal to very highly carbonaceous claystone; this horizon appears to be replaced by good coal in FD17-03A, to yield a thicker coal seam.

7.6 Gordon Creek Structure

The structural interpretation for the Gordon Creek area presented herein was determined through observation of coal exploration drilling results, O&G well logs, and from regional structural plans compiled by the British Columbia Government geologists (Legun, 2002). Other data of potential benefit to the project included surface mapping within the property and O&G exploration seismic data. These data were ultimately not used in the geologic model for the following reasons:

- Surface mapping was observed to be ineffective due to surface exposure being limited the non-coal bearing Shaftesbury Formation mudstones along the Gordon Creek. The bed orientation measurements of weathered mudstone along the creek bed were considered

too inaccurate to be used in the geologic model other than confirming an overall northwest regional strike of overburden units.

- The seismic reflection survey data acquired by Colonial from prior O&G exploration programs was found to be too low-resolution at the relatively shallow depths of the target coal seams, when compared to the gas reservoirs some 1,500+ metres below. As such, the seismic data were not useful for the correlation of coal seams or for structural interpretation.

Within the Gordon Creek area there is no potential for coal seams of interest to crop out. The depth below surface of the coal seams intersected by drilling within the resource area varies from approximately 390m for the B Seam near the northern limit of the coal resource area, to 900m in the south, near the western boundary of the property. Figures 7.4 and 7.5 show the overburden depths to the uppermost B Seam and lowermost K Seam, respectively.

The contact between the Shaftesbury and Boulder Creek Formations (SB-contact), located above the Gates Formation, was used as a reference point from which to interpret the structural trends and depth intervals of the coal beds. The SB-contact described in Section 7.1.3 is easily recognisable in the exploration drill cores and geophysical natural gamma logs.

Correlation of the SB-contact, penetrated in three of Colonial's exploration drillholes (FD17-01, FD17-02 and FD17-03A), was used to define a reference dip plane. Grid estimates of apparent (vertical) thicknesses of coal beds and intervening waste rock were stacked below this reference plane to develop a geological model; the coal seams within the defined resource area dip towards the southwest (striking northwest) at 11°. Structure contour maps for the two confining coal seams, Seam B and Seam K are shown on Figures 7.6 and 7.7, respectively.

A major resource-limiting fault is located between drillhole FD17-03A/well B-030-K and well B-029-K as shown in Figures 7.6 and 7.7. This fault, called the Flatbed fault, is interpreted to follow the regional structural trend and strike northwest. The displacement along the Flatbed fault is estimated to be approximately 1,200m, downthrown towards the northeast. Between drillholes FD17-03A and FD17-04, the fault is interpreted to split, with the split rotated to a north-northwest orientation. No marker bed horizon was penetrated in drillhole FD17-04 and the near vertical bed orientations observed at depth in this drillhole indicates that the drillhole was collared atop a major fault zone likely associated with the Flatbed fault.

There is insufficient exploration data to determine the orientation of the Flatbed fault at depth. However, exploration and mining activities in the region have shown major faults to have a near vertical orientation near surface. Consequently, the Flatbed fault and its associated splay are

interpreted to be vertical. A southwest oriented geologic cross-section illustrating the impact of the Flatbed fault on the coal seams can be observed in Figure 7.8.

8 DEPOSIT TYPES

Coal deposits are assessed relative to “Geology Type” and “Deposit Type”. The term “Geology Type” is defined relative to the structural complexity of the coal deposit. The Geological Survey of Canada (GSC) Paper 88-21 (Hughes, et al, 1989) assigned specific parameters to the term “Geology Type” for coal deposits. These specific parameters define the range of criteria used to complete resource and reserve estimation. The more structurally complex the “Geology Type” is for a coal deposit, the less confidence there is in areas that are further away from a specific reference point (i.e. drillhole). There are four categories of "Geology Type", which include:

- Low - coal deposits that have undergone low tectonic disturbance (i.e. plains-type coal deposits)
- Moderate - coal deposits that are moderately deformed
- Complex - coal deposits that are highly deformed
- Severe - coal deposits that are extremely deformed (i.e. Rocky Mountain-type deposits).

The interpretation of the Geology Type for the Gordon Creek area of the Flatbed property is Moderate. GSC Paper 88-21 describes Moderate Geology Type as: “characterised by homoclines or broad open folds (wavelength greater than 1.5km) with bedding inclinations generally less than 30°. Faults may be present, but are relatively uncommon and generally have displacements of less than ten metres.”

The term “Deposit Type,” as outlined in GSC Paper 88-21, assigns the extraction method that is most suited to a specific coal deposit. There are four "Deposit Type" classifications, which include:

- Surface
- Underground
- Non-Conventional
- Sterilized.

The interpretation of the Deposit Type as outlined in GSC Paper 88-21 for the Gordon Creek area of the Flatbed property currently under discussion is Underground only.

9 EXPLORATION

9.1 Previous Exploration

9.1.1 Oil and Gas

The region within which the Flatbed property is situated has seen significant O&G exploration and development over the past 40 years, as a result there are many O&G wells in the Flatbed property area. These wells were drilled to vertical depths of approximately 1,000m to 5,500m from surface (Norwest, 2012). Available data from these wells may include: well locations, deviations surveys, hard and digital copies of geophysical log profiles, plus approximate intervals of major formations and basic lithologic descriptions.

Within the property there are four O&G wells; two are situated in the northwest part of the property, in the Gordon Creek area, while the other two are located in the southeastern portion of the property. Each of these wells intersected the coal-bearing Gates Formation and three have geophysical logs available that intersected the coal measures. Based on the geophysical logs, significant coal seams are evident within the Gates Formation. However, due to the distance between the northwestern and southeastern wells, precise correlation of each of the coal seams between these two areas is difficult. The locations of the O&G wells that are located within the Gordon Creek area are shown in Figure 9.1. There is evidence of numerous historic seismic lines both within and around the Flatbed property; the locations of these seismic lines are not shown on the diagrams, herein.

9.1.2 Coal

Since the early 1970's, there has been significant coking coal exploration throughout the belt of coal measures that hosts the Flatbed property. Principal amongst these are the adjoining Duke Mountain (south), Trend (southwest), Quintette - Babcock (west), and Murray River (northwest) properties. Many tens of exploration holes have been drilled on each of these properties (often on multiple targets within a single property), together with exploration adits and trenches, to evaluate the mostly surface mining potential. Of the four projects listed, mines have been developed at Trend and Quintette, and all but the Duke Mountain property have seen significant exploration and development of mines and/or advanced projects since 2004.

9.2 Colonial Exploration

9.2.1 Colonial Coal 2010-2013

Colonial personnel spent a total of five days over the summers of 2010 (three days) and 2013 (two days) performing geological mapping on the property as well as inspecting proposed access routes in support of a future drilling program. The geological mapping focused primarily on the west of the property along the upper and lower reaches of Gordon Creek and around the confluence of Gordon and Babcock Creeks. Outcrops in the east of the property, along Flatbed Creek and Hambler Creek, were also examined.

9.2.2 Colonial Coal 2017

The first significant exploration program conducted by Colonial on Flatbed was in the summer-autumn period of 2017; fieldwork commenced in mid-July and was completed by mid-October. Prior to the field program, Colonial acquired O&G 3D seismic information that extended across the Gordon Creek area. It was hoped that these data could provide information on the depths from surface of prospective coal seams and highlight any large structural discontinuities that might be present. However, the data were poorly resolved at the relatively shallow depths of the targeted coal seams, when compared to the gas reservoirs some 1,500+ metres below. As such the seismic data were not useful for the correlation of coal seams and structural interpretation.

The primary objectives of the 2017 exploration work were to identify potentially underground mineable coal resources within the Gates Formation and to establish initial coal quality parameters. Activities focused on the Gordon Creek area, located in the northwestern portion of the property, which hosts one of the main targets identified by an independent review of O&G well data (Norwest, 2012).

Work focussed upon the drilling of five, HQ-size, diamond drillholes on four widely-spaced drill sites for a total of 2,831.84m of drilling. Associated activities included: down-hole geophysical logging; geological core description; coal plus seam roof and floor core sampling; geotechnical logging, sampling, and on-site testing; plus limited geological mapping. Core samples were submitted to Birtley Coal and Minerals Testing (Calgary, Alberta) for coal quality analysis and to Golder Associates Ltd. (Burnaby, B.C.) for geotechnical testing. Exploration personnel were housed at a hotel in Tumbler Ridge. The main exploration activities carried out during the 2017 program are summarized in Table 9.1.

During the 2017 exploration program all drillhole locations were surveyed by KMD Surveying Services. The easting and northing locations in the Universal Transverse

Mercator (UTM) system and the elevations were recorded to sub-centimetre accuracy and can be found listed in Section 10 of this report.

Three days of detailed geological mapping was carried out along Gordon Creek to further define outcrop locations and strata geometry to aid in structural interpretations.

Table 9.1 Summary of 2010 - 2017 Exploration Activities

Year	Geological Mapping	Drillholes (HQ)	Surveying
2010	Rec. & 1:2500	-	-
2013	Rec. & 1:2500	-	-
2017	Rec. & 1:2500	5	Drillholes

The results obtained from the 2017 exploration at Flatbed, in conjunction with selected data from historical O&G wells, were identified as sufficient for estimating coal resources and coal quality characterization within the Gordon Creek area of the Flatbed property. Details of the results obtained and interpretations formed from the 2017 exploration program are presented together with the retained historical data in Sections 10 through 14 of this report, and are summarized in Section 2.

10 DRILLING

Colonial's 2017 exploration program was the first ever drill program conducted for coal on the property. Drilling focused on the northwestern portion of the property in what is referred to as the Gordon Creek area. This area is shown on Figure 9.1, and is one of the main target areas identified by an earlier independent review of O&G drilling results from within and immediately surrounding the property (Norwest, 2012). A total of five, HQ-size, diamond drillholes were cored on four, widely-spaced sites for a total of 2,831.84m of drilling. Drillhole locations are shown in Figure 9.1. Drilling collar co-ordinates are listed in Table 10.1 and the details of the drilling activities are summarized in Table 10.2.

Table 10.1 2017 Drillhole Locations

Drillhole	UTM NAD83 Zone 10		Elevation (m)
	Easting (m)	Nothing (m)	
FD17-01	635,351.620	6,088,447.782	1,211.887
FD17-02	635,419.162	6,086,618.073	1,240.396
FD17-03	636,168.671	6,089,995.099	1,235.996
FD17-03A	636,169.421	6,089,996.091	1,236.007
FD17-04	637,147.413	6,088,568.996	1,277.451

Table 10.2 2017 Drilling Summary

Drillhole	Core Size	Meters Drilled	Geophysical Logs
FD17-01	HQ	866.39	d,g,n,c,fr,dev,s
FD17-02	HQ	608.38	-
FD17-03	HQ	297.79	-
FD17-03A	HQ	513.08	*g,c,dev,dm
FD17-04	HQ	546.20	*g,c,dev,dm
Total		**2,831.84**	

*Notes: i) * = not geophysically logged to total depth; ii) d,g,n,c,fr,dev,s,dm = density, gamma, neutron, calliper, focussed resistivity, deviation survey, sonic, and dipmeter logs.*

All the drill sites were accessed and supported by helicopter. The purpose of the 2017 work was to identify potentially underground mineable coal resources within the Gates Formation (which hosts established surface and underground mineable coking coal reserves and resources on a number of projects to the south, west and northwest of the Flatbed property) and to establish initial coal quality parameters.

Three of the five 2017 drillholes were geophysically logged to provide a combination of density, gamma, neutron, calliper, focused resistivity (or, short guard resistivity), deviation, sonic and dip

meter logs. All drillhole angles were vertical (-90°); deviation logs showed only minor amounts of variation from vertical at the bottom of the drillhole or at the base of the logged interval.

The geology of the property has been characterized from geological mapping, drill core descriptions, and interpretations of geophysical logs obtained from the drillholes. Analytical data obtained from HQ-size drill core have been used for coal quality characterization.

In addition to the drillholes shown in Table 10.1 and 10.2, the exploration database contains information derived from two gas wells; namely, B-030-K and B-029-K. These wells are located along the northern boundary of the Gordon Creek area as shown in Figure 9.1. Data from these wells have been used to provide additional control for geological interpretation and resource estimation purposes.

Coal seam thicknesses from exploration drillholes are measured along the length of the hole. As the angle of intersection between the hole and the seam is often not perpendicular to dip, these intersections represent an 'apparent' rather than 'true' thickness of the seam. Adjustment from apparent to true seam thickness is negligible in the case of the Gordon Creek area due to the very low angle of dip to the coal seams (approximately 11°) and hence very minor corrections would be required for true thickness.

11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Sampling Method and Approach

All samples obtained from Flatbed coal seams were taken from HQ-size core produced by diamond drilling.

Core handling and sampling followed these general procedures: at the drill rig, cores were placed in numbered wooden boxes that were covered prior to transport to the core yard for description and sampling. Plastic liners were used in the boxes that held coal core sections. Drill cores were described for general lithology, bed thickness and structural data. Coal seams were logged in detail with specific coal intervals being characterized according to their 'brightness' (i.e. the amount of bright coal present). Samples were placed into plastic bags, with all samples being double-bagged. These bags were then placed into 20 litre plastic buckets and shipped to the selected laboratory for testing. Each bag contained a sample tag that recorded sample number, drillhole ID and seam designation. The sample number and drillhole ID was also written on the outside of the bags and buckets. A third set of sample tags was retained by the company. All coal cores, whether in core boxes or sample bags/buckets, were stored in a -15°C walk-in freezer from the time they arrived in the core yard until the time they were shipped to the laboratory.

None of the sample collection was conducted by an employee, officer, director, or associate of Norwest.

Coal handling, description and sampling procedures used by Colonial in 2017 are as follows:

- All core samples were sent to independent laboratories for testing.
- For each sample interval, the entire core was submitted for analysis. Immediate roof and floor lithologies were also sampled to determine the nature of potential out-of-seam dilution that would occur during mining.
- Core recoveries were obtained by comparing the lithological logs to the detailed density geophysical logs. For the coal seams, recoveries ranged from 53% to 100%; all but one were 68% or greater.
- The samples were shipped by Greyhound CDA Trans Corp to Birtley Coal & Mineral Testing (a division of GWIL Industries) in Calgary, Alberta.
- Coal core logging and sampling followed prescribed guidelines to ensure a consistent approach by each geologist. The approach used for sample selection is consistent with industry standards.

All 2017 drillholes that intersected the full coal measures were geophysically logged for gamma ray, sidewall density, calliper, focussed resistivity (also called short guard resistivity), neutron, deviation and sonic logs. The geophysical logs were evaluated for lithological types in addition to comparison and reconciliation of the detailed density logs to coal seam core descriptions, in order to ensure accurate determinations of seam thickness, identification of lithological variations, core recoveries and appropriate characterization of any missing core.

In northeast British Columbia, coal core recovery from HQ-size core drilling of Gates Formation coal seams is often highly variable. Coal seam core recoveries for each of the Flatbed project coal seams are as follows: Seam B 83%; Seam D 68%; Seam E 83%; Seam F1 100%; Seam F2 100%; Seam G 78%; Seam J 99%; and, Seam K 53%. For Gates coal seams, potential sample bias is of concern mostly with regard to quantification of in-situ ash content and, hence, specific gravity (SG) and washing yield. The variability exhibited for in-situ ash content primarily reflects the thickness and continuity of in-seam rock partings. Although inherent ash produces some variability, its effect is usually minor in comparison to the in-seam partings. Rock partings and coal splits are quantifiable from the geophysical logs and so the effects of the exhibited coal and/or rock loss can reasonably be mitigated by mathematical adjustments to the coal quality data. Consequently, it is considered that coal quality data presented herein, and for the classification level of the resources defined herein, are representative and that any sample bias is within laboratory and industry standards.

The results obtained from representative samples and composites are presented in Section 13 of this report.

11.2 Sample Preparation and Analyses

Sample preparation and analysis was carried out at commercial laboratories experienced with requirements for coal testing, and can be summarized accordingly:

For the 2017 HQ-sized cores, samples, were sent to Birtley Coal & Mineral Testing (a division of GWIL Industries), Calgary, Alberta. Pearson & Associates (Victoria, B.C.) carried out coal petrography.

Each laboratory adheres to internal QA/QC protocols and criteria. Elements of quality control employed by Colonial included reviews of analytical data obtained from incremental (in-seam) samples and full seam sample composites. Standard checks included comparison between ash values with coal density and FSI results. Also included were comparisons of analyses with core descriptions and/or detailed geophysical logs. Samples deemed to be anomalous, or potentially anomalous, were re-analyzed. Minimal re-analysis of samples obtained from the 2017 Flatbed

exploration was required; the few performed, principally required re-analyses of ash content and FSI.

The laboratories used for the 2017 program are recognized across the Canadian coal industry and internationally for their expertise and experience in coal testing and analysis. Birtley Coal & Mineral Testing subscribes and adheres to Quality Associates International®, LLC's Coal/Coke Quality Conformance Program™ (CQCP™). This is a quality system designed specifically for accreditation of coal and coke laboratories using American Society for Testing and Materials (ASTM), Committee D 05 on Coal and Coke, standards. Dr. David Pearson (of Pearson & Associates) is an Accredited ICCP (International Committee for Coal & Organic Petrography) Petrographer. He is also Canada's representative on ISO/TC27 Working Group 19 (on Coal Petrography), and wrote the section on sample preparation of the new ISO 7404 "Methods for the Petrographic Analysis of Coals". Therefore, it is the opinion of the authors of this report that the sample preparation, security and analytical procedures meet current industry standards.

The analytical methods used by Birtley are shown in Table 11.1.

Table 11.1 ASTM Procedures (Birtley, 2017)

Parameter	Lab Method
Preparation of Coal Samples	ASTM D 2013
Air Dried Moisture Loss%	ASTM D 3302
Residual Moisture wt%	ASTM D 3173
Ash wt%	ASTM D 3174
Volatile wt%	ASTM D 3175
Sulphur wt%	ASTM D 4239
Specific Gravity	ISO 1014 (modified)
Free Swelling Index	ASTM D 720
Sieve Analysis	ASTM D 4749
Washability (Float Sink)	ASTM D 4371
Froth Flotation	ASTM D 5114

The laboratory sample preparation and analytical procedures followed for HQ-size core used for 2017 core analyses are summarized below. In addition to the coal seams, a number of seam roof and floor coaly zones also underwent testing and analysis; the testing of these coaly zones were often less comprehensive than the coal seams. Laboratory procedures were as follows:

- All ply samples were air-dried and crushed to -9.5mm; retains were re-crushed until 100% passed the 9.5mm screen. One-eighth by weight was taken for preliminary tests and for subsequent head raw analysis (if required), while the remainder was retained for float/sink (washability) tests and succeeding analyses.

- Initial analyses were then performed on both coal and rock ply samples. For coal plies, these included: as received moisture (%), and, on an air-dried basis, Proximate, S%, FSI and SG. Rock samples either underwent the same set of analyses or an abbreviated set that included: as received moisture (%), and, on an air-dried basis, moisture%, ash%, S% and SG.
- Selected coal seam and certain coaly zone ply samples were proportionally combined (by weight), using the retained (⅞) fraction, to form a seam composite.
- Head raw analysis comprising air-dried Proximate, S%, SG & FSI was performed on each seam composite.
- The composites were divided into two screen size fractions. These were 9.5mm x 0.25mm and 0.25mm x 0. Screen sizing analysis (on an air-dried basis) was run for each size fraction, where weight, ash%, S% and FSI were determined.
- A series of float-sink tests were conducted for the 9.5mm x 0.25mm size fraction using the following SG.: 1.40, 1.50, 1.60, 1.70 and 1.80. In several instances, the number of SG. Increments was increased (i.e. by adding 1.45 and 1.55) in an attempt to target a particular washed ash content. In one instance (FD17-03A, Seam B) a SG. cut-point of 1.30 was also used. The 0.25mm x 0 size fraction underwent time-limited froth flotation process using a Wemco flotation machine with speed of 1200 rpm. Flotation tests were performed for specified times at 30-second intervals, using kerosene and MIBC as reagents, and at 5% - 10% pulp density. The pulps went through a conditioning time of one minute before skimming.
- For each float/ sink and froth/ tail, weight, Proximate and FSI analyses were completed.
- Clean coal composites (CCCs) were generated by compositing float and froth products primarily targeting ash contents in the 8% - 9% range, but also taking into account yield and FSI values. For the 9.5mm x 0.25mm material, floats were selected over the 1.45 to 1.60 SG range. For the 0.25mm x 0 fraction, froths were selected using the 60-seconds frothing time for all seams that returned enough material to have a froth performed.
- Most CCCs underwent Proximate analysis, S%, FSI. More detailed testing for Hardgrove Index (HGI), calorific value, % phosphorous-in-coal, Ultimate analysis, Gieseler fluidity, Rhur dilatation and mineral analysis of ash is on-going and not reported herein. Split samples taken from the CCCs were submitted for petrographic analysis. Due to sample size or elevated ash contents, some samples may not have undergone all of the analyses listed above.

11.3 Security

Special security measures are not commonly employed for coal projects due to the low-value nature of the commodity. Concerns that pertain to sample security are typically directed

towards proper bagging and labeling for shipping and proper handling procedures and storage at the laboratory to ensure no “mix-up” occurs between samples and sample tags.

Sample tracking sheets were completed for each set of samples sent to the laboratory. The information recorded on sample tracking sheets included which samples were sent, the date the samples were shipped and the sample numbers received by the laboratory and date of receipt. No samples were lost. These measures are common within the coal industry and are considered adequate for the secure delivery and storage of coal samples.

12 DATA VERIFICATION

The author, Mr. D. J. Loveday (P.Geo.) an independent QP, Norwest Project Manager and representative, has reviewed and verified Colonial's coal exploration methods and data used for developing an independent coal resource estimate for the Flatbed property. The following data verification methods were employed.

12.1 Site Inspection

A site inspection of the Flatbed property and nearby core logging facilities at Tumbler Ridge was completed by the QP between October 10 and October 13, 2017. The site inspection included the following:

- A helicopter flight over the property
- location check of Colonial's exploration drillhole locations via handheld GPS
- mapping along Gordon Creek to verify regional strike and overburden formations
- viewing coal seam intervals in the core boxes
- verifying bed orientation in drill core samples
- viewing Boulder Creek Formation-Shaftesbury Formation contact zone, a significant marker horizon, in drill cores and geophysical logs
- reviewing core logging procedures
- reviewing core sampling procedures
- reviewing geophysical log picking procedures
- reviewing electronic data collection procedures.

Further meetings were held both at Colonial's offices and remotely to review and discuss seismic survey data (purchased by Colonial from an existing data set), drilling results, geologic interpretation and exploration strategy.

12.2 Database Validation

The exploration database provided to Norwest for independent geologic modeling and resource estimation included the following checks:

- Cross-validation of coal, rock and marker bed intervals against field geologist's logs and assay certificates.
- Comparisons between assay certificate results and provided coal assay database ultimately used for coal quality evaluation and resource estimation.

- Checks for outliers and overlapping intervals in the provided drillhole and coal quality data used for resource modeling and estimation.
- Comparison of drillhole collar survey data against surface topography elevation data and drillhole locality plans provided by Colonial.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

All Gordon Creek 2017 coal quality and coal washability testing was conducted using samples taken from HQ-size drill core. Coal quality testing was completed at Birtley Coal and Minerals Testing (Birtley) located in Calgary, Alberta.

13.1 Raw Coal Quality

A total of 93 ply samples covering coal, rock partings and immediate seam roof and floor intervals were analysed on a raw basis at Birtley. All coal and coal zone plies were analysed for the following parameters: moisture %, ash %, volatiles %, total sulphur (S) %, fixed carbon %, free swelling index (FSI) and specific gravity (SG). In-seam rock partings plus roof and floor rock samples were sometimes analysed for the same parameters, or may have had volatile contents omitted. The testing standards used by Birtley for the above raw coal parameters are presented in Section 11.

Coal and rock ply samples came from drillholes FD17-01 and FD17-03A. Samples from FD17-03A were limited to Seam B and the upper section of Seam D only, due to drilling complications that prevented the drillhole from penetrating the remaining Gates Formation coal seams. Composite raw coal quality results (derived from weight averaging individual seam ply data) for each coal seam penetrated in drillholes FD17-01 and FD17-03A are presented in Table 13.1, below. The raw coal quality results include adjustments for core loss intervals using the analytical results from the same seam either from adjacent drillholes or other, within-seam, sample plies that displayed a similar geophysical log signature. The impact of these corrections is understood by the QP to have non-material impact on the accuracy of the raw coal quality analytical results presented in Table 13.1

Table 13.1 Gordon Creek Raw Coal Quality – Air Dried Basis (adb)

Seam	Recovery	Moisture	Ash	Volatiles	Fixed Carbon	Sulphur	Dmmf Volatiles	Coal
ID	%	%	%	%	%	%	%	Rank
B	83	0.71	32.57	20.08	46.63	0.90	26.90	mvb
D	68	0.57	19.74	22.47	57.22	0.98	26.43	mvb
E	83	0.58	14.98	21.78	62.66	1.44	24.26	mvb
F1	100	0.31	22.83	19.85	57.01	0.45	23.86	mvb
F2	100	0.55	15.85	20.40	63.20	0.35	23.12	mvb
G	78	0.62	33.48	16.22	49.68	0.47	21.21	lvb
J	99	0.64	17.99	17.40	63.97	0.32	19.85	lvb
K	53	0.77	24.35	15.70	59.18	0.35	18.71	lvb

Notes: i) dmmf = dry mineral matter free; ii) mvb = medium volatile bituminous; iii) lvb = low volatile bituminous

Volatile matter on a dry, mineral matter free (dmmf) basis ranges from 18.71% to 26.90% indicating that the coal seams range in rank from low volatile bituminous (lvb) to medium volatile bituminous (mvb), according to ASTM coal rank classification (Standard D388). Seam G is situated close to the division between these two ranks, which is at 22%.

13.2 Float-Sink Coal Quality

Float-sink washing tests as well as froth flotation tests were performed on the Gordon Creek drill core samples to identify the potential for producing a clean coal coking product at the 8% to 9% ash (adb) product range.

To obtain sufficient sample mass for float and sink (washability) testing, the remaining ⅞ sample mass from the raw coal quality sample plies were proportionally combined into a single sample representing the entire seam intercept. The resulting full seam samples were crushed and separated into two size fractions: a coarse fraction at 9.5mm by 0.25mm and a fine fraction at less than 0.25mm. The coarse fractions from each of the coal seams ranged from 95.89% to 98.31%, with all but one sample being 97.11% or greater. These then underwent float-sink testing using the following densities: 1.40, 1.50, 1.60, 1.70, and 1.80. In addition to these cut points, some coal seams were also floated at 1.30, 1.45 and 1.55. The ASTM testing standards used for coarse fraction are presented in Section 11.

Based on the clean coarse (+0.25mm fractions), the estimated clean washed coal quality for each seam, targeting a coking coal product with an 8% to 9% ash (adb), plus associated laboratory-determined theoretical yields (adjusted for core loss), are presented in Table 13.2. The values for Seam B represent weighted averages of the coal quality data for each of the individual Seam B intercepts from drillholes FD17-01 and FD17-03A.

Table 13.2 Gordon Creek Float-Sink Coal Quality – Coarse Fraction

Seam ID	Cut Point S.G.	Moisture %(adb)	Ash% (adb)	Volatiles %(adb)	Fixed Carbon %(adb)	FSI*	Theoretical Yield%
B	1.55	0.56	9.29	24.74	65.41	7	58.3
D	1.45	0.43	8.86	24.83	65.88	5.5	59.5
E	1.50	0.70	8.33	22.28	68.69	8	80.7
F1	1.50	0.42	8.73	21.56	69.29	8	62.2
F2	1.60	0.82	8.05	20.98	70.15	7	83.2
G	1.55	0.53	8.64	20.57	70.26	7	54.2
J	1.55	0.47	8.66	18.17	72.70	4	79.2
K	1.50	0.48	5.61	18.40	75.51	4	65.8

*Rounded to the nearest half unit

The theoretical yields illustrated in Table 13.2 include adjustments for core loss by determining the ratios for lost coal versus recovered coal and lost rock versus recovered rock, applying that ratio to the float-sink weights for each SG fraction, calculating the increase in weight for each fraction and determining the adjusted theoretical yields. In so doing, all lost rock intervals were assumed to have a 0% yield while all lost coal intervals were assumed to have the same yields as the recovered coal; this was confirmed by visual comparison of recovered and lost core intervals with the detailed geophysical log profiles. The impact of these adjustments is understood by the QP to have a non-material impact on the accuracy of the washed coking coal estimates in Table 13.2.

The froth flotation test results for the fine coal fraction (<0.25mm) at the 60 second interval produced low-ash, coking coal froth "products". The results of these tests are presented in Table 13.3. The values for Seam B represent weighted averages of the coal quality data for each of the individual Seam B intercepts from drillholes FD17-01 and FD17-03A.

Table 13.3 Gordon Creek Froth Flotation Coal Quality

Seam ID	Froth Time Seconds	Moisture %(adb)	Ash% (adb)	Volatiles %(adb)	Fixed Carbon %(adb)	FSI*	Theoretical Yield%
B	60	0.51	11.52	25.33	62.64	8.5	72.24
D	Insufficient sample mass for frothing						
E	Insufficient sample mass for frothing						
F1	60	0.68	9.64	21.76	67.92	9	84.20
F2	60	0.62	7.10	22.00	70.28	8.5	87.87
G	60	0.61	13.24	20.43	65.72	7.5	69.14
J	60	0.54	9.67	18.80	70.99	7	89.78
K	60	0.88	11.07	18.42	69.63	6.5	75.22
*Rounded to the nearest half-unit							

The contribution of the froth flotation tests to the overall coking coal quality after beneficiation is non-material considering that the fine coal fractions from each of the coal seams form such a very small portion of the overall mass of any one coal seam, ranging from 1.69% to 4.11%.

The coal quality results from drill core samples indicates the Gates coal seams in the Gordon Creek area, as presented above, have coking properties after beneficiation.

13.3 Clean Coal Composite Quality

Clean coal composites (CCC's) for each coal seam were generated by selecting fractions from the float-sink tests and froth flotation tests to create, a simulated CCC with an ash content in the

range 8% - 9% (adb). In certain cases, the float selected for the CCC's differed slightly to those presented in Table 13.2 due to the small mass of certain float fractions. The results obtained from these CCC's are summarized in Table 13.4 below.

Table 13.4 Gordon Creek Clean Coal Composite Quality (adb)

Seam	Clean Coal								Mean Maximum Reflectance (RoMax)	Gieseler Fluidity Max DDPM	Dilatation % S.D. 2.5	Base Acid Ratio
	Cut-Point		Clean Coal Composite Analysis (adb)									
	S.G.	Froth (sec)	Moist%	Ash%	VM%	S%	FSI	%P in Coal				
B*	1.50-1.55	30-60	0.51	8.85	25.04	0.92	8.5	0.081	1.19	1140	117	0.22
D	1.45	NSS	0.53	8.37	25.08	0.82	6.0	0.050	1.17	1120	78	0.10
E	1.5	NSS	0.56	8.16	22.58	1.32	8.0	0.041	1.29	286	64	0.11
F1	1.5	60	0.50	8.58	21.92	0.58	8.0	0.058	1.32	35	28	0.13
F2	1.6	60	0.43	8.27	21.27	0.39	7.0	0.046	1.32	4.4	-13	0.22
G	1.5	60	0.46	7.93	20.64	0.53	8.0	0.089	1.39	26	17	0.08
J	1.55	60	0.44	8.45	18.40	0.37	3.5	0.020	1.43	1.0	-	0.10
K	1.5	60	0.52	6.01	18.14	0.41	3.5	0.002	1.43	1.7	-	0.10

*Weighted Average of FD17-01 and FD17-03A; FSI rounded to the nearest half-unit., NSS = not sufficient sample

Gordon Creek coal seams typically clean to a low sulphur product. Overall, CCC sulphur contents range between 0.37% and 1.32%. However, with the exception of Seam E (1.32%), all other CCCs returned sulphur contents of less than 1.00%.

The mineral analysis of ash provides acid and base oxides contained in the ash. For coke making purposes, minimal basic components are desired. The ash basicity can be reported using a ratio of the base oxides over the acid oxides:

Base/Acid = (CaO+MgO+Fe2O3+K2O+Na2O)/(SiO2+Al2O3+TiO2)

Overall CCC base/acid ratios range from 0.08 to 0.23, although the majority returned base/acid ratios of less than 0.13.

The phosphorus-in-coal contents for all CCC's range from 0.002% to 0.089%.

Rheological characteristics of the Gordon Creek coal seams are as follows; FSI values range from 3.5 to 8.5, although the majority are equal to, or greater than, 6; maximum fluidity values range between 1 and 1140 dial divisions per minute (ddpm); dilatation ranges from minus 13 to 117.

Mean maximum vitrinite reflectance (RoMax) values range from 1.17 for Seam B, to 1.43 for Seams J and K.

14 MINERAL RESOURCE ESTIMATES

14.1 Approach

This report has been prepared in accordance with the requirements of NI 43-101, Standards of Disclosure for Mineral Projects (CSA, 2011). The GSC Paper 88-21 "A Standardized Coal Resource/Reserve Reporting System for Canada" (Hughes, et al, 1989) has been referred to for the classification, estimation and reporting of coal resources. GSC Paper 88-21 was written in 1988 and is now obsolete with respect to certain technical parameters. This document has been used only as a guideline for resource estimation.

The following approach was used to estimate the resources in the Gordon Creek area:

- Construct a grid model to form the basis for reporting resources
- Establish the level of geological complexity based on the geological interpretation
- Perform an independent resource estimate using the grid model
- Identify a maximum depth below surface limit for resource estimation
- Use spatial distribution of drillhole data points to classify resource assurance.

14.2 Geological Model

The extent of the Gordon Creek grid model is outlined in Table 14.1. The Gordon Creek model extent in relation to the lease boundary can be observed on Figure 14.1, Coal Resource Plan.

Table 14.1 Flatbed Resource Model Parameters

Coordinates	UTM Zone 10 NAD83 Datum			2D Grid Spacing (m)
	Minimum	Maximum	Origin	
Easting (X)	634,200	641,000	634,200	20
Northing (Y)	6,085,500	6,093,300	6,085,500	20
Elevation (m)	-600	1,500	-600	-

The geologic model was compiled using MineSight® and Carlson® software. A grid modeling method was selected based on the observation of the exploration drilling results that indicated a constant, shallow, seam dip for the resource area that did not warrant the application of more complex block modeling methods. MineSight® software was used for the first phase of the grid modeling process due to the software's advanced 3D viewing capabilities to aid in the structural interpretation and correlations of the coal seams. MineSight® model grid data were later imported into Carlson® software for the reporting of coal resources and to prepare the model

for subsequent underground mine planning using Carlson® software, should that be desired in the future. Carlson® software is used extensively throughout North America for coal resource and reserve evaluation.

The modelled structural interpretation for the Gordon Creek area, described in detail in Section 7 of the report, was determined through observation of coal exploration drilling results, O&G well logs, and from regional structural maps compiled by the British Columbia Government geologists (Legun, 2002). The contact between the Shaftesbury and Boulder Creek Formations (SB-contact), located above the Gates Formation that hosts the target coal seams, was used as a reference point from which to interpret the structural trends and depth intervals of the coal beds.

Correlation of the SB-contact, penetrated in three of Colonial's exploration drillholes (FD17-01, FD17-02 and FD17-03A), was used to define a reference dip plane. Grid estimates of apparent (vertical) thicknesses of coal beds and intervening waste rock were stacked below this reference plane to develop a geologic model comprising grid estimates of seam roof and floor elevations and apparent thickness. To complete the model, grid estimates of the surface topography, derived from public domain topographic surveys and depth of unconsolidated overburden, measured from exploration drillholes, were also added.

Eight (8) Gates Formation coal seams were identified in the geologic model as having reasonable prospects for eventual economic extraction. These are, from top to bottom, seams B, D, E, F1, F2, G, J and K. The relative location of these coal seams within the Gates Formation can be viewed in Figure 7.1. The coal seams within the defined resource area are dipping towards the southwest (striking northwest) at 11°. Structure contour maps for the two confining coal seams, Seam B and Seam K are shown on Figures 7.6 and 7.7, respectively.

A major resource-limiting fault, called the Flatbed fault, has been identified from drillhole and O&G well logs. The fault follows regional structural trends and strikes northwest. The displacement along the Flatbed fault is estimated to be approximately 1,200m, downthrown towards the northeast. In the southeast of the Gordon Creek area the Flatbed fault is interpreted to develop a north-northwest orientated split. The location of the Flatbed fault and associated fault split is shown in Figures 7.6 and Figure 7.7.

There is insufficient exploration data to determine the orientation of the Flatbed fault at depth however, exploration and mining in the region has shown major faults to have a near vertical orientation near surface. Given the available information, the resource-limiting Flatbed fault is interpreted to be vertical. A southwest oriented geologic cross-section illustrating the impact of

the Flatbed fault on the coal seams can be observed in Figure 7.8. There are no other resource limiting faults identified in the Gordon Creek area.

14.3 Basis for Resource Determination

NI 43-101 (CSA, 2011) specifies that the definitions of the CIM Guidelines be used for the identification of resources. The CIM Resource and Reserve Definition Committee produced the following statement:

"Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource."

The CIM Definition of Resources is as follows:

"A Mineral Resource is a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

"Material of economic interest refers to diamonds, natural inorganic material, or natural fossilized organic material including base and precious metals, coal, and industrial minerals."

The committee went on to state the following:

"The term Mineral Resource covers mineralization and natural material of intrinsic economic interest which has been identified and estimated through exploration and sampling and within which Mineral Reserves may subsequently be defined by the consideration and application of technical, economic, legal, environmental, socio-economic and governmental factors. The phrase 'reasonable prospects for eventual economic extraction' implies a judgment by the Qualified Person in respect of the technical and economic factors likely to influence the prospect of economic extraction. Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However, for many gold deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time."

These definitions and statements clearly show that coal material can only be considered a resource if there is a clear identification of the economic potential of the deposit. For coal deposits, this means that the nature of the database, technology for mining and mine planning, some degree of practical recovery constraints and the economic potential in current markets have to be considered in order to identify a coal resource, and while the strict conditions for the definition of a reserve may not be needed to identify a resource, consideration should still be given to the same key issues.

14.4 Classification

Reserves and resources are classified according to the confidence level that can be placed in each estimate. In accordance with the criteria of the CIM Guidelines applying to coal deposits, resources are classified in Measured, Indicated and Inferred categories, proceeding from that with the highest confidence level to the lowest. Besides the reserve and resource classification scheme of the CIM Guidelines, NI 43-101 (CSA, 2011) suggests that the criteria of GSC Paper 88-21 (Hughes, et al, 1989) be referred to if necessary. The distinction between different classes of resources in that paper is based on the spacing of valid data points which, in this case, are coal seams intersected by drillholes. The concept is that the closer the drillholes are spaced, the higher the confidence that can be placed in the resource estimate.

GSC Paper 88-21 also utilizes criteria adapted to reflect the differing assurance levels associated with varying levels of geologic complexity. Four levels of increasing geologic complexity are addressed and include:

- Low
- Moderate
- Complex
- Severe.

The interpretation of the Geology Type for the Gordon Creek area of the Flatbed property is Moderate. GSC Paper 88-21 describes Moderate Geology Type as: “characterised by homoclines or broad open folds (wavelength greater than 1.5km) with bedding inclinations generally less than 30°. Faults may be present, but are relatively uncommon and generally have displacements of less than ten metres.”

14.5 Coal Resource Estimate

The term "resource" is utilized to quantify coal contained in seams occurring within specified limits of thickness and depth from surface. The resource estimations contained herein are on a

geological in-situ basis, i.e. as an in-situ tonnage and not adjusted for mining losses or dilution. However, minimum mineable seam thickness and maximum removable parting thickness are considered. Coal intervals not meeting these criteria are not included in the resource estimates.

Table 14.2 shows the criteria used for coal resource estimates for the Gordon Creek area of the Flatbed property.

Table 14.2 Gordon Creek Coal Resource Estimation Criteria

Underground Resources	
Maximum depth from surface	900m
Minimum seam thickness	1.0m
Maximum mineable parting thickness	0.5m

Coal resource estimates as reported from the grid model for the Gordon Creek area are summarized in Table 14.3. Resources are estimated for underground deposit types only. The resource statement is current as of January 10, 2018. Using ASTM criteria, coal rank varies from medium volatile bituminous (mvb) to low volatile bituminous (lvb). Coal quality and washability test results described in Section 13 indicate that the coal to has coking properties after beneficiation.

Table 14.3 Gordon Creek In-Place Inferred Coal Resource Estimate (Effective Date: January 10, 2018)

Seam ID	Thickness m	Coal Rank	Volume m^3'000	Density (SG) GSC 88-21	Resource Mt
B	2.93	mvb	32,400	1.61	52.2
D	2.45	mvb	24,564	1.49	36.6
E	1.40	mvb	13,295	1.44	19.1
F1	1.48	mvb	13,795	1.52	21.0
F2	3.67	mvb	33,960	1.45	49.2
G	2.40	lvb	21,512	1.62	34.8
J	4.40	lvb	36,881	1.47	54.2
K	2.56	lvb	20,223	1.53	30.9
				Total	**298.0**

Specific gravity used for coal tonnage estimates outlined in Table 14.3 were derived using GSC Paper 88-21's Table 1 (in-situ bulk density guidelines) in conjunction with the raw ash estimates outlined in Table 13.1 in Section 13.

The plan view surface footprint of the resource area is depicted in Figures 14.1, Gordon Creek Coal Resource Plan. The areas of resource assurance were delineated using the distance from data point guidelines in GSC Paper 88-21 that defines an Inferred resource of Moderate geology type to be between 900m and 2,400m from the nearest data point. For the Gordon Creek deposit, the distance from data point varied relative to the quality of the available information from each coal seam penetration. The distance surrounding coal seam penetrations in drillhole FD17-01 was extended to the maximum range of 2,400m on account of the high-quality data acquired from the drillhole, notably high resolution geophysical log signatures, detailed drill core descriptions and a comprehensive suite of coal assay test results. Seam penetrations around drillhole FD17-03A, as well as O&G wells B-030-K and B-029-K were limited to 1,650m, half the distance between 900m and 2,400m. This shorter range was applied due to the lower resolution geophysical log signatures acquired from the O&G wells and incomplete penetration of the target coal seams from drillhole FD17-03A due to drilling complications.

The accuracy of resource estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analyses available after the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

Mineral resources are not mineral reserves and there is no assurance that any mineral resources will ultimately be reclassified as proven or probable reserves. Mineral resources which are not mineral reserves do not have demonstrated economic viability.

15 MINERAL RESERVE ESTIMATES

Coal reserves have not been estimated for the Flatbed property at this time. Definition of coal reserves under NI 43-101 (CSA, 2011) requires an evaluation at a prefeasibility level at a minimum. Evaluation of the property at this level of detail has not been completed to date.

In order for reserves to be defined, resources at a level of confidence of Measured or Indicated must be defined for the property. Resources classified as Inferred cannot be classified as reserves until their level of confidence is upgraded to the measured or indicated categories.

16 MINING METHODS

The classification of resources under NI 43-101 (CSA, 2011) and GSC Paper 88-21 (Hughes, et al, 1989) requires that the mining method being considered be defined. The Flatbed resource has been defined based on underground mining methods. Historically, underground mining methods have been employed at a number of operations within the western Canadian Rocky Mountain Foothills. These include mines located in west-central Alberta, at Grande Cache and Canmore and at a number of mines located in the southwest Alberta - southeast British Columbia foothills region.

No underground coal mining has taken place in the immediate vicinity of the Flatbed property, although two proposed longwall mines, one at Murray River and another at Sukunka, are at an advanced stage of planning and development (Stantec, 2013; Gov't. of Canada. 2017). It is expected that methods of mining similar to those currently proposed for these projects and/or used in the past would be appropriate for the Flatbed property. However, mine design and evaluation has not been carried out as part of this resource definition study.

17 RECOVERY METHODS

As noted earlier in the study, coal handling and processing of Gates coal seams have been carried out at the neighboring Quintette, Bullmoose, Trend and Wolverine mines. It is expected that the Gates coal seams on the Flatbed property would be amenable to processing by similar methods as those utilized at the foregoing, listed, operations. However, a detailed evaluation of coal processing requirements and projected coal recoveries for the Flatbed property have not been developed as part of this resource definition study.

18 PROJECT INFRASTRUCTURE

On a regional and local basis, the important elements of infrastructure are discussed in Sections 4 and 5, and shown in Figures 4.1 to 4.4 of this report. In addition to the descriptions presented in Sections 4 and 5, electrical power is available from an existing 230kV powerline terminating at the Quintette project substation, located at the Quintette wash plant area.

There have been no improvements made to the property.

19 MARKETS AND CONTRACTS

Clean coals from the Gates Formation coal seams have been established in the international metallurgical coal market since 1983, with multiple years of commercial production from the nearby Quintette, Bullmoose, Trend and Perry Creek (Wolverine) Mines. Consequently, it is expected that the Flatbed property coal production could be sold into the international market. However, no specific marketing studies or price estimates have been prepared for this resource definition study.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SCOCIAL OR COMMUNITY IMPACT

The entire Peace Rive Coal Field contains areas where unique considerations must be taken to account for wildlife, archaeological and environmental issues.

Much of the Gordon Creek deposit area is covered by Caribou High Elevation Winter Range Habitat (HEWR) which is bordered, to the east, by Caribou Low Elevation Winter Range Habitat. To provide guidance to Colonial's employees and sub-contractors, during exploration activities, Colonial has developed the Flatbed Caribou Mitigation and Monitoring Plan (Turney, 2017) to ensure that impacts to caribou habitat and caribou populations within the Flatbed property are minimized.

As is typical for this region, Colonial was required to complete an Archaeological Overview Assessment (AOA) of the entire Flatbed property before commencing any work. The AOA (Hill and Storey, 2014) found that a significant portion of the Flatbed property had a Moderate or High Surface/Subsurface Archaeological Potential Probability of Presence (PoP). Based on these findings, Colonial committed to having all 2017 exploration ground disturbance locations, which fell within the Moderate or High PoP categories, undergo a Preliminary Field Reconnaissance (PFR) performed by an archaeologist. This was to ensure that nothing of potential archaeological interest was present within areas of planned disturbance.

The Flatbed property also contains ground covered by Ungulate Winter Range and Old Growth Management (OGM) Areas. Ungulate Winter Range is located in the eastern section of the property but is not present within the Gordon Creek deposit area. There are two Old Growth Management Areas (OGMs) within the property, one in the northwest, which partially covers the Gordon Creek deposit area and one in the southeast. Colonial's current work permit allows helicopter-supported drilling in the Gordon Creek OGM Area (and within the HEWR) although trail construction will require further consultation.

20.1 Permits

Proponents of mining projects in B.C. are required to obtain a permit from the Ministry of Mines (MEM) prior to commencing any work on a mine site (this includes exploration properties), in accordance with the Province's *Mines Act* and the *Health, Safety and Reclamation Code for Mines in British Columbia*. The requirements for a mine permit application, and the process for review and approval of permit applications, depend upon the size and type of mining activity.

The MEM regulates the approval, development and reclamation of all mines in B.C. under the authority of the *Mines Act* and its associated regulations, and all other applicable federal and

provincial laws. Under Section 10 of the *Mines Act*, before any mine operation can commence, a *Mines Act* permit must be obtained from MEM with appropriate reclamation security paid in full.

Project proponents are strongly encouraged by regulatory agencies to undertake early consultations with local, provincial and federal government agencies, First Nations and local communities, to assist in the identification and scoping of issues and information requirements, and to help define the content of the permit application. The proponent is also advised to engage with all potentially affected First Nations communities in meaningful dialogue and relationship building, to gain an understanding of the potential impacts of the project and the First Nations' expectations for participation in the project.

Acquiring a *Mines Act* permit may require additional approvals from other regulatory agencies including the B.C. Ministry of Environment (MoE) and the B.C. Ministry of Forests, Lands, Natural Resource Operations & Rural Development. Such key approvals or authorizations for exploration projects that will likely be required include:

- BC *Forests Act* Licence to Cut for clearing and/or removing timber from the mine development areas and access roads
- BC *Forests Act* Special Use Permit for construction and maintenance of roads
- *Explosives Act* Explosives Magazine Storage and Use Permit (for mining purposes), if required.

All required permits and approvals must be received prior to undertaking exploration activities.

20.2 Environmental Baseline Studies

Environmental baseline studies, to support an eventual comprehensive Environmental Assessment, are often started during more advanced exploration-stage projects. Typically, these include gathering two years of baseline data focused on surface hydrology and water quality, groundwater (water quality and levels), geochemical characterization, sediment quality, aquatic resources (benthic invertebrates, periphyton), metals concentrations in tissue (fish and benthic invertebrates), fish and fish habitat, soils, vegetation, wildlife, air quality and noise. Such data are used to document the environmental baseline, complete an environmental effects assessment, and modeling to support future permit applications.

20.3 Social and First Nations

First Nations are consulted through the government on any new permit or permit amendment. The Flatbed property is located within the area of northeastern British Columbia covered by

Treaty 8. There are four First Nations with an interest in the area: West Moberly First Nations, Saulteau First Nations, the McLeod Lake Indian Band, and Halfway River First Nation. Colonial has had conversations with the West Moberly and Saulteau First Nations and the McLeod Lake Indian Band to lay the foundations for working with Colonial to develop Impact and Benefit Agreements.

21 CAPITAL AND OPERATING COSTS

Capital and operating cost estimates have not been prepared for this resource definition report. It is expected that these estimates would be prepared as part of future evaluation work.

22 ECONOMIC ANALYSIS

Economic analyses were not completed for this resource definition study. It is expected that economic analyses would be part of future evaluation work.

23 ADJACENT PROPERTIES

No information from adjacent properties was used in the preparation of this Technical Report.

24 OTHER RELEVANT DATA AND INFORMATION

There are no other relevant data or information applicable to this Technical Report, other than the sources referenced throughout this report and listed in Section 27.

25 INTERPRETATION AND CONCLUSIONS

The effective date for this report is January 10, 2018. The principal sources of data concerning geology, drilling, coal quality testing, and many other technical aspects, were obtained from Colonial and publicly available sources.

The geology type for the property was classified as Moderate, based on GSC Paper 88-21 (Hughes, et al, 1989) criteria. The Deposit Type is categorized as an underground mineable deposit. Verification of the exploration historic records of the geology was achieved by data review and site inspections. Coal resources were reported from a geologic model constructed from the exploration results.

The exploration drilling and other exploration data supports the assessment that 298Mt of coal resources are classified as Inferred. The coal resources are identified as having coking properties after beneficiation and are sufficiently defined to form the basis for further engineering and economic analysis as part of a Preliminary Economic Assessment (PEA).

25.1 Risks and Uncertainties

Risks and uncertainties that may affect the reliability or confidence of the geologic resource estimate include geological factors such as geometry of the major thrust faults that may truncate the coal seams at depth, variations in the attitude of coal seams at depth and potential variations in coal seam thickness between points of observation.

25.2 Conclusions

Based upon the available information, it is concluded that:

- Exploration undertaken by Colonial provides a reliable compilation of geology, resource potential and coal quality for the property as indicated by the exploration results.
- The Flatbed property has a coal resource with coking properties.

26 RECOMMENDATIONS

Based upon the results achieved to date, further work on the Gordon Creek deposit is recommended. The main elements of additional project evaluation and exploration are outlined below.

26.1 Internal Scoping Study and Preliminary Economic Assessment

Conduct an internal study to determine if it is appropriate to undertake a PEA which would evaluate the mining potential of the Gordon Creek deposit area based upon the data gathered to date.

If the findings of the internal study are appropriate, proceed to a PEA. The PEA would provide an estimate of the recoverable (mined) coal tonnes from the Inferred resource and would include a high-level mining engineering study, proposed coal beneficiation program, economic analysis and coal marketing report.

The estimated cost for the internal study is approximately $45,000; the cost of the internal study already forms part of the 2017 exploration program budget. It is estimated that another $50,000 would allow the internal study to meet PEA standards, the results of which would help direct the extent and direction of subsequent coal exploration programs on the Flatbed property.

26.2 Exploration

26.2.1 Drilling

It is recommended that a further 4-5 drillholes be completed within the Gordon Creek deposit area to:

- Refine the structural geological interpretation of the deposit and hence the geological model.
- Allow an increase in resource confidence from Inferred to Measured plus Indicated.
- Confirm and infill coal quality data across the deposit.
- Acquire sufficient coal samples from each seam to conduct initial carbonization tests.
- Conduct further geotechnical studies on rock cores.
- Undertake initial coal seam gas content determinations

The drilling would include a combination of trail and helicopter accessible drillholes.

26.2.2 Geophysical Surveys

It is recommended that a 2D seismic survey, designed to identify and trace coal seams, and any shallow geological structures that might affect the Gates coal measures, be carried out over the Gordon Creek deposit. It is estimated that approximately 10km of seismic lines would be required.

26.2.3 Additional Regional Data

It is recommended an initial, 2D seismic survey, designed to identify and trace coal seams and geological structures, be carried out over the eastern anticline target together with a detailed geological mapping program. It is estimated that approximately 5km of seismic lines would be required.

26.2.4 Exploration Budget

Based upon the above, and assuming a 5-hole drill program, the estimated budget for the recommended work at the Gordon Creek deposit area will total approximately $2.6M. A detailed breakdown of the estimated budget can be found below in Table 26.1.

Table 26.1 Flatbed Exploration Budget

Component	Cost
Drilling Operations	$710,000
Geophysical Logging	$46,000
Coal Quality	$300,000
Helicopter/Trails	$210,000
Field and Office Personnel	$240,000
Geotechnical Evaluation	$40,000
Coal Seam Gas Content Evaluation	$65,000
Room and Board	$70,000
Rental Vehicles	$30,000
Materials and Supplies	$18,000
Consultants	$30,000
Geological Model Update/Resource Reporting	$40,000
PEA Preparation	$50,000
Geophysical Surveys (2D Seismic)	$310,000
Additional regional data compilation	$160,000
Reporting/PEA Up-Date	$45,000
Contingency 10%	$236,000
Total	**$2,600,000**

The proposed program, if successful, could provide information to support a prefeasibility-level study that may define coal reserves in the Proven plus Probable categories.

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28 ILLUSTRATIONS

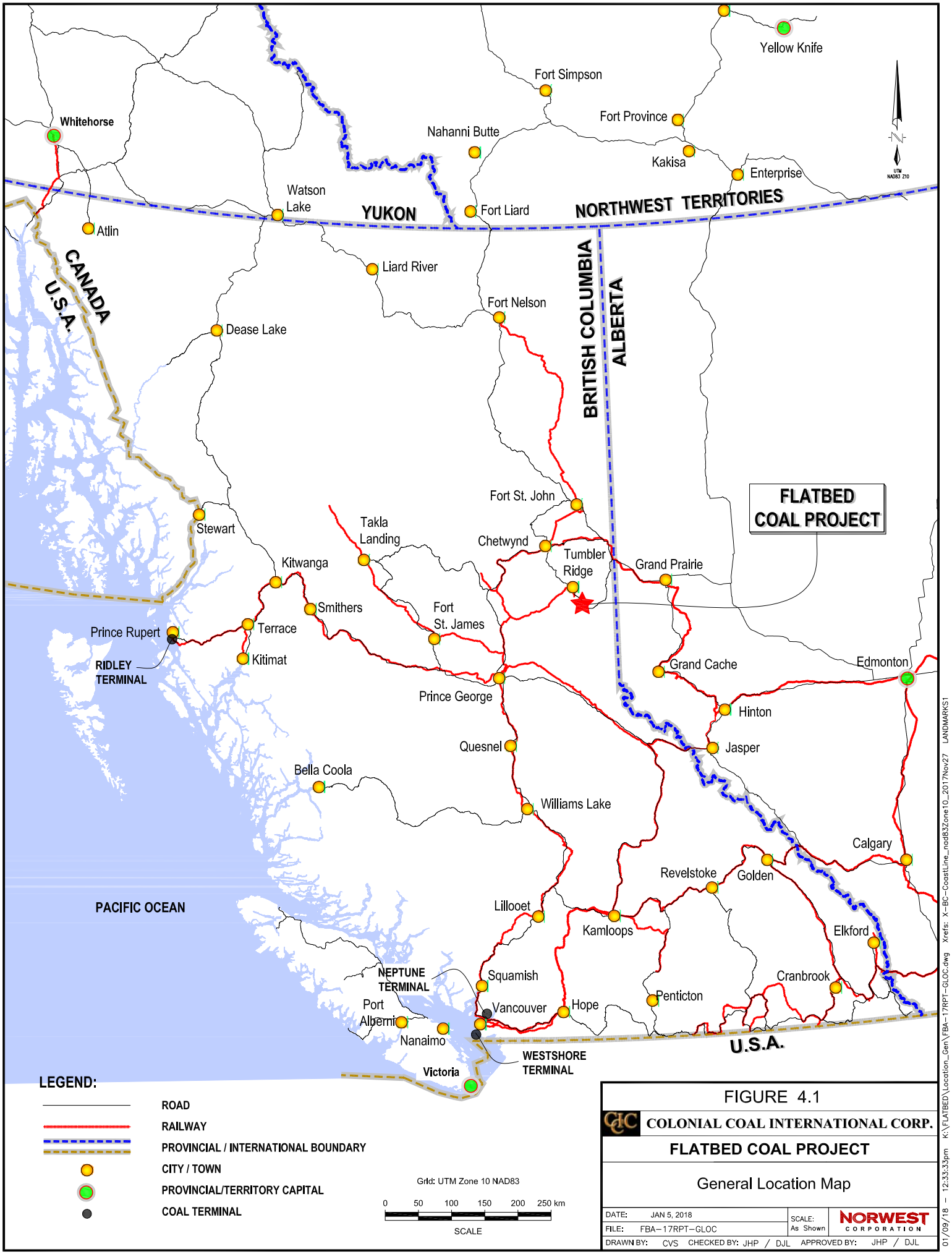

FIGURE 4.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

General Location Map

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-GLOC			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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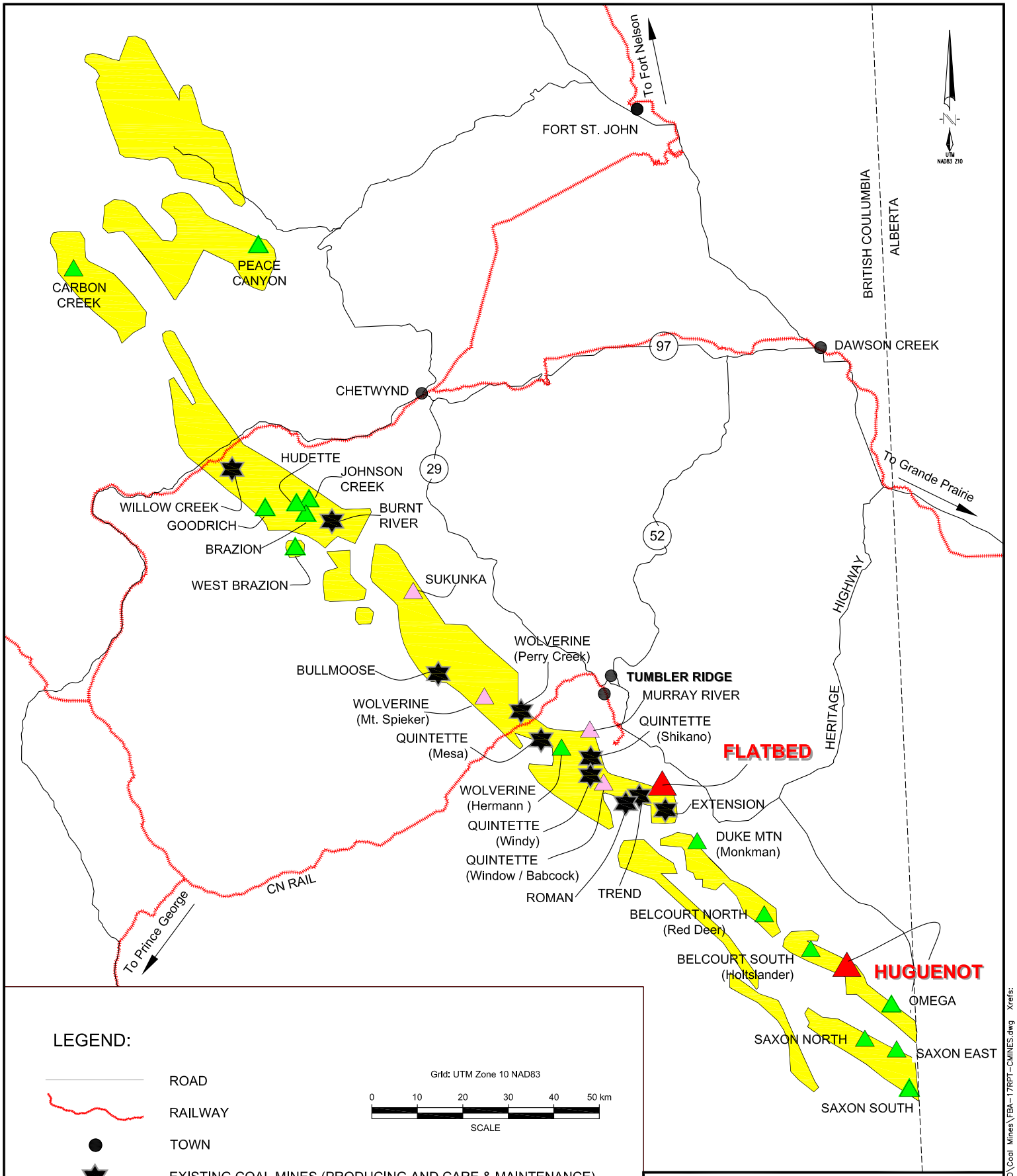

FIGURE 4.2

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Regional Location Map

DATE: JAN 3, 2018	SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-CMINES		

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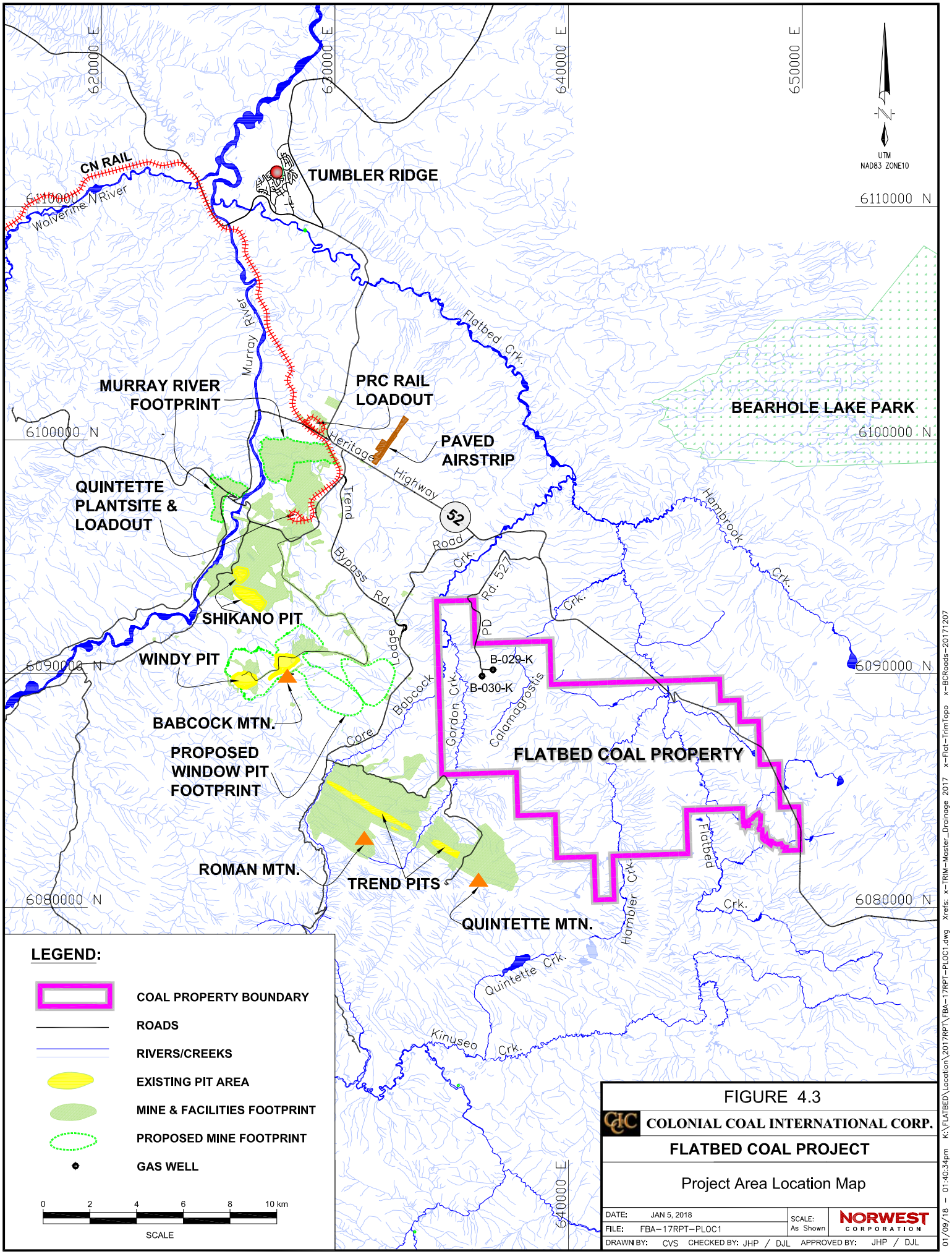

FIGURE 4.3

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Project Area Location Map

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-PLOC1			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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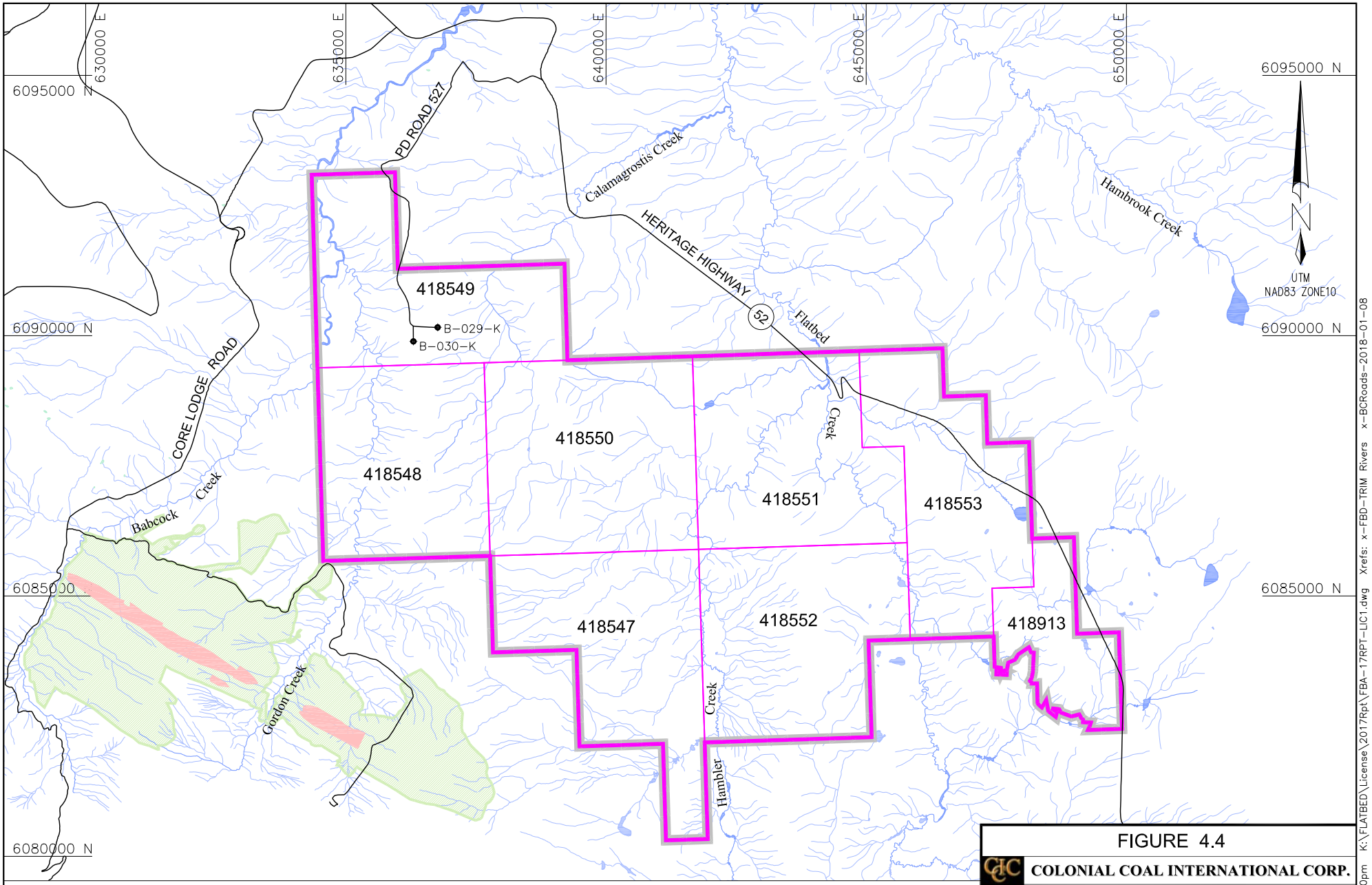

FIGURE 4.4

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Coal License Map

DATE: JAN 7, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-LIC1			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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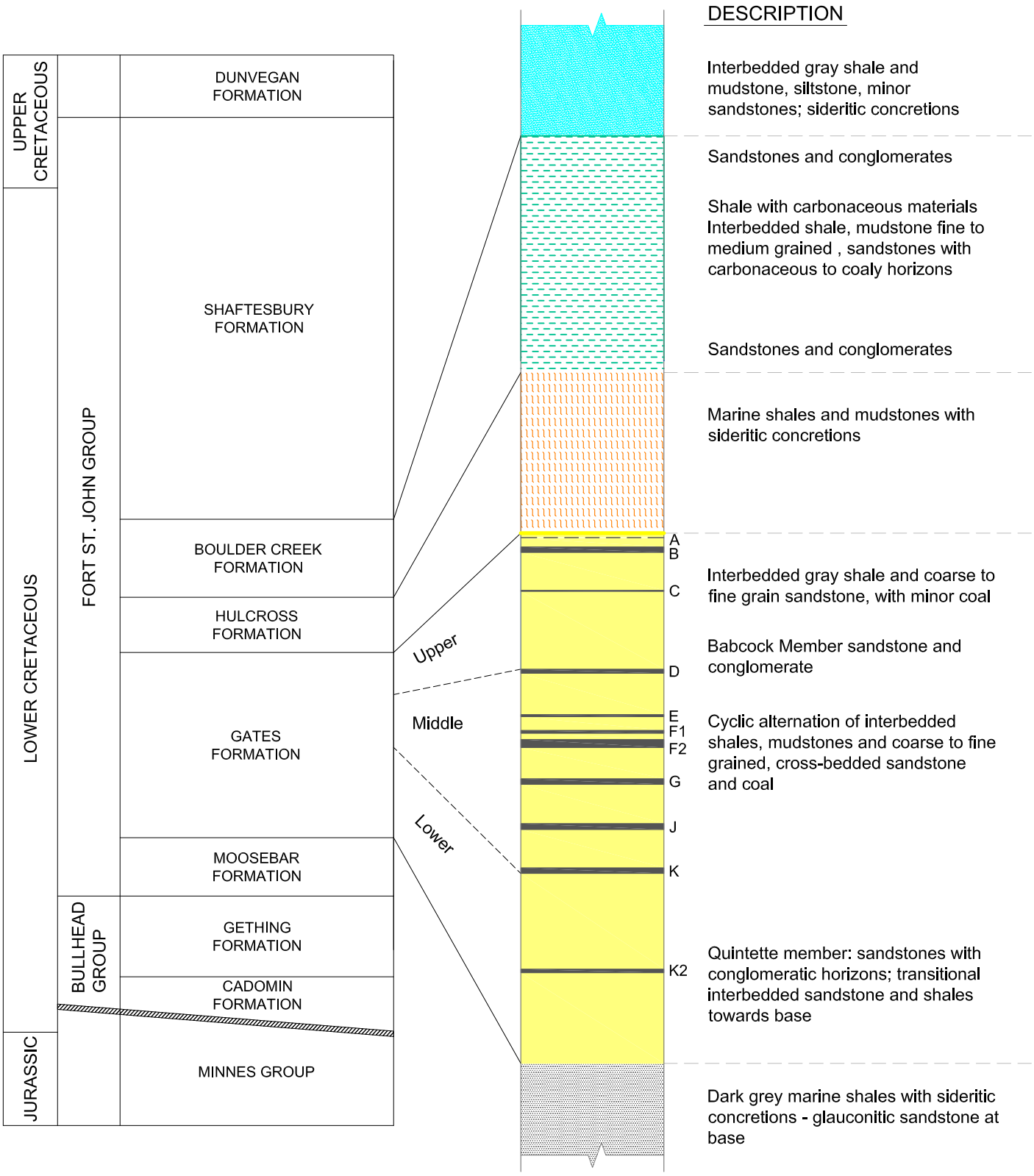

FIGURE 7.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Generalized Stratigraphic Column

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-STR			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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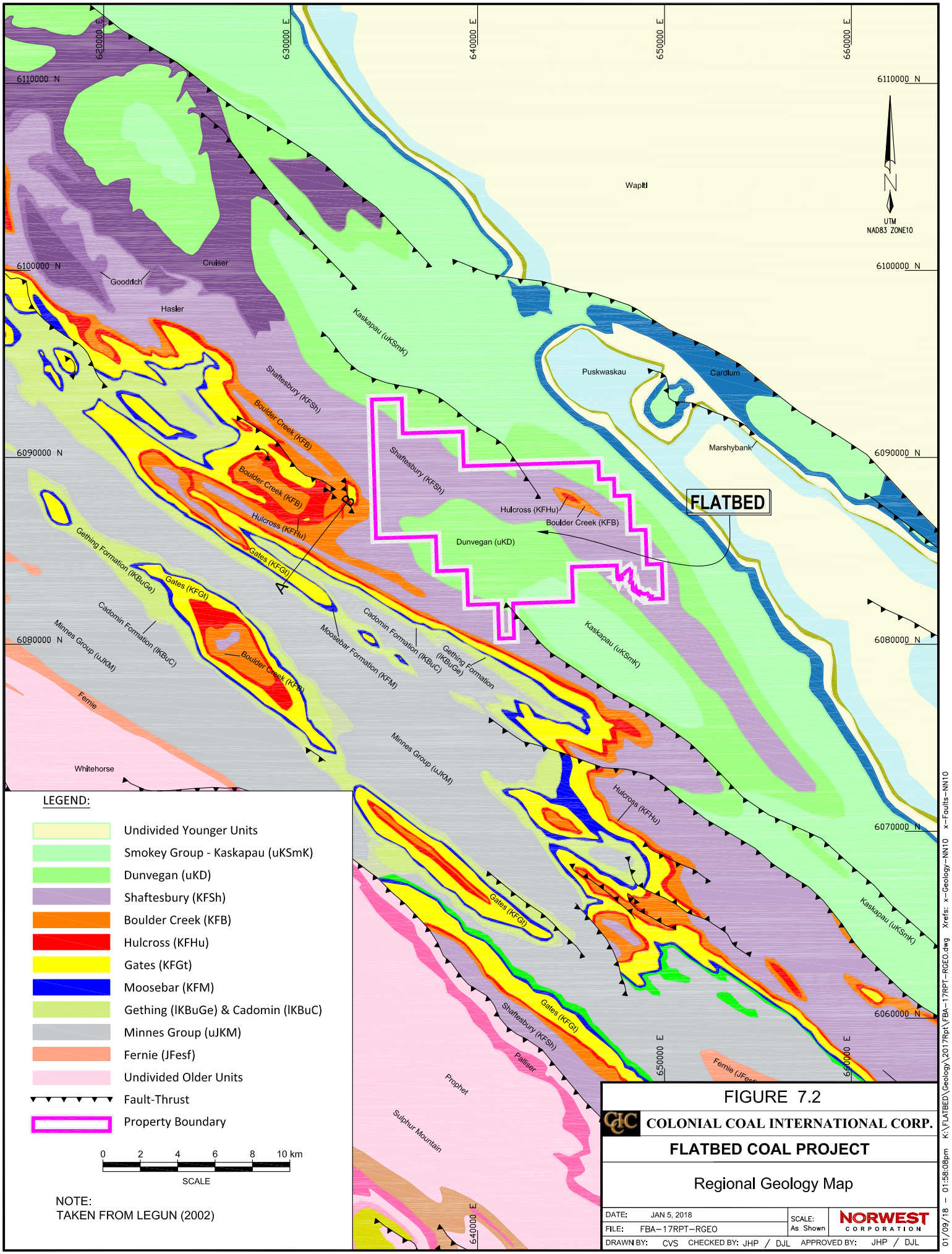

FIGURE 7.2

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Regional Geology Map

DATE: JAN 5, 2018	SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-RGEO		
DRAWN BY: CVS CHECKED BY: JHP / DJL APPROVED BY: JHP / DJL		

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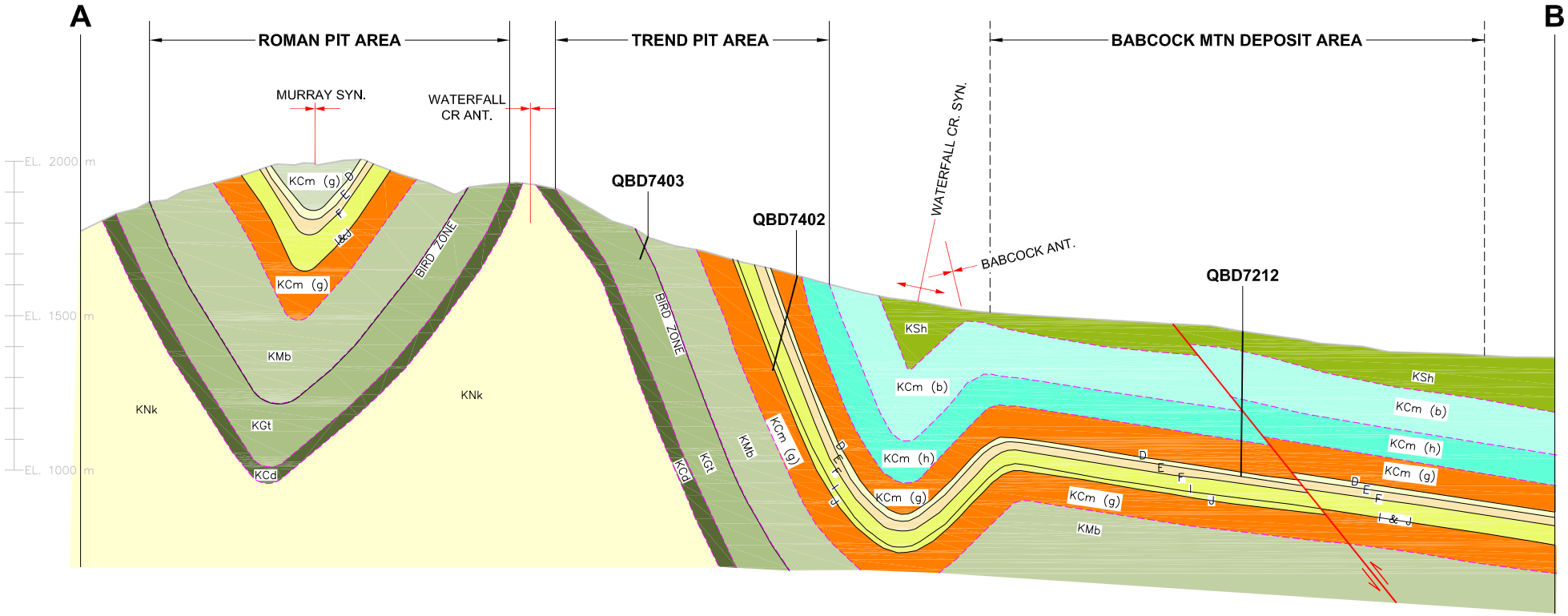

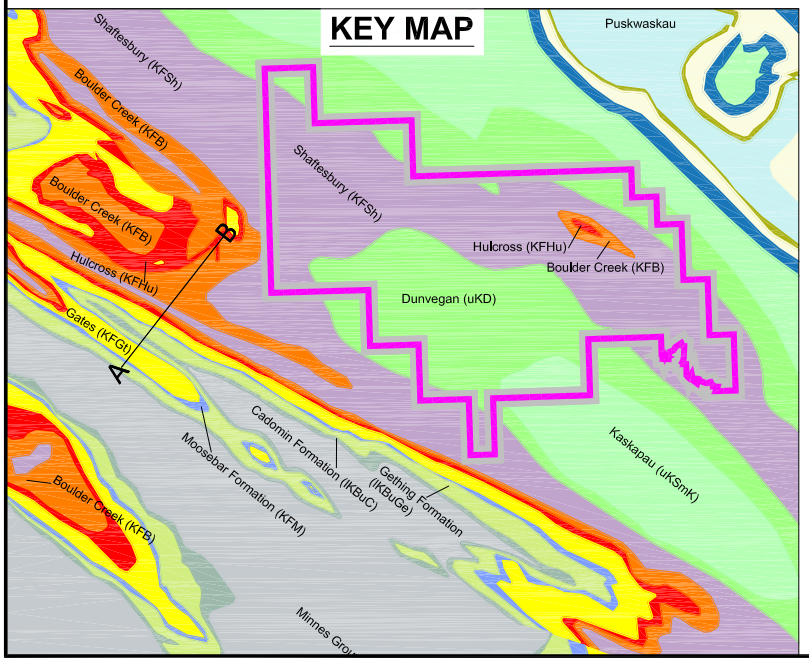

NOTE:
TAKEN FROM PERRY (2004)

CRETACEOUS

KSh	SHAFTESBURY FORMATION
KCm (b)	COMMOTION FORMATION (BOULDER MEMBER)
KCm (h)	COMMOTION FORMATION (HULCROSS MEMBER)
KCm (g)	COMMOTION FORMATION (GATES MEMBER)
KMb	MOOSEBAR FORMATION
KGt	GETHING FORMATION
KCd	CADOMIN FORMATION
KNk	NIKANASSIN FORMATION
	GEOLOGICAL CONTACT
	COAL SEAM
	FAULT

FIGURE 7.3

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Regional Schematic Cross-section

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-XSTREND			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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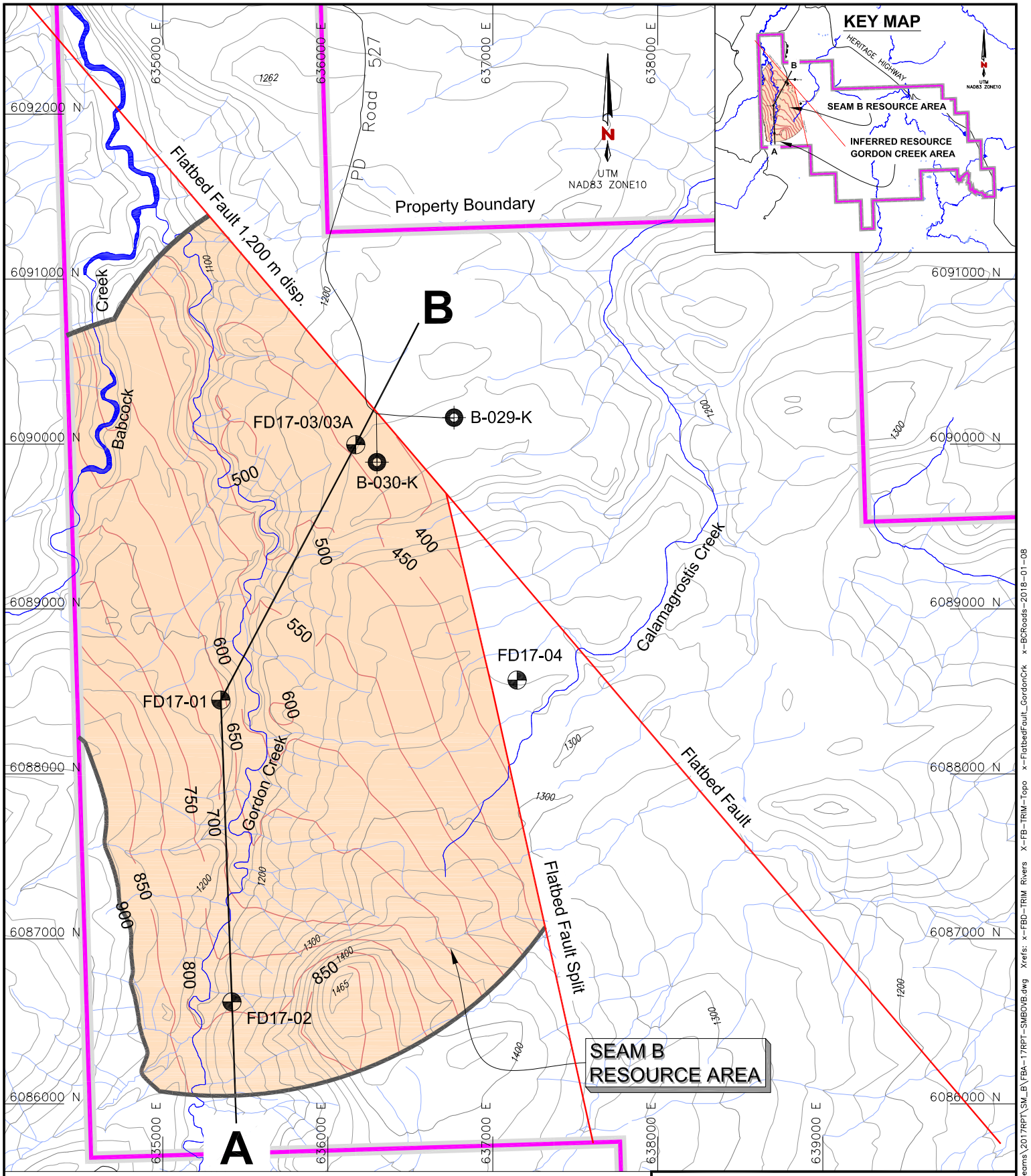

LEGEND:

- DRILLHOLE
- GAS WELL
- RIVER
- PROPERTY BOUNDARY
- TOPOGRAPHY
- ROAD
- SEAM B RESOURCE AREA
- SEAM B OVERBURDEN CONTOUR
- FAULT

0 200 400 600 800 m
SCALE

FIGURE 7.4

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam B Overburden Contours

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-SMBOVB			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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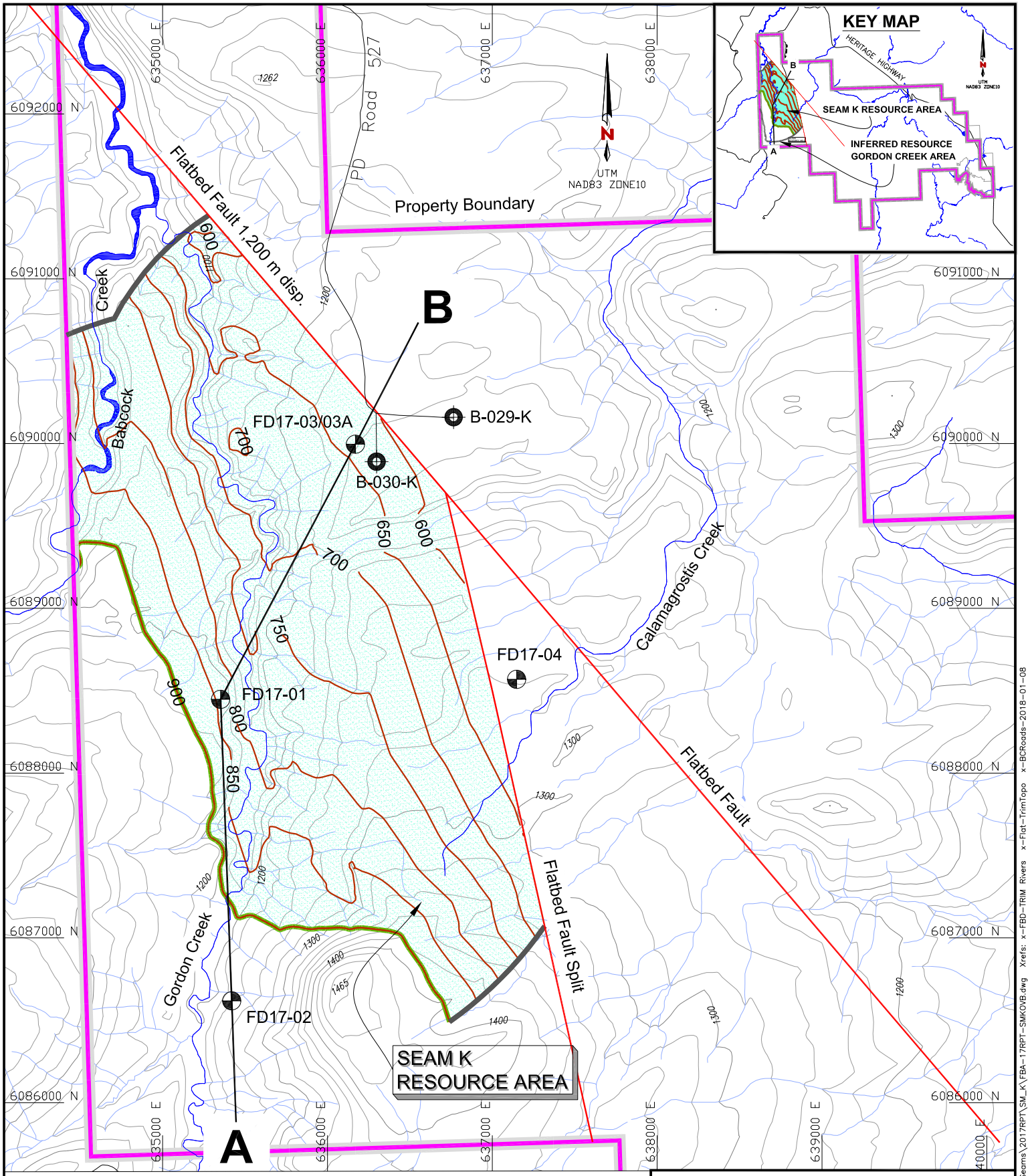

LEGEND:

- DRILLHOLE
- GAS WELL
- RIVER
- PROPERTY BOUNDARY
- TOPOGRAPHY
- ROAD
- SEAM K OVERBURDEN
- SEAM K OVERBURDEN CONTOUR
- FAULT

0 200 400 600 800 m
SCALE

FIGURE 7.5

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam K Overburden Contours

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-SMKOVB			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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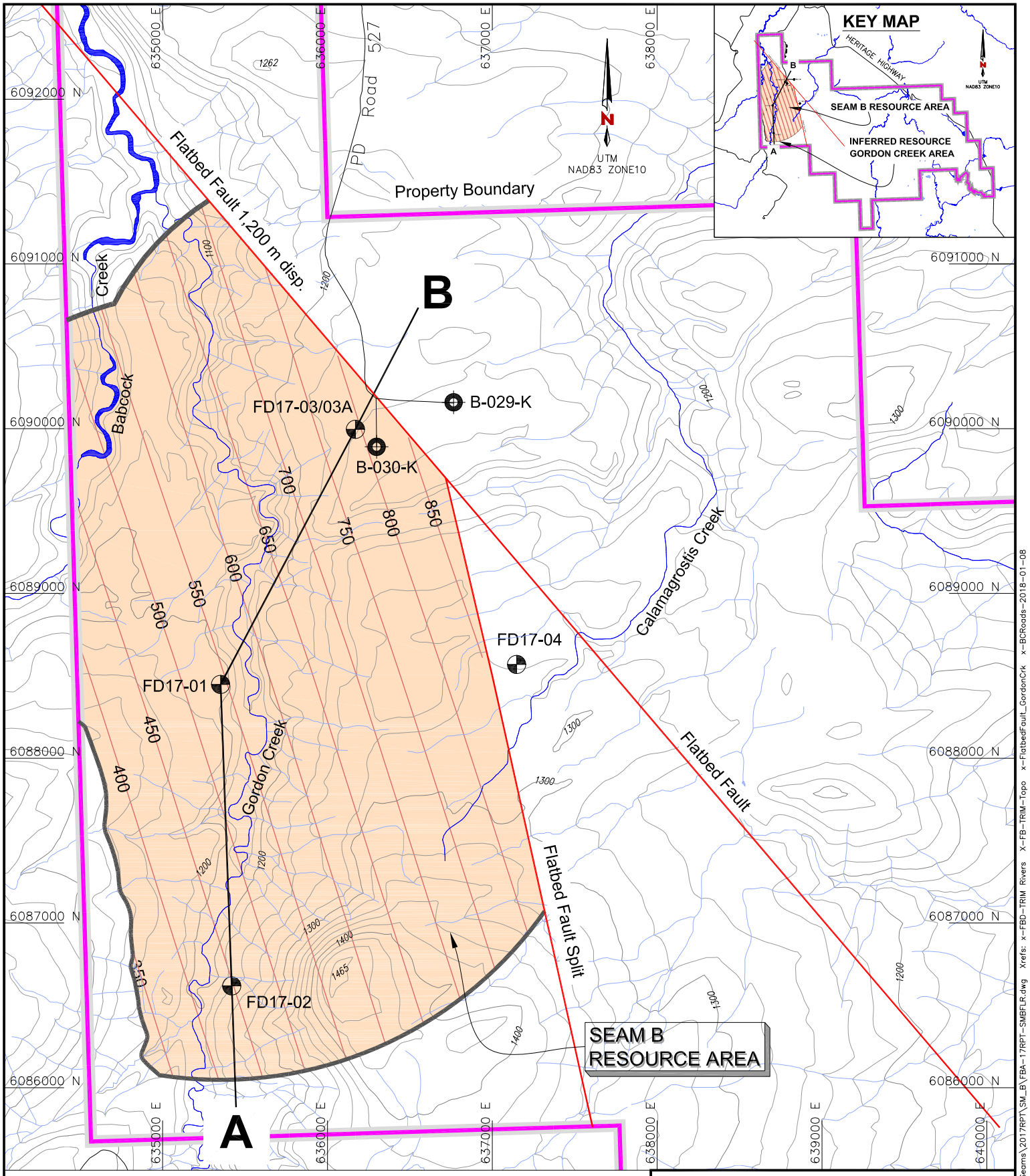

LEGEND:

- DRILLHOLE
- GAS WELL
- RIVER
- PROPERTY BOUNDARY
- TOPOGRAPHY
- ROAD
- SEAM B RESOURCE AREA
- SEAM B FLOOR ELEVATION CONTOURS
- FAULT

0 200 400 600 800 m
SCALE

FIGURE 7.6

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam B Floor Elevation Contours

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-SMBFLR			
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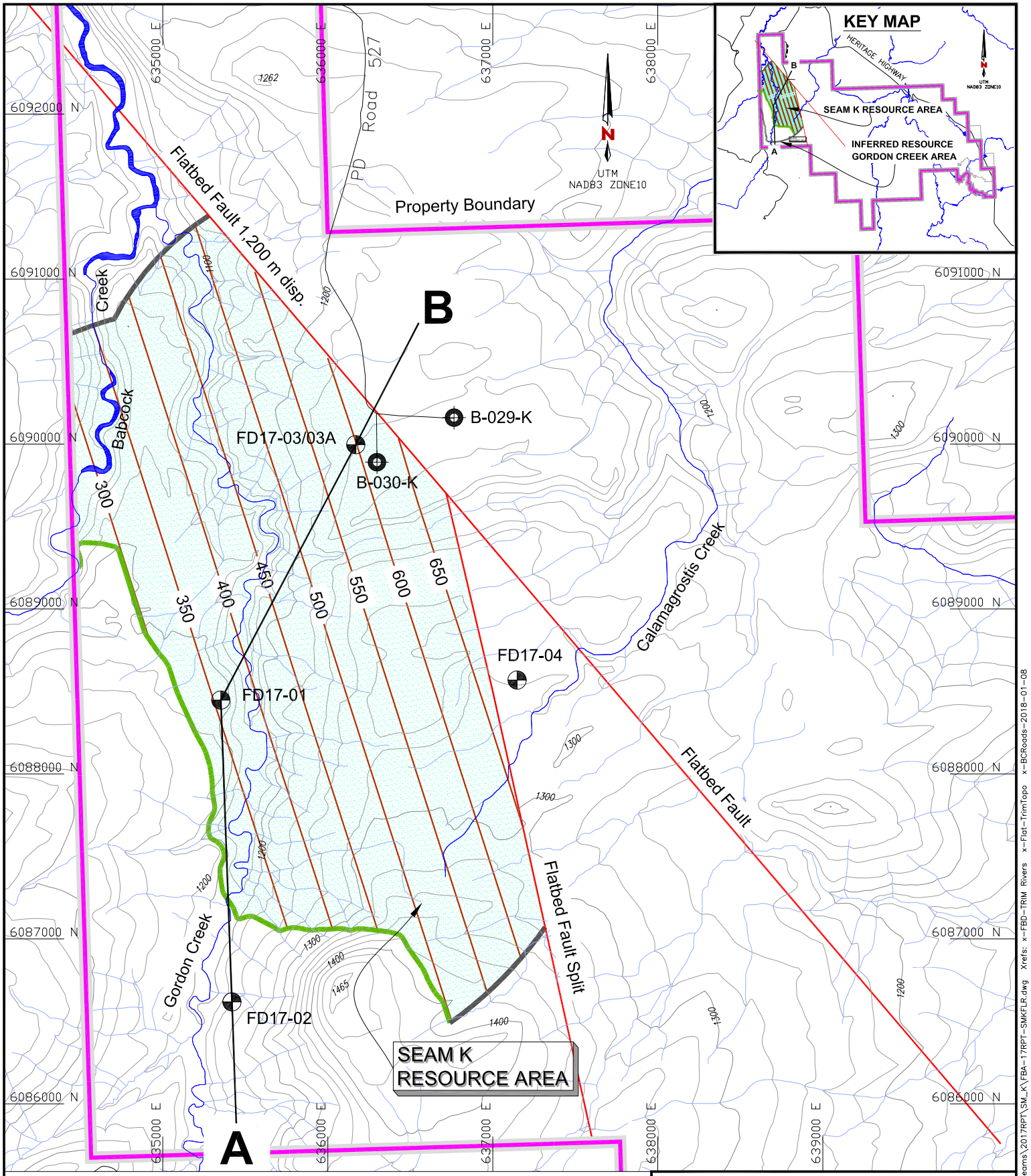

LEGEND:

- DRILLHOLE
- GAS WELL
- RIVER/CREEK
- PROPERTY BOUNDARY
- TOPOGRAPHY
- ROAD
- SEAM K RESOURCE AREA
- SEAM K FLOOR ELEVATION CONTOUR
- FAULT

0 200 400 600 800 m
SCALE

FIGURE 7.7

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Seam K Floor Elevation Contours

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-SMKFLR			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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CROSS SECTION A-B

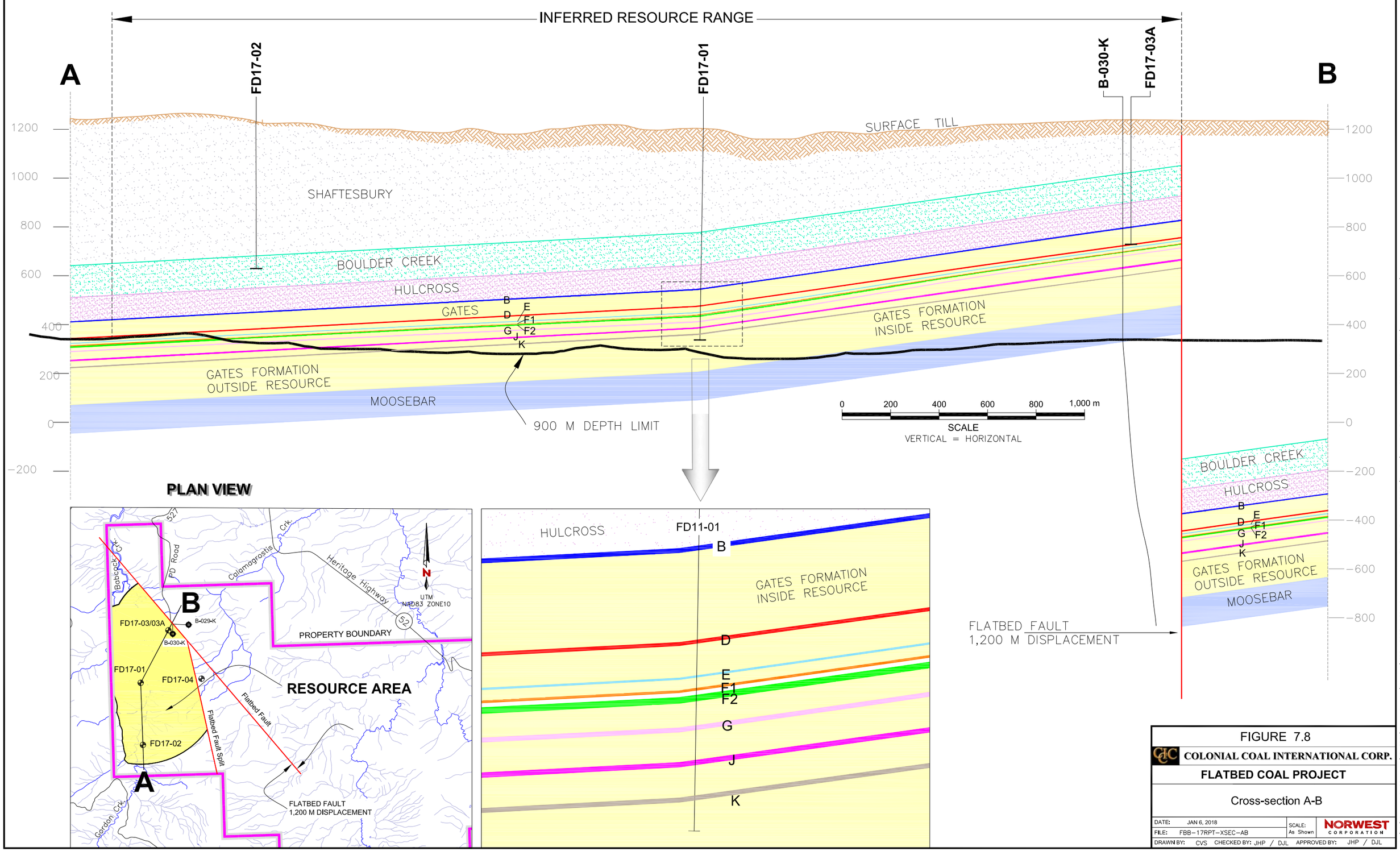

FIGURE 7.8

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Cross-section A-B

DATE: JAN 6, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBB-17RPT-XSEC-AB			
DRAWN BY: CVS	CHECKED BY: JHP / DJL	APPROVED BY: JHP / DJL	

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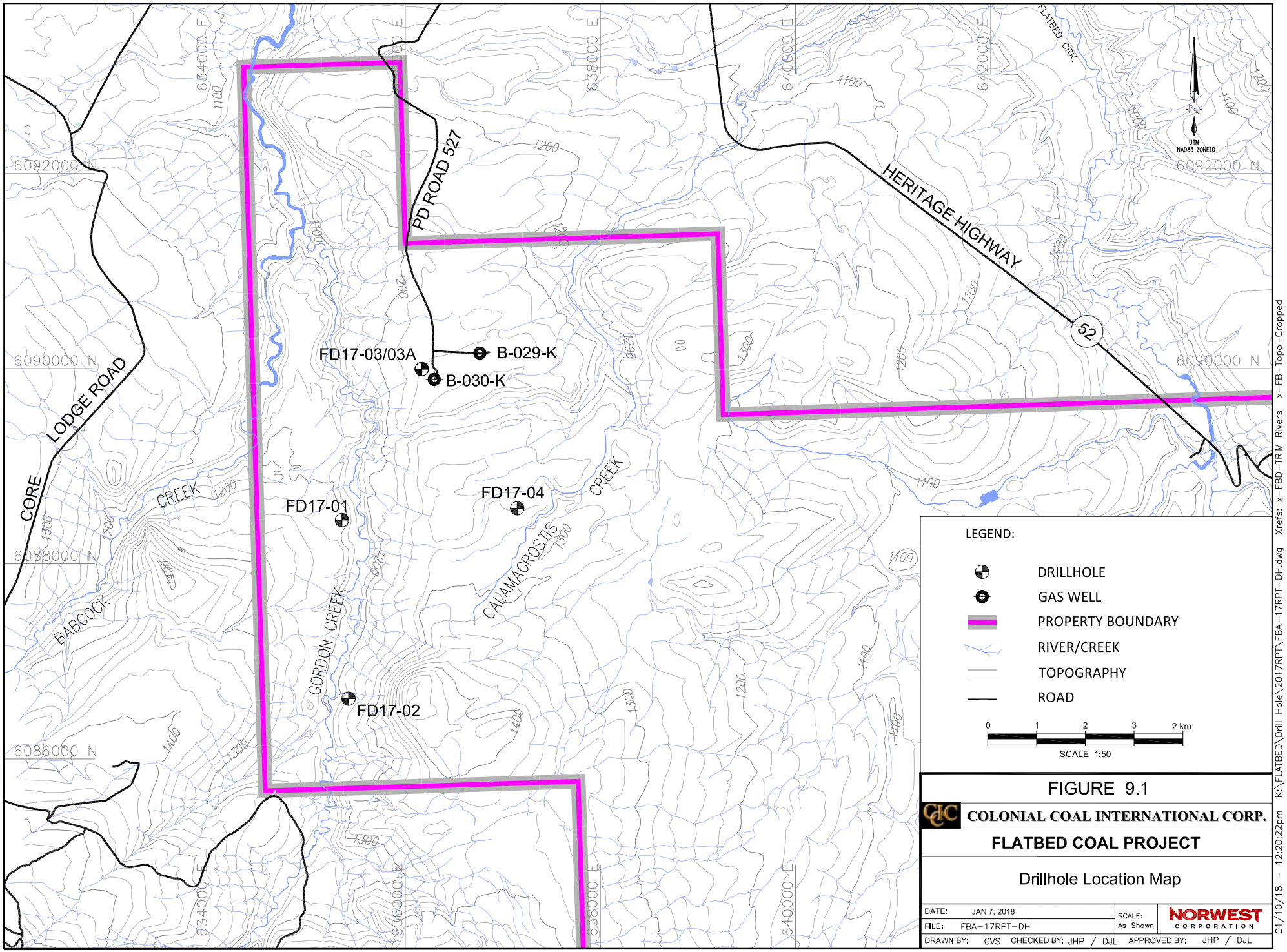
PD ROAD 527
HERITAGE HIGHWAY
52
CORE LODGE ROAD
FLATBED CRK.
FD17-03/03A
B-029-K
B-030-K
FD17-01
FD17-04
FD17-02
CREEK
CALAMAGROSTIS
GORDON CREEK
BABCOCK
6092000 N
6090000 N
6088000 N
6086000 N
634000 E
636000 E
638000 E
640000 E
642000 E
UTM NAD83 ZONE10
LEGEND:
DRILLHOLE
GAS WELL
PROPERTY BOUNDARY
RIVER/CREEK
TOPOGRAPHY
ROAD
0 1 2 3 2 km
SCALE 1:50
FIGURE 9.1
COLONIAL COAL INTERNATIONAL CORP.
FLATBED COAL PROJECT
Drillhole Location Map
DATE: JAN 7, 2018
FILE: FBA-17RPT-DH
SCALE: As Shown
NORWEST CORPORATION
DRAWN BY: CVS CHECKED BY: JHP / DJL APPROVED BY: JHP / DJL
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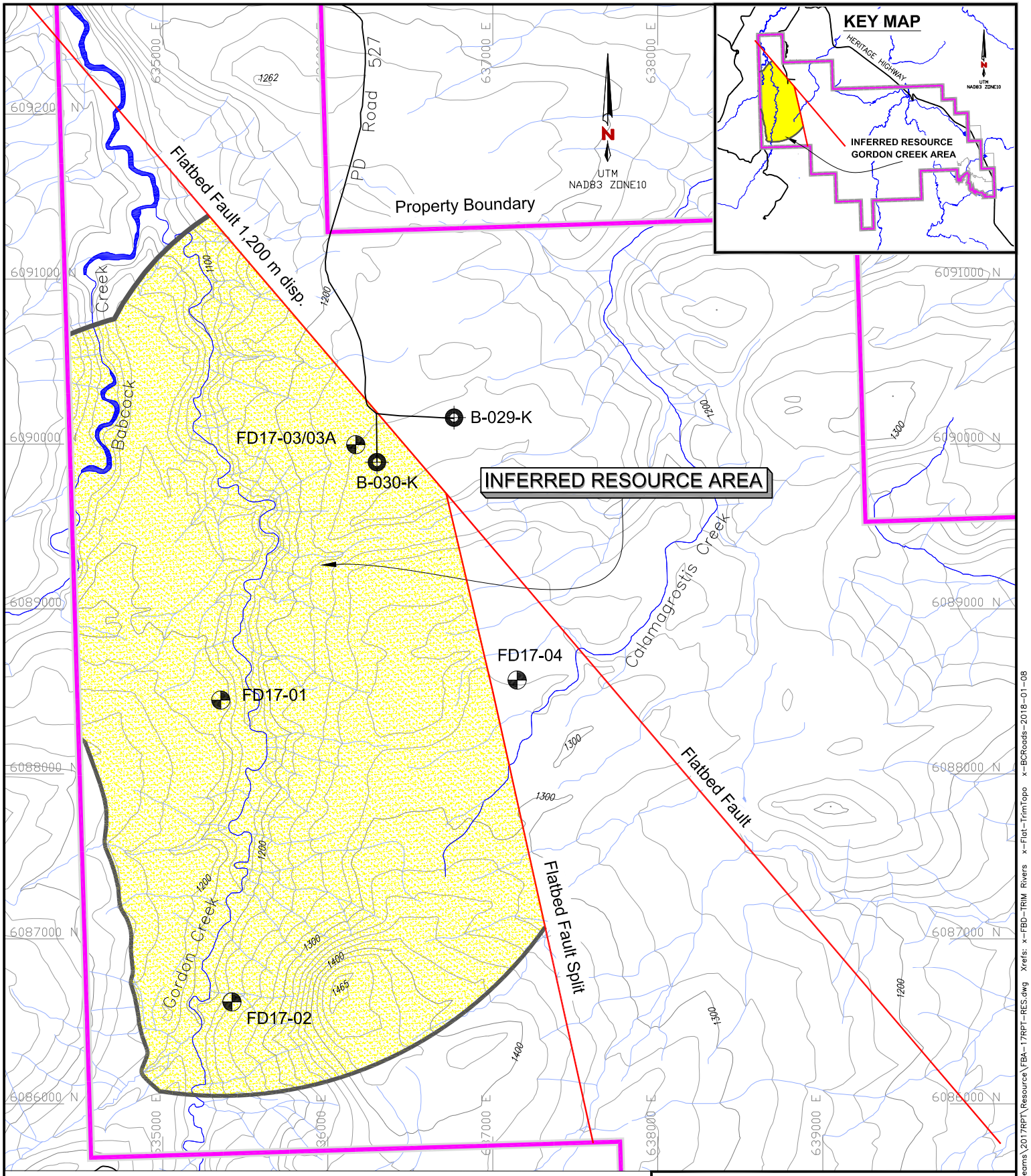

LEGEND:

- DRILLHOLE
- GAS WELL
- RIVER
- PROPERTY BOUNDARY
- TOPOGRAPHY
- ROAD
- INFERRED RESOURCE AREA
- FAULT

0 200 400 600 800 m
SCALE

FIGURE 14.1

COLONIAL COAL INTERNATIONAL CORP.

FLATBED COAL PROJECT

Coal Resource Plan

DATE: JAN 5, 2018		SCALE: As Shown	NORWEST CORPORATION
FILE: FBA-17RPT-RES			
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TSX-V: CAD

APPENDIX II

Gordon Creek Project

(Flatbed Property)

2017 Drillhole Data

TSX-V: CAD

Gordon Creek Project (Flatbed Property)

Diamond Drillhole Collar Statistics

Hole ID	Drillhole Type	Drillhole Start Date	Drillhole End Date	Drillhole Coordinates *(Surveyed)*			Survey Date	Official TD (m)	Official Casing Depth (m)	Start of Hole Bearing (°)	Start of Hole Inclination (°)	Drillhole Size	Access Method	GP Logging Date	Geologists	Drill Company	GP Company	GP Logger	Survey Company
				Easting (m)	Northing (m)	Elevation (m)													
FD17-01	Diamond	31 07 2017	01 09 2017	635351.6200	6088447.7820	1211.887	01 10 2017	866.39	102.72	-	90	HQ3	HELI	30 08 2017	Adriana Matesoi	Paycore	Century	Rylan Kobes	KMD Surveying Services
FD17-02	Diamond	02 08 2017	20 08 2017	635419.1620	6086618.0730	1240.396	01 10 2017	608.38	12.19	-	90	HQ3	HELI	-	Ozlem Suleyman	Paycore	-	-	KMD Surveying Services
FD17-03	Diamond	23 08 2017	02 09 2017	636168.6710	6089995.0990	1235.996	01 10 2017	297.79	57.91	-	90	HQ3	HELI	-	Ozlem Suleyman	Paycore	-	-	KMD Surveying Services
FD17-03A	Diamond	03 09 2017	09 10 2017	636169.4210	6089996.0910	1236.007	01 10 2017	513.08	75.00	-	90	HQ3	HELI	07 10 2017	Ozlem Suleyman	Paycore	Century	Rylan Kobes	KMD Surveying Services
FD17-04	Diamond	05 09 2017	18 09 2017	637147.4130	6088568.9960	1277.451	01 10 2017	546.20	66.00	-	90	HQ3	HELI	17 09 2017	Josh Taningco	Paycore	Century	Rylan Kobes	KMD Surveying Services

Gordon Creek Project

(Flatbed Property)

2017 Drillhole

Lithology Descriptive Logs

Gordon Creek Project

(Flatbed Property)

Lithology Descriptive Logs

FD17-01

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	1		0.00	29.56		29.56																	OVB	R-LOSS		No core.
FD17-01	1	29.56	29.56	29.71	0.15				GR	BR	SWE	PEB								MFI	HBK		OVB	SST		Rubble, pieces of sst and conglomerate rounded by the drill bit
FD17-01	1		29.71	29.88	0.17				DBR	GR	SWE	PEB								MFI	IN		OVB	SST		As above but caught in mud matrix
FD17-01	1		29.88	30.17	0.29				MGR			MGR		LA	XBE					MFI	SO		OVB	SST		Bedding/lamin 15-20° TCA (75-80° TCN).
FD17-01	1		30.17	30.70	0.53				GR		SWE	PEB	VFGR							MFI	MBK		OVB	SST		pebbles in grey to brown mud matrix, moderately consolidated
FD17-01	1		30.70	32.55		1.85																	OVB	R-LOSS		
FD17-01	1	32.61	32.55	35.28	2.73				MGR	MBR	SWE	PEB	VFGR							MFI	SBK		OVB			15% pebbles supported by mud matrix, pebbles are 3mm to 6 cm in size.
FD17-01	2		35.28	35.66	0.38				MGR	MBR		PEB	VFGR							MFI	SO		OVB			as above
FD17-01	2	35.66	35.66	37.28	1.62				MGR	MBR		PEB								MFI	IN		OVB			As above: 15 - 20% pebbles subangular in consolidated mud.
FD17-01	2		37.28	37.53	0.25				MGR	MBR	MWE	VFGR				GO				MFI	HBK		OVB	GO		consolidated grey-brn mud; looks like clay gouge in the top half….Much fewer pebbles. (possible R-Loss @ top or interval?)
FD17-01	2		37.53	37.82	0.29				MGR	MBR		PEB	VFGR							MFI	IN		OVB			15% subangular pebbles/cobbles in consolidated mud matrix.
FD17-01	2		37.82	38.71		0.89																	OVB	R-LOSS		
FD17-01	2	38.71	38.71	40.33	1.62				MGR	MBR		COB	PEB							MFI	IN		OVB	SST		15-20% angular ro subangular pebbles/cobbles (mostly SST) 1 to 10 cm in size, in the same mud matrix as above.
FD17-01	3		40.33	40.82	0.49				MGR	MBR		COB								MFI	IN		OVB			intact core, 25% cobbles. Sharp fracture at bottom contact at 12 degrees TCA
FD17-01	3		40.82	41.01	0.19				LGR	LBR		VFGR				SL				SFI	IN		OVB	SST		Soft sediment deformation or slump structures; contacts sharp and irregular.
FD17-01	3		41.01	41.76	0.75				MBR	MGR		COB								MFI	IN		OVB			Cobbles/pebbles up to 5 cm in size
FD17-01	3	41.76	41.76	43.63	1.87				MBR	MGR		COB				BX				MFI	SBK		OVB			20-25% clasts in mud matrix, 1.18 m from top a large 13 cm piece of breccia (might give a kick on some geophys log?)
FD17-01	3		43.63	43.84	0.21				MBR	MGR		PEB								SFI	MBK		OVB			Mud matrix holding 5 % of pebbles (clasts)
FD17-01	3		43.84	44.81		0.97																	OVB	R-LOSS		
FD17-01	3	44.81	44.81	45.42	0.61				MBR	MGR		COB	VFGR							SFI	SBK		OVB	SST		Approx. 25- 30 % clasts in mud matrix. (possible R-Loss @ top of interval)
FD17-01	4		45.42	46.27	0.85				MBR	MGR		PEB	VFGR							MFI	SBK		OVB			10 to 15 % clasts in mud supported matrix
FD17-01	4		46.27	47.85		1.58																	OVB	R-LOSS		
FD17-01	4	47.85	47.85	48.30	0.45				MBR	MGR	MWE	COB	VF-FGR							MFI	HBK		OVB	SST		Rubble of fine sst with some loose mud. (possible R-Loss @top of interval)
FD17-01	4		48.30	50.90		2.60																	OVB	R-LOSS		
FD17-01	4	50.90	50.90	51.18	0.28				MBR	MGR	MWE	COB	VF-FGR							MFI	HBK		OVB			As above
FD17-01	4		51.18	53.94		2.76																	OVB	R-LOSS		
FD17-01	4	53.94	53.94	54.28	0.34				MBR	MGR	HWE	COB	VFGR							MFI	HBK		OVB	GO		Weakly consolidated mud (gauge like) with cobbles of sst at the end of interval
FD17-01	4		54.28	55.47		1.19																	OVB	R-LOSS		
FD17-01	4	55.47	55.47	56.99		1.52																	OVB	R-LOSS		Rock loss (no core between these two marker blocks)
FD17-01	4	56.99	56.99	57.32	0.33				MBR	MGR		PEB	VFGR							WFI	HBK		OVB	LM		Loose sandy mud with subangular sst cobbles
FD17-01	4		57.32	57.44	0.12				MBR	MGR		VFGR	PEB							MFI	HBK		OVB			Mud holding few pebbles
FD17-01	4		57.44	57.59	0.15				MBR	MGR		MGR								SFI	IN		OVB	SST		Mud supporting sst clast (50 % mud and 50 % sst) Pebbles vary from mm to 6cm. Small rip up clasts present
FD17-01	4		57.59	60.04		2.45																	OVB	R-LOSS		
FD17-01	4	60.04	60.04	60.83	0.79				MBR	MGR		VF-FGR	PEB							MFI	SBK		OVB			Mud matrix (mostly clay) with up to 5% pebbles.
FD17-01	4		60.83	63.10		2.27																	OVB	R-LOSS		
FD17-01	4	63.10	63.10	64.62		1.52																	OVB	R-LOSS		Rock loss (no core between these two marker blocks; marker block is @ end of Box #4)
FD17-01	5	64.62	64.62	65.87	1.25				DBR	GR		PEB	VFGR							MFI	IN		OVB			15- 20 % subrounded pebbles in mud matrix
FD17-01	5		65.87	66.03	0.16				LGR			CGR								SFI	SO		OVB	SST		Coarse sst matrix with pebble clast of various colours.
FD17-01	5		66.03	66.14		0.11																	OVB	R-LOSS		
FD17-01	5	66.14	66.14	67.29	1.15				DGR	LGR		MGR								SFI	MBK		OVB	SLT		Chunks of SLT that react strongly to acid. Medium grained SST doesn't react to acid. Surfaces coated in thick muds. Slight weathering
FD17-01	5		67.29	69.18		1.89																	OVB	R-LOSS		
FD17-01	5	69.18	69.18	69.28	0.10				GR			VF-FGR								SFI	SO		OVB	SLT		Very fine to fine grained. Has thinly bedded laminations of SST
FD17-01	5		69.28	70.72	1.44				BR	LGR		COB	VFGR							MFI	SBK		OVB	SST		10-15% sandy to silty cobbles/pebbles in mud matrix.
FD17-01	6		70.72	72.23	1.51				BR	LGR		PEB	VFGR							MFI	SBK		OVB	SST		as above.
FD17-01	6	72.23	72.23	74.72	2.49				BR	GR	SWE	PEB	VFGR							MFI	SBK		OVB			carbonate mud with 10% angular clasts (Pebble to cobble sizes)
FD17-01	7		74.72	75.20	0.48							PEB	VFGR										OVB			as above. 20% clasts
FD17-01	7		75.20	75.28		0.08																	OVB	R-LOSS		
FD17-01	7	75.28	75.28	76.38	1.10				BR	LGR	SWE	VF-FGR	PEB							WFI	IN		OVB	SST		mud with 5% subangular clasts (sandy pebbles to cobbles)
FD17-01	7		76.38	77.62	1.24				DBR	GR	SWE	VFGR								WFI	IN		OVB			very fine grained mud with 1-2% pebbles
FD17-01	7		77.62	77.70	0.08				LGR	DGR		PEB				BX				-	SO		OVB	CGL		a piece of breccia that can "appear" on geophys logs
FD17-01	7		77.70	78.16	0.46				DBR			VFGR						0		WFI	IN		OVB			mud with possible silty laminations perpendicular to core axis
FD17-01	7		78.16	78.33		0.17																	OVB	R-LOSS		
FD17-01	7	78.33	78.33	79.15	0.82				DBR			VFGR						1		-	IN		OVB	SST		As above. 5cm of med-coarse grained light grey sst at the end
FD17-01	8		79.15	79.28	0.13				DBR	MGR	SWE	MGR									SO		OVB	SST		One solid pieces of med-coarse grained SST partially coated in mud
FD17-01	8		79.28	79.86		0.58																	OVB	R-LOSS		
FD17-01	8	79.86	79.86	81.21	1.35				DBR	DGR	SWE	VFGR								SFI	HBK		OVB	LM		Loose Mud with sst clasts
FD17-01	8		81.21	81.38		0.17																	OVB	R-LOSS		
FD17-01	8	81.38	81.38	81.82	0.44				DBR	GR	SWE	MGR	VFGR								MBK		OVB	LM		50 % medium grained sst and 50 % mud
FD17-01	8		81.82	84.43		2.61																	OVB	R-LOSS		
FD17-01	8	84.43	84.43	85.08	0.65				BR	LGR		VFGR									HBK		OVB	LM		Pieces of sst found in loose mud
FD17-01	8		85.08	85.95		0.87																	OVB	R-LOSS		
FD17-01	8	85.95	85.95	86.08	0.13				GR		SWE	MGR									HBK		OVB	SST		white and grey ss (from Boulder creek?)

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	8		86.08	87.48		1.40																	OVB	R-LOSS			
FD17-01	8	87.48	87.48	87.93	0.45				GR		SWE	MGR									MBK		OVB	SST			
FD17-01	8		87.93	90.53		2.60																	OVB	R-LOSS			
FD17-01	8	90.53	90.53	90.77	0.24				LGR	MGR		M-CGR									MBK		OVB	SST			
FD17-01	9		90.77	90.83	0.06				LGR		SWE	MGR									SBK		OVB	SST			
FD17-01	9		90.83	92.05		1.22																	OVB	R-LOSS			
FD17-01	9	92.05	92.05	92.15	0.10				DBR		MWE	VFGR									HBK		OVB	LM		Poorly consolidated mud with minor CST pieces mixed in.
FD17-01	9		92.15	92.80	0.65			0.64	DGR	LGR		VFGR		LA			8		8		HBK		CST	SLT	Ksh	DGR CST with LGR silty laminae/bands 1mm - 5mm thin. Some/minor mud occnly mixed in.
FD17-01	9		92.80	93.57		0.77		0.76											8				R-LOSS		Ksh	
FD17-01	9	93.57	93.57	93.82	0.25			0.25	DGR	LGR		VFGR		LA					8		HBK		CST	SLT	Ksh	Same rock as above. CASING down to bottom of this interval.
FD17-01	9		93.82	96.62		2.80		2.75											11				R-LOSS		Ksh	
FD17-01	10	96.62	96.62	97.17		0.55		0.54											11				R-LOSS		Ksh	
FD17-01	10		97.17	99.67	2.50			2.45	DGR	LGR		VFGR		LA	TLA			11	11		HBK		CST	SLT	Ksh	Same rock as above. HBK at top, becoming MBK downwards.
FD17-01	10	99.67	99.67	100.07	0.40			0.39	DGR	LGR		VFGR		LA	TLA				11		MBK		CST	SLT	Ksh	as above. Top 3 - 4 cm looks like clay GO.
FD17-01	10		100.07	100.13	0.06			0.06	LGR	MGR		VFGR				HSH			16		HBK		CST	SLT	Ksh	HSH and weathered rock. Looks like a flt gouge?
FD17-01	10		100.13	101.08	0.95			0.91	DGR	LGR		VFGR		LA	ILA		17	14	16		SBK		CST	SLT	Ksh	Same CST with SLT ± SST laminae/bands that increase in frequency downwards.
FD17-01	11		101.08	102.72	1.64			1.62	DGR	LGR		VFGR		LA	ILA		9	10	10		SBK		CST	SLT	Ksh	As above.
FD17-01	11	102.72	102.72	104.06	1.34			1.32	DGR	LGR		VFGR		LA	ILA			11	11		SBK		CST	SLT	Ksh	Aa above.
FD17-01	11		104.06	104.24		0.18		0.18											11				R-LOSS		Ksh	
FD17-01	12	104.24	104.24	104.51		0.27		0.27											10				R-LOSS		Ksh	
FD17-01	12		104.51	107.29	2.78			2.74	MGR	LGR		VFGR		LA	TLA			10	10		MBK		CST	SLT	Ksh	Top 1.22m: very friable, breaking easily along bedding planes; the rest is intact. Increasingly silty with same LGR-white bands aligned along bedding;
FD17-01	12	107.29	107.29	108.60	1.31			1.29	MGR	LGR		VF-FGR		LA					10		IN		SLT	CST	Ksh	As above, with the with occnl thicker LGR sandy bands which show lamination features such as "climbing ripples" and X-lamination.
FD17-01	13		108.60	110.34	1.74			1.72	MGR	LGR		VF-FGR		LA	ILA			9	9		IN		SLT	CST	Ksh	As above; the sandy bands up to 2 cm in size; generally irreg shape but aligned along bedding.
FD17-01	13	110.34	110.34	112.92	2.58			2.55	MGR	LGR		VF-FGR		LA	ILA				9		IN		SLT	CST	Ksh	Aa above.
FD17-01	14		112.92	113.39	0.47			0.47	MGR	LGR		VF-FGR		LA	ILA		8		8		IN		SLT	CST	Ksh	As above; occnly superficial Fe staining on core surfaces.
FD17-01	14	113.39	113.39	116.32	2.93			2.83	MGR	LGR		VF-FGR		LA	ILA			15	15		IN		SLT	CST	Ksh	Aa above.
FD17-01	14	116.43	116.32	117.24	0.92			0.91	MGR	LGR		VF-FGR		LA	ILA			10	10		IN		SLT	CST	Ksh	Aa above.
FD17-01	15		117.24	119.42	2.18			2.15	MGR	LGR		VF-FGR		LA	ILA		12	8	10		IN		SLT	CST	Ksh	Aa above.
FD17-01	15	119.48	119.42	121.61	2.19			2.16	MGR	LGR		VF-FGR		LA	ILA			10	10		IN		SLT	CST	Ksh	Aa above.
FD17-01	16		121.61	122.53	0.92			0.91	MGR	LGR		VF-FGR		LA	ILA				10		IN		SLT	CST	Ksh	Aa above.
FD17-01	16	122.53	122.53	125.58	3.05			2.99	MGR	LGR		VF-FGR		LA	ILA		11		11		IN		SLT	SST	Ksh	Aa above. Gradual increase in the frequency of the LGR/white sandy bands (still aligned along lamination/bedding). Some Fe staining on core surfaces (maybe from the drill rods?).
FD17-01	16	125.58	125.58	125.84	0.26			0.25	MGR	LGR		VF-FGR		LA	ILA		15		15		SBK		SLT	SST	Ksh	Same rock…
FD17-01	17		125.84	128.52	2.68			2.62	MGR	LGR		VF-FGR		LA	ILA			12	12		IN		SLT	SST	Ksh	As above.
FD17-01	17	128.63	128.52	130.21	1.69			1.65	MGR	LGR		VF-FGR		LA	ILA		11	12	12		IN		SLT		Ksh	As above.
FD17-01	18		130.21	131.64	1.43			1.40	MGR	LGR		VF-FGR		LA	ILA				11		SBK		SLT	SST	Ksh	Same rock. Locally burrows filled with white SST material. One Carbonaceous/coaly stringers near bottom. Mostly IN, bkn only at bottom 0.15m.
FD17-01	18	131.67	131.64	134.35	2.71			2.68	MGR	LGR		VF-FGR		LA	ILA		8	9	9		IN		SLT	SST	Ksh	Some of the white sandy bands show X-lamination and "climbing ripple" lamination features.
FD17-01	19		134.35	134.76	0.41			0.40	MGR	LGR		VF-FGR		LA					9		SBK		SLT	SST	Ksh	Same rock…
FD17-01	19	134.72	134.76	137.77	3.01			2.97	MGR	LGR		VF-FGR		LA	ILA		9	8	9		IN		SLT	CST	Ksh	Slightly more clayey, with fewer white/LGR sandy bands.
FD17-01	19	137.77	137.77	138.59	0.82			0.79	MGR	LGR		VF-FGR		LA	ILA			15	15		IN		SLT	CST	Ksh	As above.
FD17-01	20		138.59	140.85	2.26			2.18	MGR	LGR		VF-FGR		LA	ILA			15	15		IN		SLT		Ksh	As above.
FD17-01	20	140.82	140.85	142.82	1.97			1.90	MGR	LGR		VF-FGR		LA	ILA			15	15		IN		SLT		Ksh	As above.
FD17-01	21		142.82	143.87	1.05			1.01	MGR	LGR		VF-FGR		LA	ILA				16		IN		SLT		Ksh	Same rock as above. Cut (& broken) by two joints @ ~40° TCA.
FD17-01	21	143.87	143.87	146.82	2.95			2.82	MGR	LGR		VF-FGR		LA	ILA		17	16	17		IN		SLT	CST	Ksh	Getting more clayish at bottom 0.75 m of interval.
FD17-01	22	146.91	146.82	147.06	0.24			0.23	MGR	LGR		VF-FGR		LA				15	15		SBK		SLT		Ksh	Same SLT; small (2-3 mm) creamy white RCL near bottom.
FD17-01	22		147.06	149.89	2.83			2.76	MGR	LGR		VF-FGR		LA	ILA		13	12	13		IN		SLT	SST	Ksh	Mostly IN core, bkn only at top (rounded core). Significant increase in the occurrence of the LGR/white sandy bands (make ~ 25-% of interval), with occnl signs of bioturbation.
FD17-01	22	149.96	149.89	151.37	1.48			1.44	MGR	LGR		VF-FGR		LA	ILA				14		IN		SLT		Ksh	somewhat more silty than above interval.
FD17-01	23		151.37	152.85	1.48			1.43	MGR	LGR		VF-FGR		LA	ILA		14	15	15		IN		SLT		Ksh	As above.
FD17-01	24	153.01	152.85	155.62	2.77			2.68	MGR	LGR		VF-FGR		LA	ILA				15		IN		SLT	CST	Ksh	More clayey; few fracts along bedding (@14-15° TCN).
FD17-01	24		155.62	155.89	0.27			0.26	MGR	LGR		VF-FGR		LA	ILA		15	12	14		IN		SLT		Ksh	More signs of bioturbation around some of the LGR/white sandy bands.
FD17-01	24	156.06	155.89	158.98	3.09			3.04	MGR	LGR		VF-FGR		LA	ILA			10	10		IN		SLT	CST	Ksh	As above. At 0.35m from top: one greenish-brown rounded clast (sideritic concretion?) 2.5cm x 3.7cm in size.
FD17-01	24	159.11	158.98	159.90	0.92			0.91	MGR	LGR		VF-FGR		LA	ILA			10	10		IN		SLT	CST	Ksh	Sandy bands decrease in frequency and size.
FD17-01	25		159.90	162.02	2.12			2.09	MGR	LGR		VF-FGR		LA	ILA			10	10		IN		SLT	CST	Ksh	As above.
FD17-01	25	162.15	162.02	164.26	2.24			2.21	MGR	LGR		VF-FGR		LA				10	10		IN		SLT	CST	Ksh	As above.
FD17-01	26		164.26	165.07	0.81			0.80	MGR	LGR		VF-FGR		LA				11	11		IN		SLT	CST	Ksh	<5% white/LGR sandy bands; one rounded light brn sideritic concretion.
FD17-01	26	165.20	165.07	166.81	1.74			1.71	MGR	LGR		VF-FGR		LA				10	10		IN		SLT		Ksh	Mostly intact core, bkn only locally along a set of joints running @ 10-15° TCA. Top 1.15m: 5-10% LGR sandy bands up to 3.5 cm thick, showing folding and "climbing ripple" lamination; they disappear for the rest of the interval. Bottom 0.28 cm increasingly rough/sandy (fading into SST). Bottom contact irregular.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	26		166.81	168.01	1.20			1.18	MGR	LGR		F-MGR		BIO	ILA				10		IN		SST	SLT	Ksh	WBU at top 0.15 m, BIO (?) obstructing LA/bedding for most of the interval. Weak+irreg LA developing on bottom ~0.20m where rock becomes more silty.
FD17-01	26	168.25	168.01	168.37	0.36			0.35	MGR			FGR		ILA					10		IN		SLT	SST	Ksh	Fine SST with weakly developed LA (almost massive, not clear enough to see a BCN).
FD17-01	27		168.37	171.18	2.81			2.78	MGR			FGR		ILA			(8)		8		IN		SST	SLT	Ksh	Almost massive v. weak bedding of LA. Silty on some portions; minor Fe staining on core surfaces.
FD17-01	27	171.30	171.18	172.66	1.48			1.46	MGR			FGR	VF-FGR	ILA					10		IN		SST	SLT	Ksh	As above; fines downward.
FD17-01	28		172.66	174.19	1.53			1.51	MGR			VF-FGR	FGR	ILA					10		IN		SLT	SST	Ksh	Silty SST; mottled look with almost no defined bedding/LA (almost massive). Minor LGR/white sandy bands v. irreg shaped.
FD17-01	28	174.35	174.19	176.93	2.74			2.68	MGR			VF-FGR	FGR	ILA	MBE			(12)	12		SBK		SLT	SST	Ksh	Same rock as above. Mostly IN, bkn only locally.
FD17-01	29		176.93	177.30	0.37			0.36	MGR			VF-FGR	FGR	ILA	MBE				12		IN		SLT	SST	Ksh	as above.
FD17-01	29	177.39	177.30	180.37	3.07			3.00	MGR	LGR		FGR	VF-FGR	MBE	ILA				12		IN		SLT	SST	Ksh	Almost massive; getting sandier and harder near bottom.
FD17-01	29	180.44	180.37	181.17	0.80			0.78	MGR	LGR		FGR	VF-FGR	MBE	ILA			12	12		SBK		SLT	SST	Ksh	Silty in top half, sandier in bottom half.
FD17-01	30		181.17	183.23	2.06			2.01	MGR	LGR		FGR	VF-FGR	MBE	ILA				12		IN		SST	SLT	Ksh	Silty SST; mottled look with almost no defined bedding/LA (almost massive).
FD17-01	30	183.49	183.23	185.48	2.25			2.23	MGR	LGR		FGR	VF-FGR	ILA	MBE				8		SBK		SST	SLT	Ksh	As above.
FD17-01	31		185.48	186.36	0.88			0.87	MGR			FGR		ILA	MBE				8		SBK		SST	SLT	Ksh	As previously described.
FD17-01	31	186.54	186.36	189.22	2.86			2.84	MGR			FGR		ILA	MBE			6	6		SBK		SST	SLT	Ksh	SST grading into SLT. Minor irreg LGR/white sandy bands/clasts aligned to a weakly defined lamination @ 5-7° BCN. Bottom contact gradational (SO core).
FD17-01	31		189.22	189.35	0.13			0.13	MGR	DGR		VF-FGR		ILA	MBE				6		IN		SLT	CST	Ksh	Silty to clayey; weakly lamin to massive.
FD17-01	31	189.59	189.35	189.71	0.36			0.36	MGR	DGR		VF-FGR		ILA	MBE				7		IN		SLT	CST	Ksh	as above,.
FD17-01	32		189.71	192.41	2.70			2.68	MGR			VF-FGR	FGR	ILA	MBE			7	7		SBK		SLT		Ksh	More sandy than above. Weak LA at 6-8° BCN. Locally sideritic concretions, and LBR (also sideritic?) bands showing some signs of BIO.
FD17-01	32	192.63	192.41	193.95	1.54			1.53	MGR			FGR	VF-FGR	ILA	MBE		7	8	8		IN		SLT	SST	Ksh	As above bur somewhat more sandy and with two -three brownish bands (as above\0 up to 5 cm thick. Occnly LGR/white sandy bands (or clasts?) more abundant near top of intervals and showing signs of BIO.
FD17-01	33		193.95	195.40	1.45			1.44	MGR			FGR	VF-FGR	ILA	MBE				6		IN		SLT		Ksh	As above but more silty, increasingly clayey in the bottom 0.17m.Cut by joints running sub-parallels TCA (5-10°)
FD17-01	33	195.68	195.40	198.23	2.83			2.82	MGR	DGR		VF-FGR		MBE	LA		5		5		SBK		SLT	CST	Ksh	Almost massive;; rare white/LGR sandy bands aligned along a weakly developed bedding/La at 4-7° BCN.
FD17-01	34		198.23	198.64	0.41			0.41	DGR	MGR		VF-FGR		MBE					5		IN		CST	SLT	Ksh	Silty CST; occnl irreg bands (or clasts?) of white/LGR sandy material.
FD17-01	34	198.73	198.64	201.68	3.04			3.02	DGR	MGR		VF-FGR		MBE	ILA				6		IN		CST	SLT	Ksh	As above; locally carb stringers, and sideritic bands - all aligned to a weakly defined bedding.
FD17-01	34	201.78	201.68	202.40	0.72			0.71	DGR			VF-FGR		MBE	LA			7	7		IN		CST		Ksh	Slightly silty.
FD17-01	35		202.40	204.70	2.30			2.28	DGR			VFGR		MBE	ILA				7		SBK		CST		Ksh	As above, with short carbonaceous "bands".
FD17-01	35	204.83	204.70	206.62	1.92			1.91	DGR			VFGR		MBE	ILA				6		SBK		CST		Ksh	As above; local LBR (sideritic?) bands; one set of fracts with black slickensides.
FD17-01	36		206.62	207.65	1.03			1.03	DGR			VFGR		MBE			5		5		SBK		CST		Ksh	Silty to clayey; weakly lamin to massive.
FD17-01	36	207.87	207.65	210.86	3.21			3.19	DGR			VFGR		MBE	LA		6	7	7		SBK		CST		Ksh	As above.
FD17-01	36	210.92	210.86	211.00	0.14			0.14	DGR			VFGR		MBE	LA			6	6		SO		CST		Ksh	claystone.
FD17-01	37		211.00	213.66	2.66			2.63	DGR			VFGR		MBE			4	11	8		MBK		CST		Ksh	Slightly carbonaceous. Sets of joints cutting @ 10-12°; Bkn mostly inside the interval, Minor LGR sandy bands 3mm - 2cm thick, aligned along a weak bedding/LA 4-11°TCA.
FD17-01	37	213.97	213.66	215.01	1.35			1.33	DGR			VFGR		MBE	LA			10	10		SBK		CST		Ksh	claystone.as above. (Possible loss at top of interval).
FD17-01	38		215.01	216.68	1.67			1.64	DGR			VFGR		MBE					11		IN		CST		Ksh	Claystone; slightly carbonaceous.
FD17-01	39	217.02	216.68	219.29	2.61			2.56	DGR			VFGR		MBE	LA			11	11		IN		CST		Ksh	As above. One 8cm thick sideritic band near bottom; finely disseminated marcasite surrounding it for 6 to 6 cm above and below.
FD17-01	39		219.29	219.66	0.37			0.36	DGR			VFGR		MBE					11		IN		CST		Ksh	Claystone; slightly carbonaceous.
FD17-01	39	220.07	219.66	222.70	3.04			3.00	DGR			VFGR		MBE	LA				9		SBK		CST		Ksh	As above, with one sideritic band containing a 5mm thin marcasite band/
FD17-01	39	223.11	222.70	223.26	0.56			0.56	DGR			VFGR		MBE			7		7		IN		CST		Ksh	slightly carbonaceous.
FD17-01	40		223.26	225.83	2.57			2.54	DGR			VFGR		MBE				8	8		IN		CST		Ksh	as above…
FD17-01	40	226.16	225.83	227.44	1.61			1.59	DGR			VFGR		MBE	LA			10	10		IN		CST		Ksh	As above; occnly LBR (sideritic) bands 2 - 8cm thick. At bottom there is one joint x-cutting bedding @ 7° TCA.
FD17-01	41		227.44	228.84	1.40			1.38	DGR	MGR		VFGR		LA	MBE				10		IN		CST	SLT	Ksh	More silty with occnl LBR sideritic bands aligned along bedding/LA @ ~10° One 5 sideritic band ~5 cm thick.
FD17-01	41	229.21	228.84	231.62	2.78			2.75	DGR	MGR		VF-FGR		LA	MBE		10	8	9		IN		CST	SLT	Ksh	2-3% LGR sandy bands+lams; one sideritic bands at bottom.
FD17-01	42		231.62	231.95	0.33			0.33	DGR	MGR		VF-FGR		LA	MBE				9		IN		CST		Ksh	As above.
FD17-01	42	232.26	231.95	235.00	3.05			3.01	DGR	MGR		VF-FGR		LA	MBE		8	10	9		IN		CST		Ksh	As above
FD17-01	42	235.31	235.00	235.78	0.78			0.77	DGR	MGR		VF-FGR		LA	MBE			9	9		IN		CST		Ksh	As above.
FD17-01	43		235.78	238.07	2.29			2.28	DGR	MGR		VF-FGR		LA	MBE			(6)	6		IN		CST		Ksh	Slightly carbonaceous; 2-3% LGR, irreg. shaped sandy bands 3mm -2cm thick, aligned along a weakly defined bedding @ 5- 10° BCN, and showing some BIO. Also sideritic bands (LBR, 3-15 cm thick)
FD17-01	43	238.35	238.07	239.99	1.92			1.90	DGR	MGR		VF-FGR		LA	MBE			8	8		IN		CST		Ksh	As above.
FD17-01	44		239.99	241.05	1.06			1.04	DGR	MGR		VF-FGR		LA	MBE			10	10		IN		CST		Ksh	More silty than above; up to 5% LGR sandy bands (as described above).
FD17-01	44	241.40	241.05	244.10	3.05			3.00	DGR	MGR		VF-FGR		LA	MBE				10		SBK		CST	SLT	Ksh	As above. Mostly IN core, bkn only on a short (40cm) interval |@ 0.5m above bottom.
FD17-01	45	244.45	244.10	247.15	3.05			2.99	DGR			VFGR		LA	MBE		12	9	11		IN		CST		Ksh	Slightly carbonaceous; occnl LBR sideritic bands up to 6cm thick.
FD17-01	45	247.50	247.15	248.30	1.15			1.14	DGR	MGR		VFGR		LA	MBE			9	9		IN		CST		Ksh	as above…
FD17-01	46		248.30	250.17	1.87			1.85	DGR	MGR		VF-FGR		LA	MBE				9		IN		CST	SLT	Ksh	Silty with few carbonaceous bands; Locally LGR sandy bands with WBU (→ tops up) and BIO.
FD17-01	46	250.55	250.17	252.44	2.27			2.24	DGR	MGR		VF-FGR		LA	MBE		9	8	9		IN		CST	SLT	Ksh	More carbonaceous on top 0.6m then silty, with LGR/white sandy bands. At 0.70m below top\; one ~ 0.20m thick band with signs of BIO and burrows filled with white SST.
FD17-01	47		252.44	253.11	0.67			0.66	DGR			VFGR		MBE	LA			12	12		IN		CST		Ksh	Locally carbonaceous stringers/lams.
FD17-01	47	253.59	253.11	256.18	3.07			3.00	DGR	MGR		VF-FGR		LA	MBE				12		IN		CST	SLT	Ksh	Slightly carbonaceous in top 1/3rd; silty bands + LGR irreg shaped sandy bands + lams aligned along weakly developed bedding (10-) BCN; minor carbonaceous±±coaly stringers in bottom 0.75m.
FD17-01	47	256.64	256.18	256.65	0.47			0.46	DGR	MGR		VF-FGR		LA	MBE				12		IN		CST	SLT	Ksh	As above.
FD17-01	48		256.65	259.27	2.62			2.56	DGR	MGR		VF-FGR		LA	MBE		14	9	12		IN		CST	SLT	Ksh	As above; one LBR sideritic band ~5 cm thick; some LGR sandy bands with tiny WBU (→ top up) ; minor carb stringers. BCN varies along the interval from 14 to 9°

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor								
FD17-01	48	259.69	259.27	260.92	1.65			1.61	DGR	MGR		VF-FGR		LA	MBE			9	12		IN		CST	SLT	Ksh	Near bottom: one 5cm thick LBR sideritic band containing a "ring" of fine white clasts.
FD17-01	49		260.92	262.30	1.38			1.37	DGR			VFGR		MBE	LA		8		8		SBK		CST	CSST	Ksh	More carbonaceous on 2nd half; bedding/LA 8-10° defined by the same LGR/white sandy bands/lams.
FD17-01	49	262.74	262.30	265.17	2.87			2.81	DGR			VFGR		MBE	LA		12	11	12		IN		CST	CCST	Ksh	as above.
FD17-01	50		265.17	265.35	0.18			0.18	DGR			VFGR		MBE	LA				9		so		CST	CCST	Ksh	slightly carbonaceous.
FD17-01	50	265.79	265.35	268.40	3.05			3.03	DGR	MGR		FGR	VF-FGR	ILA	MBE			7	7		IN		CST	SLT	Ksh	silty to carbonaceous; same rock as above…
FD17-01	50	268.83	268.40	269.37	0.97			0.96	DGR	LGR		VF-FGR		MBE	ILA				8		SBK		CST	SST	Ksh	as above, with 7-8% LGR/white sandy bands+lams.
FD17-01	51		269.37	271.47	2.10			2.07	DGR	LGR		VF-FGR		MBE	ILA		9	9	9		SBK		CST	SST	Ksh	As above, with sandy bands up ro 3.5 cm thick; locally LBR sideritic bancs, carbonaceous stringers.
FD17-01	51	271.88	271.47	273.56	2.09			2.04	DGR	LGR		VF-FGR		MBE	ILA			12	12		IN		CST	SST	Ksh	as above.
FD17-01	52		273.56	274.52	0.96			0.94	DGR	LGR		VF-FGR		LA	MBE				11		IN		CST	SST	Ksh	slightly carb, with 10-15% LGR sandy bands (up to 3cm thick) and lams.
FD17-01	52	274.93	274.52	277.52	3.00			2.97	DGR	LGR		VF-FGR		ILA	MBE			8	8		IN		CST	CCST	Ksh	2-3% LGR sandy bands+lams; one sideritic bands at bottom.
FD17-01	52	277.98	277.52	277.72	0.20			0.20	DGR			VFGR		ILA	MBE				9		SO		CST	CCST	Ksh	Slightly carbonaceous
FD17-01	53		277.72	280.52	2.80			2.77	DGR	MGR		VF-FGR		ILA	MBE		8	10	9		SBK		CST	CCST	Ksh	As above; few carbonaceous stringers.
FD17-01	53	281.03	280.52	281.95	1.43			1.42	DGR	LGR		VF-FGR		LA	MBE			8	8		SBK		CST	SST	Ksh	7-8% LGR sandy bands and lams. Mostly IN core, bkn only @ top or run.
FD17-01	54		281.95	283.62	1.67			1.65	DGR			VFGR		LA				8	8		SBK		CST		Ksh	Slightly carb.; well laminated @ 6-8° BCN
FD17-01	54	284.07	283.62	286.14	2.52			2.50	DGR	MGR		VFGR		LA				8	8		IN		CST		Ksh	As above; occnly LGR sideritic bands.
FD17-01	55		286.14	286.71	0.57			0.56	DGR	LGR		VF-FGR		LA	MBE		9		9		SBK		CST	SST	Ksh	As above; up to 10% LGR sandy band/laminae.
FD17-01	55	287.12	286.71	289.72	3.01			2.98	DGR	LGR		VF-FGR		LA	MBE		9	10	8		SBK		CST	SST	Ksh	As above, with up to 15% LGR sandy bands/laminae (as previously described).
FD17-01	55	290.17	289.72	290.22	0.50			0.49	DGR	LGR		VF-FGR		LA	MBE			9	9		IN		CST		Ksh	Slightly carb, with 2-3% LGR sandy bands (up to 3cm thick) and laminae.
FD17-01	56		290.22	292.77	2.55			2.51	DGR	LGR		VF-FGR		LA	MBE				10		SBK		CST		Ksh	As above.
FD17-01	56	293.22	292.77	294.52	1.75			1.72	DGR	LGR		VF-FGR		LA	MBE		10	10	10		SBK		CST	SST	Ksh	As above, with 8 - 15% LGR sandy bands/laminae; @ 0.20m above bottom - one 6cm thick LBR sideritic band.
FD17-01	57		294.52	295.88	1.36			1.34	DGR	LGR		VF-FGR		LA	MBE		10	11	11		SBK		CST	SST	Ksh	As above.
FD17-01	57	296.27	295.88	298.88	3.00			2.97	DGR	LGR		VF-FGR		LA	MBE			8	8		IN		CST		Ksh	As above, with one 4 cm thick LBR sideritic band.
FD17-01	58	299.31	298.88	301.98	3.10			3.05	DGR	LGR		VF-FGR		LA	MBE			10	10		IN		CST	SST	Ksh	5-6% sandy bands & laminae.
FD17-01	58	302.36	301.98	303.13	1.15			1.12	DGR	LGR		VF-FGR		LA	MBE			12	12		IN		CST		Ksh	As above; signs of BIO associated with some of the LGR sandy bands.
FD17-01	59		303.13	304.85	1.72			1.69	DGR	MGR		VF-FGR						11	11	-	IN		CST	SLT	Ksh	
FD17-01	59	305.41	304.85	307.33	2.48			2.47	DGR	MGR		VF-FGR		MBE	LA			6	6	-	MBK		CST	SLT	Ksh	Interbed of slt and cst. Mostly intact core broken only above the bottom
FD17-01	60		307.33	307.95	0.62			0.62	DGR	LGR		VF-FGR		MBE	LA			6	6	-	IN		CST	SLT	Ksh	As above
FD17-01	60	308.46	307.95	311.02	3.07			3.02	DGR	MGR		VF-FGR		MBE	LA			10	10	-	IN		CST	SLT	Ksh	Mostly silty cst with some carbonaceous stringers. Local light brown sideritic band (approximately 4 cm thick)
FD17-01	60	311.51	311.02	311.56	0.54			0.53	DGR	MGR		VF-FGR		MBE	LA			10	10	-	IN		CST	SLT	Ksh	As above
FD17-01	61		311.56	314.13	2.57			2.54	DGR	MGR		VF-FGR		MBE	LA			8	8	-	IN		CST	SLT	Ksh	One sideritic band (5 cm thick). Light grey sandy bands with cross laminations
FD17-01	61	314.55	314.13	315.85	1.72			1.70	DGR	LGR		VF-FGR		MBE	ILA			8	8	-	IN		CST	SLT	Ksh	Dark grey sst with LG sandy bands and laminae (5- 6 %) of interval
FD17-01	62		315.85	317.21	1.36			1.35	DGR	LGR		VF-FGR		MBE	ILA			8	8	-	IN		CST	SLT	Ksh	Locally developed aragonite crystal.
FD17-01	62	317.60	317.21	320.11	2.90			2.87	DGR	LGR		VF-FGR		MBE	ILA	SL		8	8	-	IN		CST	SST	Ksh	Slightly carbonaceous ccst with LG sandy bands and laminae up to 10 cm thick. Local fractures subparallel to bedding and with sly
FD17-01	63		320.11	320.21	0.10			0.10	DGR	LGR		VF-FGR		MBE	ILA			10	10	-	IN		CST	SLT	Ksh	
FD17-01	63	320.65	320.21	323.19	2.98			2.93	DGR	LGR		VFGR	FGR	MBE	ILA		9	10	10	-	IN		CST	SST	Ksh	Occasionally marcasite blobs (1-2 cm) across. Local fractures with slicken side
FD17-01	63	323.70	323.19	324.35	1.16			1.15	DGR	MGR		VF-FGR		MBE	LA			8	8	-	IN		CST	SST	Ksh	2-3 % LG sandy bands and lamina
FD17-01	64		324.35	326.17	1.82			1.79	DGR	LGR		VF-FGR		MBE	ILA			10	10	-	IN		CST	SST	Ksh	Slightly carbonaceous cst with LG bands., Irregularly shaped, up to 10 % of interval
FD17-01	64	326.75	326.17	328.63	2.46			2.42	DGR	LGR		VF-FGR		MBE	ILA				10	-	IN		CST	SST	Ksh	As above but with less than 5 % sandy bands diminishing downwards. One local sideritc band 4 cm thick
FD17-01	65		328.63	329.22	0.59			0.58	DGR	MGR		VF-FGR		MBE	LA			9	9	-	IN		CST	SLT	Ksh	silty cst
FD17-01	65	329.79	329.22	332.30	3.08			3.04	DGR	MGR		VF-FGR		MBE	LA		10		9	-	IN		CST	SLT	Ksh	BCN varies from 7 to 10 degrees across
FD17-01	65	332.84	332.30	332.86	0.56			0.55	DGR	MGR		VFGR		MBE	LA		8		9	-	SO		CST		Ksh	
FD17-01	66		332.86	335.42	2.56			2.54	DGR	MGR		VFGR		MBE	LA			8	8	-	IN		CST		Ksh	slightly silty, minor white bands
FD17-01	66	335.89	335.42	337.23	1.81			1.78	DGR	MGR		VFGR		MBE	LA		10	10	10	-	SBK		CST		Ksh	Mostly intact core. Broken/ highly fractured in one spot
FD17-01	67		337.23	337.98	0.75			0.73	DGR	DBR		VFGR		MBE	LA	SL	13	11	12		MBK		CSST	CST	Ksh	Bkn + HFR with black slicks on a short (~ 12cm) interval in the middle where is very carbonaceous. Becomes less carb / more silty towards bottom.
FD17-01	67		337.98	338.35	0.37			0.36	DGR			VFGR		MBE	LA			13	13		SO		CST		Ksh	Weakly carb; top contact intact (@ 11° BCN) marked by a LBR 4 cm thick sideritic band. Some LGR sandy bands & lams.
FD17-01	67	338.94	338.35	341.27	2.92			2.85	DGR	MGR		VFGR		MBE	LA			13	13		SBK		CST		Ksh	Weakly carb getting siltier towards bottom. BCN along the interval: 13-15° . Bottom 0.21 m: enrichment in LGR sandy bands (irreg shaped, 2mm-2cm thick).
FD17-01	68	341.99	341.27	344.39	3.12			2.97	MGR	LGR		VFGR	FGR	ILA	MBE		16	20	18	-	IN		CST	SST	Ksh	Cst with 50% LG sandy sandy bands and sandy lamina. Irregularly shaped, generally aligned with bedding/laminations @ 11- 20 BCN
FD17-01	68	345.03	344.39	345.52	1.13			1.07	MGR	LGR		VFGR	FGR	MBE	ILA				18	-	IN		CST		Ksh	As above but with less than 10% LG sandy bands
FD17-01	69		345.52	347.45	1.93			1.84	DGR	MGR		VF-FGR		MBE	ILA				18		IN		CST		Ksh	As above up to 5 % LG sst. Silty cst
FD17-01	69	348.08	347.45	349.67	2.22			2.11	DGR	MGR		VF-FGR		MBE	ILA		15	20	18		IN		CST	SST	Ksh	silty sst BCN measures start with 15 degrees and increase all the way to 21 degrees
FD17-01	70		349.67	350.46	0.79			0.76	DGR	MGR		VF-FGR		MBE	ILA			16	16		SO		CST	SST	Ksh	
FD17-01	70	351.13	350.46	353.42	2.96			2.78	DGR	MGR		VF-FGR		MBE	ILA		20	20	20		IN		CST	SST	Ksh	
FD17-01	70	354.18	353.42	353.86	0.44			0.41	DGR	MGR		VF-FGR		MBE	ILA			(20)	20		IN		CST	SST	Ksh	
FD17-01	71		353.86	356.51	2.65			2.57	DGR	MGR		VF-FGR		MBE	ILA		15	12	14		IN		CST	SST	Ksh	Cst with 2-3 % LG sandy lamina
FD17-01	71	357.23	356.51	358.12	1.61			1.59	DGR	MGR		VF-FGR		MBE	ILA		11	7	9		IN		CST	SST	Ksh	
FD17-01	72		358.12	359.48	1.36			1.34	DGR	MGR		VFGR		MBE	LA	SL	6	(18)	10		SBK		CST	CCST	Ksh	Fractures with SL
FD17-01	72	360.27	359.48	359.80	0.32			0.32	DGR			VFGR		MBE		SL		(24)	10		MBK		CSST		Ksh	
FD17-01	72		359.80	361.13	1.33			1.30	MGR			VF-FGR		MBE	LA		12	(6)	12		MBK		CSST	SLT	Ksh	
FD17-01	72	361.80	361.13	362.01	0.88			0.83	DGR	MGR		VFGR		MBE	LA		20	20	20		SBK		CST		Ksh	Broken at top due to bit change
FD17-01	73		362.01	362.41	0.40			0.37	DGR	MGR		VFGR		MBE	LA			23	23		SBK		CST		Ksh	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor								
FD17-01	73	363.32	362.41	365.41	3.00			2.67	DGR	MGR		VFGR		LA	MBE		25	28	27		SBK		CST	SLT	Ksh	With carbonaceous bands /stringers
FD17-01	73	366.37	365.41	366.21	0.80			0.73	DGR	MGR		VFGR		LA	MBE		25	25	25		SBK		CST	SLT	Ksh	
FD17-01	74		366.21	368.45	2.24			2.00	DGR	MGR		VFGR		ILA	MBE		25	28	27		IN		CST	SLT	Ksh	A burrow is present close to the top of the core
FD17-01	74	369.42	368.45	370.44	1.99			1.77	MGR	LGR		VFGR		ILA	MBE		27	26	27		IN		CST	SST	Ksh	
FD17-01	75		370.44	371.41	0.97			0.86	MGR	LGR		VFGR		ILA	MBE				28		IN		SLT		Ksh	
FD17-01	75	372.47	371.41	374.45	3.04			2.66	MGR	DGR		VF-FGR		MBE	LA		29		29		SBK		SLT	CST	Ksh	
FD17-01	76	375.51	374.45	377.44	2.99			2.69	DGR	MGR		VFGR		MBE	LA		25	26	26		SBK		CST	SLT	Ksh	In the 0.9 m, it is dominated by cst. BCN varies between 25- 30 and 40 degrees
FD17-01	76	378.56	377.44	378.67	1.23			1.09	MGR			VF-FGR		MBE	LA	SL	30	26	28		IN		SLT		Ksh	Local marcasite (finely disseminated) along bedding and lamination
FD17-01	77		378.67	380.45	1.78			1.65	MGR			VF-FGR		MBE			23	20	22		IN		SLT	CST	Ksh	Well banded/ laminated SLT/SST with occasional carbonaceous stringer/lamina. BCN are between 26 and 20
FD17-01	77	381.61	380.45	382.90	2.45			2.27	MGR	LGR		VF-FGR		LA	MBE		21	22	22		SBK		SLT	SST	Ksh	As above but some what enriched LG sst
FD17-01	78		382.90	383.44	0.54			0.49	MGR			VF-FGR		MBE	LA			25	25		IN		SLT	CST	Ksh	As above but less sst
FD17-01	78	384.66	383.44	386.54	3.10			2.91	MGR			VF-FGR		MBE	ILA		20	20	20		IN		SLT		Ksh	As above, but with irreg LGR sandy bands.
FD17-01	78	387.71	386.54	387.02	0.48			0.45	MGR			VF-FGR		MBE	ILA			20	20		IN		SLT		Ksh	as above…
FD17-01	79		387.02	389.60	2.58			2.39	MGR			VF-FGR		ILA	MBE		22	21	22		IN		SLT		Ksh	SLT as above, with occnl carb stringers+laminae.
FD17-01	79	390.75	389.60	391.27	1.67			1.56	MGR			VF-FGR		ILA	MBE		21	20	21		IN		SLT		Ksh	As above…
FD17-01	80		391.27	392.70	1.43			1.35	MGR			VF-FGR		ILA	MBE		19	18	19		IN		SLT		Ksh	as above.
FD17-01	80	393.80	392.70	395.64	2.94			2.71	MGR	DGR		VF-FGR		ILA	MBE		20	24	23		SBK		SLT	CST	Ksh	As above; SLI on some fractured surfaces; one sideritic concretion. BCNs 19 to 30° across the interval.
FD17-01	81		395.64	395.72	0.08			0.07	MGR			VF-FGR		ILA	MBE			25	25		so		SLT		Ksh	siltstone with sandy lams.
FD17-01	81	396.85	395.72	398.75	3.03			2.91	DGR	MGR		VF-FGR		LA	MBE	SL	16	15	16		IN		CST	SLT	Ksh	As above, with better defined banding/LA. Locally fractured with SL on surfaces.
FD17-01	81	399.90	398.75	399.75	1.00			0.96	DGR	MGR		VF-FGR		LA	MBE		15	19	17		IN		CST	SLT	Ksh	As above.
FD17-01	82		399.75	401.81	2.06			1.98	DGR	MGR		VF-FGR		LA	MBE		16	15	16		IN		CST		Ksh	Slightly carb CST with bands/laminae of SLT+SST.
FD17-01	82	402.95	401.81	403.95	2.14			1.97	DGR	MGR		VF-FGR		LA	MBE	SL	22	23	23		IN		CST	SLT	Ksh	As above; locally fractured wit SL on surfaces.
FD17-01	83		403.95	404.87	0.92			0.85	DGR	MGR		VF-FGR		LA	MBE		(15)	23	23		SBK		CST	SLT	Ksh	As above; locally bkn along a joint running @ 33° TCA.
FD17-01	83	405.99	404.87	407.90	3.03			2.85	DGR	MGR		VFGR		MBE	ILA		18	21	20		IN		CST		Ksh	Slightly carbonaceous.
FD17-01	83	409.04	407.90	408.05	0.15			0.14	DGR	MGR		VF-FGR		LA	MBE			23	23		SO		CST		Ksh	As above
FD17-01	84		408.05	410.98	2.93			2.68	DGR	MGR		VF-FGR		LA	MBE		20	25	24		SBK		CST	SLT	Ksh	As above, with carb + coaly laminae/stringers.
FD17-01	84	412.09	410.98	412.17	1.19			1.11	DGR	MGR		VF-FGR		LA	MBE		23	18	21		SBK		CST	SLT	Ksh	As above.
FD17-01	85		412.17	413.98	1.81			1.71	DGR	MGR		VF-FGR		LA	MBE		24	15	19		IN		CST	SLT	Ksh	
FD17-01	85	415.14	413.98	416.53	2.55			2.41	DGR	MGR		VF-FGR		LA	MBE		15	23	19		IN		CST	SLT	Ksh	Slightly carb, with SLT/SST lams+bands, and occnl carb±coaly stringers/lams. (Bedding seems to be slightly turning direction @ 0.40m above bottom.
FD17-01	86		416.53	416.97	0.44			0.42	DGR			VFGR		MBE	ILA				19		IN		CST		Ksh	As above…
FD17-01	86	418.19	416.97	420.06	3.09			2.90	MGR	DGR		VF-FGR		ILA	MBE	SL	20		20		IN		CST	SLT	Ksh	Weakly developed bedding (almost massive in bottom ~0.6 m), varies 20-18-16-23-22° BCN; bedding seems to be slightly running direction @ ~0.30m from top and again @ ~1.30 m from top. Locally fractured with SL and aragonite crystals on surfaces
FD17-01	86	421.23	420.06	420.78	0.72			0.68	DGR	MGR		VFGR		MBE	ILA		20	20	20		IN		CST	SLT	Ksh	Silty CST, as above; BCN varies along the interval: 20-18-15-20°
FD17-01	87		420.78	421.65	0.87			0.83	DGR	MGR		VF-FGR		MBE	ILA		17	18	18		IN		CST	SLT	Ksh	Occnly small marcasite blebs. Bottom contact w/ SST fractured with SL on surfaces.
FD17-01	87		421.65	423.10	1.45			1.38	MGR			VF-FGR	FGR	LA	ILA		18		18		SBK		SLT	SST	Ksh	Sandy SLT: good LA developed on top 1/2 of interval, then increasingly irreg downward. Marcasite as above. Top 0.05m: fractured with SL..
FD17-01	87	424.28	423.10	425.05	1.95			1.82	MGR	DGR		VF-FGR		LA	MBE		18	24	21		IN		SLT	CST	Ksh	Marcasite blebs along the interval (size: 2mm -1cm across)
FD17-01	88		425.05	426.13	1.08			0.98	MGR	DGR		VF-FGR		ILA	MBE		23	27	25		IN		SLT	CST	Ksh	As above…
FD17-01	88	427.33	426.13	427.02	0.89			0.85	MGR	DGR		VF-FGR		LA	MBE		20	15	17		IN		SLT	CST	Ksh	As above; few 1-2 cm thin CGL bands appear on bottom 0.20 m, and a CCST band at bottom 0.08m. Bottom ct with CGL sharp @ ~15° BCN.
FD17-01	88		427.02	427.27	0.25			0.24	GR	LGR		PEB	GRN	MBE			15	15	15		IN		CGL		Kb	Fine SST, mostly massive; one 12 cm thick x-bedded, med-grained SST; few RCL (of DGR CST) in lower half of interval aligned with weak LA @ 25-23° BCN. Locally one well preserved FOS of a leaf. Bottom ct sharp @ 23° BCN.
FD17-01	88		427.27	427.33	0.06			0.06	DBR	DGR		VFGR		LA	MBE		15	15	15		SO		CCST		Kb	Mod carbonaceous. Floor ct sharp 15° BCN..
FD17-01	88		427.33	427.56	0.23			0.22	GR	LGR		PEB	GRN	MBE			15	13	14		SO		CGL		Kb	As previously described.
FD17-01	88		427.56	428.84	1.28			1.22	LGR			FGR		MBE	XBE		13	23	18		IN		SST		Kb	Fine SST, mostly massive; one 12 cm thick x-bedded, med-grained SST; few RCL (of DGR CST) in lower half of interval aligned with weak LA @ 25-23° BCN. Locally one well preserved FOS of a leaf. Bottom ct sharp @ 23° BCN.
FD17-01	88		428.84	429.10	0.26			0.23	LGR			MGR		XBE	LA	SL	23	29	26		IN		SST		Kb	Mostly XBE; 2-3 mm thick carb/coaly bands/lams developed near bottom of interval, and also two fracts with SL
FD17-01	88	430.38	429.10	429.36	0.26			0.23	LGR			MGR		XBE					26		IN		SST		Kb	X-bedded SST, has a "salt & pepper" look.
FD17-01	89		429.36	432.14	2.78			2.38	LGR			MGR		LA	XBE		37	25	31		IN		SST		Kb	"salt & pepper" look SST, some XBE intervals, but generally well LA (@ 37-35-30-25° BCN). Locally RCL (angular and DGR); occnly CCST clasts (rounded, 5-15 mm size, BR colour); minor thin coaly stringers toward bottom.(where BCN is poorly defined).
FD17-01	89	433.43	432.14	433.75	1.61			1.23	LGR			MGR	CGR	LA	XBE		50	30	40		IN		SST		Kb	As above but coarsening downward, with 1-2 cm thick bands of pebbles and CGL on bottom 0.40 m where bedding is v. poorly defined. BCN varies across the interval from 50-53° to 36-30° .
FD17-01	90		433.75	435.18	1.43			1.20	LGR			CGR	MGR	MBE	XBE		40	25	33		IN		SST		Kb	Coarse SST with occnl small pebble bands. Poorly defined bedding/LA with occnl XBE, but generally massive. BCN varies across interval (40-35-38-43-25-32-30-25°)
FD17-01	90	436.47	435.18	436.93	1.75			1.64	LGR			MGR	CGR	MBE	XBE			20	20		IN		SST		Kb	"Salt & pepper" look SST; coarsens downward grading into CGL.
FD17-01	90		436.93	437.16	0.23			0.22	LGR	MGR		GRN	PEB	MBE				15	15		IN		CGL		Kb	Clast to matrix supported (toward bottom) pebble CGL; sub-rounded clasts 1-10 mm in size; mod sorted (fining downward). Bottom ct sharp @ 15° BCN.
FD17-01	90		437.16	437.27	0.11			0.11	LGR			MGR	FGR	MBE	XBE				15		SO		SST		Kb	One large irreg shaped, MBR coloured CST clast at bottom + few dark pebbles. Bottom ct probably lost (core rounded by drill bit).
FD17-01	90		437.27	438.15	0.88			0.85	LGR	MGR		VFGR	VF-FGR	MBE					15		IN		SLT	SST	Kb	SLT grading into silty SST; clay enriched in top 0.41m. Quite massive (hard to distinguish any bedding)..
FD17-01	91		438.15	438.29	0.14			0.13	LGR	MGR		VF-FGR		MBE					18		SO		SST	SLT	Kb	Silty SST: as above.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	91	439.52	438.29	441.29	3.00			2.82	MGR	LGR		FGR	MGR	ILA	XBE		20	20	20		IN		SST		Kb	Irreg interbeds of FGR and MGR SST, occnly XBE (on the coarser bands), also RCL; locally sideritic concretions (1-6 cm in size). Core surfaces are badly rust stained from the drill rods. BCN is not well defined and varies along the interval (20-6-17-22-24-27-16-21-20°), also turns direction twice..
FD17-01	91	442.57	441.29	442.42	1.13			1.06	MGR	LGR		FGR	MGR	ILA	WBE				20		MBK		SST		Kb	Generally FGR coarsening in the bottom half; top half has RCL + RM. Sideritic concretions all along the interval, generally aligned with a poorly defined + erratic LA/bedding; XBE @ bottom 0.15m. (Mostly IN core, bkn only @ top 0.18m).
FD17-01	92		442.42	444.36	1.94			1.85	LGR	BL		MGR		XBE	LA		28	7	18		SBK		SST		Kb	"salt & pepper" look SST, seems to be fining downward; well LA with XBE portions in top half. Bottom ~ 0.50 m is enriched in coaly/carb stringers+lams (with core fractured along surfaces) PO and SLI @ bottom 2 cm.
FD17-01	92	445.62	444.36	446.71	2.35			2.22	LGR	MGR		FGR	MGR	LA	XBE		21	17	19		MBK		SST	CST	Kb	Top 0.19m is cut by an irreg shaped (7-8 cm large) CCST band/clast(?); the rest of interval is SST as above, with occnl thin coaly lams/stringers. Bottom ~ 1.5 m: coarser and XBE. (Mostly IN core, bkn only at top).
FD17-01	93		446.71	447.36	0.65			0.62	LGR			MGR		XBE	LA			18	18		IN		SST		Kb	"salt & pepper" look.
FD17-01	93	448.67	447.36	449.41	2.05			1.95	LGR	MGR		MGR	FGR	XBE	RCL			18	18		IN		SST		Kb	Top ~0.95 m: as above; further below - numerous RCL & cart/coaly stringers (DGR/DBR/BL colours) mostly aligned with bedding @ 15-20° BCN. Bottom ct sharp @ 18° BCN.
FD17-01	93		449.41	450.35	0.94			0.89	MGR	GR		VFGR		MBE					18		IN		SLT	CST	Kb	SLT fining into CST. Top 0.23 m: fine SST with irreg silty bands/lams; rest of interval is silty CST; Very massive with no defined bedding/LA. Bottom ct sharp @ 28 BCN, intact.
FD17-01	93	451.71	450.35	451.03	0.68			0.65	MGR	GR		VFGR		MBE					18		IN		SLT	CST	Kb	As above..
FD17-01	94		451.03	453.38	2.35			2.23	MGR	GR		VFGR		MBE					18		MBK		SLT	CST	Kb	As above. Mostly IN core, bkn only on two short sections.
FD17-01	94	454.76	453.38	455.31	1.93			1.84	MGR	GR		VFGR		MBE					18		IN		SLT	CST	Kb	As above. Top ~0.50 m show signs of turbidity (swirls of SST in the CST mass); also lots of sideritic concretions. Rest of interval is as above.
FD17-01	95		455.31	456.40	1.09			1.04	MGR			VFGR		MBE					18		IN		CST		Kb	Still no defined bedding; some darker CST clasts more rounded and "mixing" with the lighter colour CST. Occnly sideritic concretions (LBR colour, v. irreg shaped).
FD17-01	95	457.81	456.40	459.41	3.01			2.86	MGR	GR		VFGR		MBE					18		IN		CST	SLT	Kb	CST at top 0.47 m, then increasingly silty+sandy Still no defined bedding, all looks like darker softer rock (CST) interbed with slightly coloured and harder rock. Occnly siderite concretions; locally fine crystals of marcasite.
FD17-01	95	460.86	459.41	459.55	0.14			0.13	MGR	GR		VFGR		MBE					18		SO		CST	SLT	Kb	as above.
FD17-01	96		459.55	461.53	1.98			1.86	MGR			VF-FGR	FGR	MBE	ILA				20		IN		SLT	CST	Kb	SLT with irreg bands of CST and fine SST; occnly carb +/- coaly stringers; also sideritic concretions (as in previous intervals). Weakly defined bedding /ILA @ 0.50 m from top; 32-28-26-32° BCN Bottom ct wavy, sharp @ 21° BCN.
FD17-01	96		461.53	461.74	0.21			0.20	DGR	DBR		VFGR		ILA	MBE	PO			20		IN		CCST		Kb	Locally fractured with SLI & PO; 5-6 mm thick coal stringers near bottom. Bottom ct very irreg (but intact).
FD17-01	96		461.74	462.41	0.67			0.61	MGR			FGR	VFGR	WBE	ILA				25		IN		SLT	SST	Kb	Silty CST with wavy bands of SST+CST. Bedding seems to get shallower (10-5° BCN) but still irreg.
FD17-01	96	463.91	462.41	463.12	0.71			0.64	MGR	DGR		FGR	VFGR	ILA	WBE			(15)	25		IN		SLT	SST	Kb	As above. Minor coal stringers. Bottom ct @ ~ 15° BCN (intact).
FD17-01	96		463.12	463.73	0.61			0.55	LGR	MGR		MGR	FGR	WBE	ILA			25	25		IN		SST		Kb	"Salt & Pepper" look, with DGR + BL carbonaceous & coaly stringers.
FD17-01	97		463.73	465.48	1.75			1.59	LGR	MGR		MGR		XBE	WBE				25		SBK		SST		Kb	as above.
FD17-01	97	466.95	465.48	467.05	1.57			1.52	LGR	DGR		MGR	CGR	XBE	ILA			(10)	15		SBK		SST		Kb	Top 0.08 m: rich in coal stringers. Next 0.09 m: granular CGL (matrix supported, subrounded 2-5 mm clasts). Rest of interval is "salt & pepper" SST: XBE, with local coal stringer. Bottom ct @ ~10° BCN (intact).
FD17-01	97		467.05	467.34	0.29			0.28	LGR	GR		GRN		MBE				12	12		SO		CGL		Kb	Well sorted (fine to granular) clasts in SST matrix. Bottom 3 cm: fine SST band with minor coal stringers. Bottom ct sharp @ 12° BCN.
FD17-01	97		467.34	467.95	0.61			0.58	DGR	DBR		VFGR		MBE	ILA				18		IN		CCST		Kb	Mod carbonaceous locally sideritic concretions ; massive look (no distinct bedding0..
FD17-01	98		467.95	468.64	0.69			0.66	MGR	GR		VF-FGR		MBE					18		SO		CST	SLT	Kb	Carb @ top 10-11 cm, then increasingly silty (but transition is v. irreg, almost turbiditic). Massive look with no visible bedding.
FD17-01	98	470.00	468.64	469.27	0.63			0.60	GR			VF-FGR		MBE					18		IN		SLT	SST	Kb	Sandy SLT:;occasionally clusters & bands of Marcasite (up to 5 cm across). Bottom ct irreg shaped.
FD17-01	98		469.27	471.59	2.32			2.21	GR	DGR		VFGR		MBE					18		IN		SLT	CST	Kb	V. Irregular interbeds of SLT with CST (darker colour). V massive (no visible bedding) with some signs of turbidity @ contact CST/SLT. Increasingly sandy downwards; irreg bottom contact.
FD17-01	98		471.59	471.69	0.10			0.10	GR			FGR	VFGR	MBE					18		IN		SST		Kb	
FD17-01	98	473.05	471.69	472.17	0.48			0.46	LGR	MGR		FGR	MGR	ILA	WBE			(8)	18		IN		SST		Kb	Fine SST with irreg arb+coaly lams/stringers. Clay enriched @ bottom 5 cm. Floor contact @ ~8° BCN, somewhat irreg.
FD17-01	98		472.17	472.23	0.06			0.06	DGR			VFGR		MBE					18		SO		CST		Kb	
FD17-01	99		472.23	472.44	0.21			0.20	DGR			VFGR		MBE					18		IN		CST		Kb	Becomes slightly carb towards bottom where coal stringers occur. Floor contact irreg.
FD17-01	99		472.44	473.56	1.12			0.99	LGR			MGR	CGR	ILA	XBE			28	28		IN		SST		Kb	Thin coal stringers @ top 0.15m; small DBR/BL stringers & clasts throughout. Fines downward. Bottom ct @ ~28° BCN.
FD17-01	99		473.56	474.71	1.15			1.09	LGR			FGR		LA	MBE		28	8	18		IN		SST		Kb	Mostly massive, only near top is WBE and near bottom is LA; BCN varies from 28-33° @ top to 20-8° @ bottom.
FD17-01	99	476.10	474.71	474.85	0.14			0.14	LGR			FGR		LA			8	13	11		SO		SST		Kb	Floor contact v. irreg (erosional?).
FD17-01	99		474.85	476.38	1.53			1.27	MGR	DGR		FGR	VFGR	LA	WBE		28	39	34		MBK		SST	CST	Kb	RCL @ the roof contact. interbedded/interLA SST/CST. MBK @ bottom 0.36m along joints running @ ~30° BCA.
FD17-01	100		476.38	476.64	0.26			0.25	MGR	DGR		FGR	VFGR	LA	WBE			17	17		SBK		SST	CST	Kb	Floor contact @ 17° BCN, intact.
FD17-01	100		476.64	477.84	1.20			1.15	LGR			FGR	MGR	LA	RCL		16	15	16		SBK		SST		Kb	RCL along the interval, aligned along bedding/LA @ 17-16-25-15° BCN. Some XBE @ bottom o.40m.
FD17-01	100	479.15	477.84	480.64	2.80			2.70	LGR	MGR		MGR	FGR	XBE	LA		14	15	15		SBK		SST		Kb	Top ~0.30 m: RCL and some coaly stringers up to 2cm thick. The rest of interval is XBE.
FD17-01	101		480.64	480.92	0.28			0.27	LGR	DGR		MGR		XBE					15		IN		SST		Kb	some coaly laminae.
FD17-01	101	482.19	480.92	482.09	1.17			1.13	LGR	DGR		FGR		LA	RCL				15		IN		SST		Kb	Carb RCL of DBR/DGR colour, generally aligned with LA @ 8-10° BCN; LA varies from 8-10° to 20° BCNL occnly XBE. Floor contact sharp @ 20° BCN (intact).
FD17-01	101		482.09	483.97	1.88			1.82	LGR			FGR	MGR	MBE	LA				15		SO		SST		Kb	Massive looking; coarsens downhole; minor RCL in the top half of interval.
FD17-01	101	485.24	483.97	484.76	0.79			0.74	LGR	DGR		MGR		MBE	RCL				20		IN		SST		Kb	As above but with more RCL.
FD17-01	102		484.76	486.00	1.24			1.17	LGR			MGR	CGR	MBE					20		SO		SST		Kb	Massive, "salt & pepper" look. Bottom ct sharp @ 32° BCN, fractured (with PO).
FD17-01	102		486.00	487.07	1.07			1.01	DGR	DBR		VFGR		LA	MBE	SL	20		20		MBK		CST		Kb	Slightly carb; v. bkn/fractured @ top with PO & SLI.
FD17-01	102	488.29	487.07	488.91	1.84			1.72	DGR	DBR		VFGR		LA	MBE		17	25	21		IN		CST		Kb	as above; locally thin Ca stringers.
FD17-01	103		488.91	490.28	1.37			1.27	LGR			CGR	MGR	MBE	XBE	SL	22		22		SBK		SST		Kb	Coarser "salt & pepper" SST, with minor thin carb+coaly stringers. Top ct fractured (@ 27° BCN) with SL.
FD17-01	103	491.34	490.28	491.08	0.80			0.74	GR	MBR		CGR	PEB	ILA					22		IN		SST	CGL	Kb	Coarse to granular SST with occnl bands of FGR SST; cut by carb+coaly stringers; minor Ca. Grades into pebble CGL with clasts of DGR/DBR CST. Bottom ~10 cm : one large, irreg BR sideritic concretion with marcasite blebs/stringers at the bottom, marking the contact with CST below. (took pics of this weird interval).

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	103		491.08	493.22	2.14			2.04	DGR	GR		VFGR		WBE	LA		15	20	18		MBK		CST		Kb	Slightly carb; on the first 0.25 m with few coal stringers. Occnly sideritic concretions, marcasite (bands, blebs or stringers). Bedding/LA defined by LGR SLT or BR sideritic bands. One local 4 cm thick fine SST band.
FD17-01	104	494.39	493.22	493.44	0.22			0.21	DGR	GR		VFGR		WBE	LA			18	18		IN		CST		Kb	As above; grades into SLT.
FD17-01	104		493.44	494.76	1.32			1.26	GR	BR		VF-FGR		MBE	BIO				18		IN		SLT		Kb	Grades into fine SST; signs of BIO, v. massive with no defined bedding.
FD17-01	104		494.76	495.07	0.31			0.30	LGR	MGR		FGR		MBE	XBE			(10)	14		SO		SST		Kb	Bottom ct @ ~10 BCN.
FD17-01	104		495.07	495.29	0.22			0.21	DGR	DBR		VFGR		MBE	WBE		15	22	19		IN		CCST		Kb	Mod carb with coal stringers (up to 6 mm thick); some marcasite stringer, sideritic concretions. Sandier near top.
FD17-01	104		495.29	496.31	1.02			0.96	LGR			MGR		LA	XBE		15	(40)	19		IN		SST		Kb	Darker grey near top, becoming LGR and coarser downward; XBE near bottom.
FD17-01	104	497.43	496.31	497.41	1.10			1.03	LGR	MGR		MGR	FGR	LA	XBE				20		SBK		SST		Kb	One ~20 cm thick silty section in the middle of interval; locally calcite stringers + coaly stringers..
FD17-01	105		497.41	499.31	1.90			1.79	LGR	MGR		FGR	MGR	ILA	XBE			20	20		MBK		SST		Kb	Interbeds of FGR/MGR SST: the finer SST is enriched in coal stringers. Occnly calcite stringers x-cutting bedding @ 15-20° TCA.
FD17-01	105	500.48	499.31	501.36	2.05			1.90	LGR			MGR		XBE					22		IN		SST		Kb	"salt & pepper" SST with minor coal stringers. Bottom ct sharp & irreg, intact.
FD17-01	105		501.36	501.69	0.33			0.31	DGR			VFGR		MBE	LA		22		22		SBK		CST	CCST	Kb	Weakly carb with coal stringers near top, and one 2-3 cm thick irreg sideritic concretion.
FD17-01	106		501.69	502.33	0.64			0.59	DGR	DBR		VFGR		MBE					22		SBK		CST	SLT	Kb	Sideritic concretions in the top 0.35 m; getting siltier downward.. V massive, no discernible bedding.
FD17-01	106	503.53	502.33	504.52	2.19			2.03	DGR			VFGR		MBE	BIO				22		IN		CST	CCST	Kb	Slightly silty, with carb interbeds, overall massive with signs of BIO, but no bedding. Locally sideritic concretions. Grades into SLT.
FD17-01	106		504.52	505.34	0.82			0.78	MGR			VF-FGR		MBE	BIO				19		IN		SLT		Kb	Getting sandier and harder downwards; bottom 13 cm is chert-like.
FD17-01	106	506.58	505.34	505.74	0.40			0.38	MGR			VF-FGR		MBE	WBE		17	20	19		IN		SLT	CST	Kb	Top ~0.20 m: v. hard, chert like; grades into SLT.; better defined bedding..
FD17-01	107		505.74	508.38	2.64			2.35	DGR	MGR		VFGR		MBE				27	27		SBK		CST		Kb	Locally coal stringers, sideritic concretions.
FD17-01	107	509.63	508.38	510.07	1.69			1.65	DGR	MGR		VFGR		MBE			15	10	13		SBK		CST		Kb	As above, with better defined bedding near top; some signs of BIO.
FD17-01	108		510.07	510.33	0.26			0.25	DGR	DBR		VFGR		WBE	MBE			13	13		SBK		CCST		Kb	Mod carb with coal stringers, sideritic concretions. Floor contact somewhat irreg, intact.
FD17-01	108		510.33	511.49	1.16			1.13	GR	LGR		VF-FGR	FGR	MBE					13		SBK		SST	SLT	Kb	V hard (chert like) @ the top 0.29m. Bkn along fracts filled/coated with calcite. Bottom half is silty, with signs of BIO.
FD17-01	108	512.67	511.49	511.66	0.17			0.16	GR			VF-FGR		MBE					20		SO		SST	SLT	Kb	Silty SST. Floor ct almost gradational, @~5 BCN.
FD17-01	108		511.66	513.01	1.35			1.27	GR	DGR		VFGR		MBE	ILA			20	20		IN		CST	CCST	Kb	Silty near top, then gradually more carb. Weak/irreg bedding, ILA in bottom half (30-20 BCN). Occnly siderite concretions; gradual enrichment in sandy/silty material in bottom 0.20m. Few coal stringers near bottom.
FD17-01	108		513.01	513.93	0.92			0.86	GR	LBR		VF-FGR		MBE	BIO				20		SO		SST		Kb	With signs of BIO; some coaly stringers near top (up to to 1 cm thick). No bedding/LA visible.
FD17-01	108		513.93	514.42	0.49			0.46	MGR	GR		VF-FGR		MBE					20		IN		SLT	CST	Kb	Silty @ to 10 cm, then slightly carb.
FD17-01	109		514.42	514.65	0.23			0.21	DGR	MGR		VFGR		MBE					22		SO		CST		Kb	
FD17-01	109	515.72	514.65	517.03	2.38			2.21	GR	DGR		VFGR		MBE	ILA		22		22		SBK		CST		Kb	Weakly defined bedding. Few sideritic concretions; increasingly silty downward, with some BIO. Bottom ct almost 0° BCN.
FD17-01	109		517.03	517.74	0.71			0.66	GR			VF-FGR	FGR	MBE	BIO				22		IN		SLT		Kb	Siltstone grading into SST.
FD17-01	109	518.77	517.74	518.58	0.84			0.77	MGR	LGR		FGR		ILA	XBE		20	25	23		IN		SST		Kb	V. irreg bedding with signs of turbidity (swirls of SST); few CST bands.
FD17-01	110		518.58	520.00	1.42			1.38	MGR	LGR		FGR		ILA	XBE			13	13		IN		SST	CST	Kb	As above; bands of CST in bottom half, defining bedding @ 13° BCN. Bottom ct v. irreg. (erosional?) with one large CST clast.
FD17-01	110		520.00	520.52	0.52			0.52	DGR	DBR		VFGR		MBE				5	5		SBK		CST	CCST	Kb	Increasingly carb downwards; coal coating on bottom end; sideritic concretions. BCN very shallow near bottom (1-5°)
FD17-01	110		520.52	520.60	0.08			0.08	DGR	BL		VFGR		LA					5		HBK		HCST		Kb	Highly carb.
FD17-01	110		520.60	521.05		0.45		0.45											5				C-LOSS		Kb	
FD17-01	110		521.05	521.17	0.12			0.12	BL										6		SBK		CBB		Kb	Bright banded coal.
FD17-01	110	521.82	521.17	521.55	0.38			0.38	BL	DBR		VFGR		ILA	MBE				6		MBK		HCST	CBR	Kb	HCST with bands+stringers of bright coal (coal is mostly bkn). ?loss @ top?
FD17-01	110		521.55	521.80	0.25			0.25	DGR	DBR		VFGR		MBE					6		IN		CCST		Kb	Gradual decrease in carb material.
FD17-01	110		521.80	522.10	0.30			0.30	GR	DGR		VF-FGR		MBE	BIO				6		SBK		SLT		Kb	Slightly arb @ top 10 cm, then suddenly v. hard (cherty?) with BIO signs for ~13 cm. Grades into CST.
FD17-01	110		522.10	523.15	1.05			1.04	MGR	DGR		VFGR		MBE					6		IN		CST		Kb	Slightly carb near bottom. No bedding visible.
FD17-01	111		523.15	523.29	0.14			0.14	MGR	DGR		VFGR		MBE					6		IN		CST		Kb	Grades into CCST. (Possible loss at bottom).
FD17-01	111		523.29	523.47	0.18			0.18	DGR	DBR		VFGR		MBE	ILA				6		SBK		CCST		Kb	With coal stringers. (Possible loss \2 bottom\0.
FD17-01	111		523.47	523.86	0.39			0.39	MGR			VFGR		MBE					6		SO		CST		Kb	Sideritic concretions; no defined bedding/LA.
FD17-01	111	524.87	523.86	524.09	0.23			0.23	MGR			VFGR		MBE			6	5	6		SO		CST		Kb	AS above; floor ct abrupt @ 5° BCN.
FD17-01	111		524.09	525.17	1.08			1.07	LGR	MGR		FGR		ILA	XBE				6		IN		SST		Kb	Silty near top MBE in top half, then XBE (and slightly coarser). Floor ct abrupt + irreg (erosional).
FD17-01	111		525.17	525.49	0.32			0.32	MGR			VFGR		MBE					8		SO		CST		Kb	Grades into SLT.
FD17-01	111		525.49	526.44	0.95			0.94	MGR			VF-FGR	FGR	MBE	BIO				8		IN		SST	SLT	Kb	Floor ct irregular.
FD17-01	111		526.44	526.79	0.35			0.35	GR			VFGR		WBE	MBE			8	8		SBK		CST		Kb	
FD17-01	111	527.91	526.79	527.36	0.57			0.56	GR			VFGR		WBE	MBE		10	6	8		IN		CST		Kb	Minor coal stringers.
FD17-01	112		527.36	529.81	2.45			2.43	MGR	DGR		VFGR		MBE				8	8		MBK		CST	CCST	Kb	Aa above; slightly carb.
FD17-01	112	530.96	529.81	531.25	1.44			1.43	MGR	DGR		VFGR		MBE			8		8		MBK		CST	CCST	Kb	As above, with minor coal stringers.
FD17-01	113		531.25	532.92	1.67			1.65	MGR	DGR		VFGR		MBE					8		MBK		CST		Kb	Some white clay mineral on bkn/fractured surfaces.
FD17-01	113	534.01	532.92	533.88	0.96			0.95	MGR	DGR		VFGR		MBE					8		MBK		CCST	CST	Kb	Increasingly carb downwards, with few coal stringers. Massive, no visible bedding.
FD17-01	113		533.88	535.38	1.50			1.49	MGR	MBR		VFGR		MBE	BIO				8		IN		CST		Kb	Increasingly silty, with some BIO; few sideritic concretions.
FD17-01	114		535.38	535.98	0.60			0.59	GR			VF-FGR		MBE					8		IN		SLT		Kb	Some BIO; no visible bedding (v. massive).
FD17-01	114	537.06	535.98	539.02	3.04			3.01	GR			VF-FGR	FGR	MBE	BIO				8		IN		SLT		Kb	Sideritic concretions. Increasingly sandy .
FD17-01	114	540.11	539.02	539.54	0.52			0.52	GR	LBR		VF-FGR	FGR	MBE				4	4		IN		SLT		Kb	Floor ct sharp @ 4 BCN (intact).
FD17-01	114		539.54	539.64	0.10			0.10	LGR	MGR		MGR		ILA	XBE				8		SO		SST		Kb	With coal stringers.
FD17-01	115		539.64	541.09	1.45			1.44	LGR	DGR		MGR		XBE	LA				8		SBK		SST		Kb	V. irreg coal stringers + lams; occasional irreg LBR bands (sideritic?) 3-8 cm thick. Floor ct irreg shaped.
FD17-01	115		541.09	542.02	0.93			0.92	MGR			FGR	VF-FGR	ILA	MBE				8		IN		SLT	SST	Kb	Sandy SLT; sideritic concretions throughout; Minor coaly + carb stringers. Fines downward (into CST).
FD17-01	115	543.15	542.02	542.18	0.16			0.16	GR			VFGR		MBE				7	7		SO		CST		Kb	Bottom ct wavy, @ ~7° BCN.
FD17-01	115		542.18	542.47	0.29			0.29	DGR	DBR		VFGR		MBE		PO			8		MBK		CCST		Kb	Mod to strongly carb with few coal stringers; fractured with PO surfaces. Bkn at bottom (with coal: possible C-Loss).
FD17-01	115		542.47	542.66	0.19			0.19	MGR			VFGR		WBE	MBE				8		SBK		CST		Kb	Bkn @ top. Bottom ct v. irreg, intact.
FD17-01	115		542.66	543.29	0.63			0.63	LGR	DGR		MGR	FGR	ILA					7		SBK		SST		Kb	Coal stringers throughout. Possible core loss @ bottom.
FD17-01	115		543.29	544.00	0.71			0.70	DGR			VF-FGR		LA	WBE		4	10	7		SBK		CSST		Kb	Carb SST with few bands of CCST + thin coal stringers.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	116		544.00	544.61	0.61			0.60	MGR	LGR		FGR	VFGR	ILA	WBE		6	10	8		IN		SST	SLT	Kb	SST with silty+clayey bands; thin coal stringers in bottom half. Floor contact wavy, intact.
FD17-01	116		544.61	545.23	0.62			0.60	GR			VFGR		WBE			12	13	13		SO		CST		Kb	Grades into SLT.
FD17-01	116	546.20	545.23	546.00	0.77			0.75	MGR	LGR		VF-FGR		LA	ILA		15	10	13		IN		SLT	SST	Kb	STL with LGR sandy bands. (Possible core loss @ bottom)
FD17-01	116		546.00	548.27	2.27			2.21	LGR	GR		GRN	PEB	MBE					13		IN		CGL		Kb	Inerbeds of GRN & PEB CGL; mod sorted, more clast than matrix supported, with subrounded clasts (2-17 mm in size). Minor coal stringers.
FD17-01	116	549.25	548.27	548.36	0.09			0.09	LGR	GR			PEB	MBE					13		SO		CGL		Kb	As above.
FD17-01	117		548.36	548.53	0.17			0.17	LGR	GR		PEB	GRN	MBE				10	10		SO		CGL		Kb	Floor ct @ 10° BCN (intact).
FD17-01	117		548.53	550.00	1.47			1.45	LGR			MGR		XBE					10		IN		SST		Kb	A few carg+coaly stringers towards bottom. Floor contact v. irreg shaped.
FD17-01	117		550.00	551.29	1.29			1.26	LGR	GR		PEB	GRN	MBE					13		SBK		CGL		Kb	As previously described but with more coal stringers; clasts size 2mm - 2cm.
FD17-01	117	552.30	551.29	552.31	1.02			0.99	LGR	GR		PEB	GRN	MBE				13	13		IN		CGL		Kb	As previously described but no coal stringers. Floor ct sharp @ ~13° BCN.
FD17-01	117		552.31	552.63	0.32			0.31	LGR	GR		FGR		LA	XBE		12	10	11		SO		SST		Kb	Some XBE on short portions. Floor ct sharp @ 10° BCN.
FD17-01	117		552.63	552.72	0.09			0.09	MGR	DGR		VFGR		ILA					11		SBK		SLT		Kb	Sandy bands/lams. Grades into SST.
FD17-01	118		552.72	554.34	1.62			1.59	LGR	GR		FGR		LA	XBE		12	10	11		IN		SST	SLT	Kb	One ~5 cm thick CCST band@ 1.26m below the top.
FD17-01	118	555.35	554.34	556.59	2.25			2.22	LGR	GR		FGR		LA	XBE		10	8	9		IN		SST		Kb	Silty, as above. Floor ct fractured along bedding @ @ 8° BCN.
FD17-01	118		556.59	556.76	0.17			0.17	DGR			VFGR		MBE	ILA			6	6		SBK		CST		Kb	With SST lams/bands. Floor ct fractured along bedding @ 6° BCN.
FD17-01	118		556.76	557.11	0.35			0.35	LGR			FGR		LA	ILA				6		MBK		SST		Kb	At bottom for ~8 cm; HBK and SWE (FZ?). Numerous veins of a white clay mineral.
FD17-01	119		557.11	557.21	0.10			0.10	LGR	MGR	MWE	FGR				FLT			8		HBK		SST		Kb	V. bkn and weathered core with white clay on surfaces. Possible FZ?
FD17-01	119	558.39	557.21	558.56	1.35			1.34	LGR	MGR		FGR		ILA	LA	FZ		8	8		SBK		SST		Kb	Top 0.42 m: looks like a re-annealed FZ (veins filled with white clay mineral, distributed in a breccia shape). @ 0.78 m from top: one 7 cm thick CST/SLT band.
FD17-01	119		558.56	560.02	1.46			1.45	LGR	DGR		FGR	VFGR	XBE	LA				8		SBK		SST	CST	Kb	Fine LGR SST with occnl bands of CST 2-8 cm thick, mostly @ the top 0.25 m and bottom 0.30 m of interval.
FD17-01	119		560.02	560.36	0.34			0.34				VFGR							6		SBK		CST		Kh	
FD17-01	119	561.44	560.36	561.02	0.66			0.66	LGR	MGR		FGR	VFGR	ILA	XBE		4	4	4		SBK		SST	CST	Kh	Top 0.35 m: fine LGR SST. Bottom 0.31 m: XST/SST interbedded, fractured with PO locally; coal stringers near bottom contact. Contact SST/CST is v. irregular.
FD17-01	119		561.02	561.31	0.29			0.29	DGR			VFGR		MBE	LA				4		SBK		CST		Kh	Bottom ct intact, @ 15° BCN.
FD17-01	119		561.31	561.40	0.09			0.09	MGR			FGR		XBE	LA				6		SO		SST		Kh	with CST lams/bands.
FD17-01	120		561.40	561.53	0.13			0.13	MGR			FGR		XBE	LA			10	10		SO		SST		Kh	As above.
FD17-01	120		561.53	563.41	1.88			1.85	DGR	LGR		VFGR	FGR	WBE			10	10	10		SBK		CST	SST	Kh	CST with sandy bands/lams (up to 3-4 cm thick, more or less irreg shaped).
FD17-01	120	564.49	563.41	564.01	0.60			0.59	DGR	LGR		VFGR	FGR	WBE			5	14	10		IN		CST	SST	Kh	As above; occnly coal stringers.
FD17-01	120		564.01	565.71	1.70			1.68	LGR	DGR		FGR	VFGR	WBE	MBE			8	8		SBK		SST	CST	Kh	SST with CST interbeds (up to 49 cm thick).
FD17-01	121		565.71	566.46	0.75			0.74	DGR	LGR		VFGR	FGR	MBE	LA		10	10	10		IN		CST	SST	Kh	Interbedded/interlaminated CST/SST (CST dominant
FD17-01	121	567.54	566.46	569.51	3.05			2.96	DGR	LGR		VFGR	FGR	WBE	ILA		12	15	14		SBK		CST	SST	Kh	As above but with thicker SST bands.
FD17-01	121	570.59	569.51	569.92	0.41			0.40	DGR	MGR		VF-FGR		ILA					14		IN		CST	SST	Kh	Very irreg LA/bedding.
FD17-01	122		569.92	572.58	2.66			2.63	MGR	DGR		VF-FGR		LA	WBE		9	8	9		SBK		CST	SST	Kh	Thinly banded.
FD17-01	122	573.63	572.58	574.18	1.60			1.58	DGR	LGR		VF-FGR		LA	WBE			10	10		SBK		CST	SST	Kh	
FD17-01	123		574.18	575.62	1.44			1.41	DGR	LGR		VF-FGR		LA	WBE		10	12	11		IN		CST	SST	Kh	Thinly banded.
FD17-01	123	576.68	575.62	578.48	2.86			2.82	DGR	LGR		VF-FGR		LA	WBE		13	4	9		IN		CST	SST	Kh	As above.
FD17-01	124		578.48	578.68	0.20			0.20	DGR	LGR		VF-FGR		LA	WBE		5	5	5		SO		CST	SST	Kh	As above.
FD17-01	124	579.73	578.68	581.71	3.03			3.00	DGR	LGR		VFGR		LA	WBE			8	8		IN		CST		Kh	Fewer SST bands/lams.
FD17-01	124	582.78	581.71	582.69	0.98			0.95	DGR	LGR		VF-FGR		LA	WBE			15	15		IN		CST		Kh	As above.
FD17-01	125		582.69	583.41	0.72			0.71	DGR	LGR		VFGR	FGR	LA	WBE		12	6	9		SBK		CST		Kh	As above.
FD17-01	125		583.41	583.50	0.09			0.09	BR	GR	MWE	VFGR		LA	MBE				9	SFI	MBK		CCST		Kh	Weathered zone @ the bottom of above interval; some 2 cm thick calcite band @ bottom contact (weavey+irreg but intact).
FD17-01	125		583.50	584.76	1.26			1.22	DGR	LGR		VFGR	FGR	WBE	LA		8	20	14		IN		CST	SST	Kh	BCN varies: 8-13-10-20°
FD17-01	125	585.83	584.76	586.94	2.18			2.12	DGR	LGR		VFGR	FGR	WBE	LA		20	5	13		IN		CST	SST	Kh	
FD17-01	126		586.94	587.80	0.86			0.85	DGR	LGR		VFGR	FGR	WBE	LA		7	7	7		IN		CST	SST	Kh	As above.
FD17-01	126	588.87	587.80	590.82	3.02			2.99	DGR	LGR		VFGR	FGR	WBE	LA		10	6	8		SBK		CST	SLT	Kh	As above; BCN varies from 10-8-9-10-12-6°
FD17-01	126	591.92	590.82	591.13	0.31			0.30	DGR	LGR		VFGR	FGR	WBE	LA				15		IN		CST	SLT	Kh	
FD17-01	127		591.13	593.92	2.79			2.69	DGR	LGR		VFGR	VF-FGR	LA	WBE		12	17	15		IN		CST	SLT	Kh	BCN varies from 12-8-4-10-8-5-12-17°
FD17-01	127	594.97	593.92	594.85	0.93			0.92	DGR	LGR		VFGR	VF-FGR	LA	WBE		12	7	10		IN		CST	SLT	Kh	;
FD17-01	127		594.85	595.19	0.34			0.33	MGR	WH	SWE	VF-FGR		ILA	LA			10	10	SFI	SBK		CST	SLT	Kh	V. fractured zone with some weathering and calcite on some fractured surfaces; abundant calcite stringers @ bottom 8 cm, s BC Nub|| to bedding/LA. Floor contact intact, @ 10°
FD17-01	127		595.19	595.58	0.39			0.38	MGR	LGR		VF-FGR		LA	WBE		10	10	10		IN		CST	SLT	Kh	
FD17-01	128		595.58	596.98	1.40			1.40	MGR	LGR		VF-FGR		LA	WBE	WFR		3	3		IN		CST	SLT	Kh	Slightly fractured.
FD17-01	128	598.02	596.98	599.69	2.71			2.69	MGR	LGR		VF-FGR		LA	WBE			7	7		MBK		CST	SLT	Kh	
FD17-01	129		599.69	600.12	0.43			0.43	MGR	LGR		VF-FGR		LA	WBE			7	7		SO		CST	SLT	Kh	
FD17-01	129	601.07	600.12	602.93	2.81			2.77	DGR	LGR		VF-FGR		LA	ILA			10	10		SBK		CST	SLT	Kh	Bkn @ top (possible core loss); minor/local coal stringers near top.
FD17-01	129		602.93	603.08	0.15			0.15	LGR	LBR		VF-FGR		MBE		HFR			10		SBK		GO	SLT	Kh	HFR zone wit LGR clay (soft) in the bottom half (clay GO).
FD17-01	129	604.11	603.08	603.90	0.82			0.81	DGR	LGR		VF-FGR		LA	ILA	WFR	8	11	10		IN		CST	SLT	Kh	One fracture @ top filled (15 mm thick)with a white clay.
FD17-01	130		603.90	606.20	2.30			2.27	DGR	MGR		VFGR		LA			10	7	9		IN		CST		Kh	Well LA/banded CST with MGR-LGR bands of SLT+SST.
FD17-01	130	607.16	606.20	607.72	1.52			1.51	DGR	MGR		VFGR		LA			8		8		IN		CST		Kh	
FD17-01	130		607.72	607.78	0.06			0.06	LGR	WH		VFGR		ILA					9	SFI	SO		SLT		Kh	Calcite enriched band with LBR clasts. Top and bottom contacts intact, sharp and irreg shaped.
FD17-01	130		607.78	608.34	0.56			0.55	DGR	MGR		VFGR		LA				10	10		IN		CST	SLT	Kh	
FD17-01	131		608.34	609.43	1.09			1.08	DGR	MGR		VFGR		LA			7	7	7		IN		CST		Kh	Well LA/banded CST with MGR-LGR bands of SLT+SST.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	131	610.21	609.43	612.48	3.05			3.00	DGR	MGR		VFGR		LA			8	12	10		IN		CST		Kh	As above
FD17-01	131	613.26	612.48	612.69	0.21			0.21	DGR	MGR		VFGR		LA				9	9		SO		CST		Kh	As above
FD17-01	132		612.69	615.53	2.84			2.83	DGR	MGR		VFGR		LA		WFR	5	5	5		IN		CST		Kh	Fractures along bedding planes.
FD17-01	132	616.31	615.53	617.12	1.59			1.58	DGR	MGR		VFGR		LA		WFR	4	6	5		IN		CST		Kh	~0.28 m below top: one 8 cm thick band brownish-GR colour, SWE, MFR with calcite near its bottom.
FD17-01	133		617.12	618.56	1.44			1.44	DGR	MGR		VFGR		LA	WBE		3	5	4		IN		CST		Kh	
FD17-01	133	619.35	618.56	619.74	1.18			1.17	DGR	MGR		VFGR		LA			6	12	9		IN		CST		Kh	Bottom ct fractured with PO.
FD17-01	133		619.74	621.49	1.75			1.73	MGR	LGR		VF-FGR		ILA					9		IN		SLT		Kh	Mottled look with weakly visible bedding; looks like a sand-enriched CST.
FD17-01	134		621.49	621.59	0.10			0.10	MGR	LGR		VF-FGR		ILA					11		SO		SLT		Kh	As above.
FD17-01	134	622.40	621.59	624.64	3.05			2.99	GR	LGR		VFGR		LA			10	12	11		IN		SLT	CST	Kh	Better defined bedding/LA (10-13 BCN). One 8cm thick calcite-enriched band @ 2.52 m from top.
FD17-01	134	625.45	624.64	625.81	1.17			1.15	GR	LGR		VFGR		LA				10	10		IN		SLT	CST	Kh	As above but enriched in sandy bands.
FD17-01	135		625.81	627.67	1.86			1.83	GR	LGR		VFGR		LA			10	12	11		IN		SLT	CST	Kh	
FD17-01	135	628.50	627.67	630.26	2.59			2.56	GR	LGR		VFGR		LA				8	8		IN		CST		Kh	Weakly banded/la with SLT + SST bands/lams.
FD17-01	136		630.26	630.69	0.43			0.43	GR	LGR		VFGR		LA		WFR	7	4	6		IN		CST		Kh	As above.
FD17-01	136	631.55	630.69	633.70	3.01			2.98	GR	LGR		VFGR		LA			5	10	8		IN		CST		Kh	
FD17-01	136	634.59	633.70	634.44	0.74			0.74	GR	LGR		VFGR		LA				5	5		IN		CST		Kh	
FD17-01	137		634.44	636.74	2.30			2.27	GR	LGR		VFGR		ILA			8	12	10		IN		CST		Kh	Slight enrichment in sandy bands.
FD17-01	137	637.64	636.74	638.67	1.93			1.92	GR	LGR		VFGR		LA				7	7		IN		CST		Kh	Less sandy downhole.
FD17-01	138		638.67	639.81	1.14			1.12	GR	LGR		VFGR		LA	ILA		9	10	10		IN		CST		Kh	
FD17-01	138	640.69	639.81	640.96	1.15			1.14	GR	LGR		VFGR		LA	ILA			9	9		IN		CST		Kh	
FD17-01	138		640.96	641.01	0.05			0.05	GR	BR	MWE	VF-FGR				GO			9		SBK		GO		Kh	Gouge: soft sandy clay; few cm of MWE HF rock (CST as above).
FD17-01	138		641.01	641.16	0.15			0.15	GR	WH	SWE	FGR		ILA				2	2	SFI	SO		CST		Kh	Bottom 0.09 m: enrichment in calcite as dense veining/lams; top part is SWE.
FD17-01	138		641.16	642.97	1.81			1.79	GR	MGR		VFGR		LA	ILA			8	8		IN		CST		Kh	Bottom 0.20 m: enrichment in SST, with more ILA.
FD17-01	139	643.74	642.97	646.12	3.15			3.10	GR	MGR		VFGR		LA	ILA		10	10	10		IN		CST		Kh	BCN varies from 7-10.
FD17-01	139	646.79	646.12	647.36	1.24			1.24	GR	MGR		VFGR		LA	ILA		5	5	5		IN		CST		Kh	
FD17-01	140		647.36	649.23	1.87			1.86	GR	MGR		VFGR		LA	ILA		5	4	5		IN		CST	SLT	Kh	Increase in SLT+SST bands in bottom half.
FD17-01	140	649.83	649.23	650.31	1.08			1.04	GR	MGR		VFGR		LA	ILA			15	15		IN		CST		Kh	BCN increases in bottom half: 10-28-22-15°
FD17-01	140		650.31	650.49	0.18			0.17	LGR	MGR		CGR	GRN	ILA					15		IN		CGL	SST	Kg	Interbedded granular CGL/ SST; the CGL pebbles/granules are supported by SST matrix. Possible contact Kh/Kg.
FD17-01	140		650.49	651.65	1.16			1.10	LGR	DGR		FGR	VFGR	ILA	LA			18	18		IN		SST	CST	Kg	Mainly fine LGR SST with bands/lams of CST.
FD17-01	141		651.65	651.68	0.03			0.03	DGR	LGR		VFGR	FGR	LA			12		10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141		651.68	651.72	0.04			0.04	DGR	LGR		VFGR	FGR	LA					10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141		651.72	651.93	0.21			0.21	DGR	LGR		VFGR	FGR	LA					10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141		651.93	652.02	0.09			0.09	DGR	LGR		VFGR	FGR	LA					10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141		652.02	652.06	0.04			0.04	DGR	LGR		VFGR	FGR	LA					10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141		652.06	652.10	0.04			0.04	DGR	LGR		VFGR	FGR	LA					10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141		652.10	652.32	0.22			0.22	DGR	LGR		VFGR	FGR	LA				8	10		IN		CST	SST	Kg	Thinly banded. CST with SST bands.
FD17-01	141	652.88	652.32	652.33	0.01			0.01	LGR			FGR	MGR	LA	XBE		5		5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.33	652.36	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.36	652.39	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.39	652.57	0.18			0.18	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.57	652.68	0.11			0.11	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.68	652.71	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.71	652.74	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.74	652.83	0.09			0.09	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.83	652.86	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.86	652.88	0.02			0.02	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		652.88	653.16	0.28			0.28	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.16	653.20	0.04			0.04	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.20	653.24	0.04			0.04	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.24	653.36	0.12			0.12	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.36	653.40	0.04			0.04	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.40	653.44	0.04			0.04	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.44	653.61	0.17			0.17	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.61	653.65	0.04			0.04	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.65	653.70	0.05			0.05	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.70	653.88	0.18			0.18	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.88	653.97	0.09			0.09	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		653.97	654.00	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		654.00	654.20	0.20			0.20	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		654.20	654.23	0.03			0.03	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		654.23	654.27	0.04			0.04	LGR			FGR	MGR	LA	XBE				5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		654.27	654.29	0.02			0.02	LGR			FGR	MGR	LA	XBE			5	5		IN		SST		Kg	Top 0.70 m: enriched in CST bands/lams; occnly thin coal stringers and lams. Bkn @ bottom ct.
FD17-01	141		654.29	654.58	0.29			0.29	DGR	LGR		VFGR	FGR	LA	WBE		7		8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	141		654.58	654.63	0.05			0.05	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		654.63	654.68	0.05			0.05	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		654.68	654.85	0.17			0.17	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		654.85	654.90	0.05			0.05	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		654.90	654.94	0.04			0.04	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		654.94	655.07	0.13			0.13	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		655.07	655.11	0.04			0.04	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		655.11	655.15	0.04			0.04	DGR	LGR		VFGR	FGR	LA	WBE				8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141		655.15	655.36	0.21			0.21	DGR	LGR		VFGR	FGR	LA	WBE			8	8		IN		CST	SST	Kg	CST with sandy bands/lams (up to 15%).
FD17-01	141	655.93	655.36	655.52	0.16			0.16	MGR	DGR		VFGR		LA	MBE		8		7		IN		CST		Kg	Silty CST.
FD17-01	141		655.52	655.57	0.05			0.05	MGR	DGR		VFGR		LA	MBE				7		IN		CST		Kg	Silty CST.
FD17-01	141		655.57	655.60	0.03			0.03	MGR	DGR		VFGR		LA	MBE				7		IN		CST		Kg	Silty CST.
FD17-01	141		655.60	655.84	0.24			0.24	MGR	DGR		VFGR		LA	MBE			5	7		IN		CST		Kg	Silty CST.
FD17-01	142		655.84	655.87	0.03			0.03	MGR	DGR		VFGR		LA	MBE		7		6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		655.87	655.92	0.05			0.05	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		655.92	656.16	0.24			0.24	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.16	656.20	0.04			0.04	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.20	656.24	0.04			0.04	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.24	656.41	0.17			0.17	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.41	656.44	0.03			0.03	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.44	656.47	0.03			0.03	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.47	656.67	0.20			0.20	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.67	656.71	0.04			0.04	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.71	656.73	0.02			0.02	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.73	656.98	0.25			0.25	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		656.98	657.23	0.25			0.25	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		657.23	657.38	0.15			0.15	MGR	DGR		VFGR		LA	MBE				6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		657.38	657.42	0.04			0.04	MGR	DGR		VFGR		LA	MBE			4	6		IN		CST	CCST	Kg	Near bottom is bkn along joints running @ ~10° TCA. Grading into CCST. (Floor contact solid).
FD17-01	142		657.42	657.46	0.04		15559	0.04	MGR	DGR		VFGR		LA	MBE				4		IN		CST	CCST	Kg	ROOF SAMPLE for CZR-B
FD17-01	142		657.46	657.52	0.06			0.06	MGR	DGR		VFGR		LA	MBE			4	4		IN		CST	CCST	Kg	ROOF SAMPLE for CZR-B
FD17-01	142		657.52	657.65	0.13			0.13	DGR	BL		VFGR		MBE					4		IN	BRCZ	CCST	HCST	Kg	Increasingly carb to coaly, grading into coaly stone.
FD17-01	142		657.65	657.77	0.12			0.12	BL			VFGR		MBE					8		IN	BRCZ	ST	HCST	Kg	Coaly stone?: light weight, black, with a v. amorphous texture (no trace of bedding/LA) Grades into HCST.
FD17-01	142		657.77	657.81	0.04			0.04	DBR	BL		VFGR		MBE					8		SO	BRCZ	HCST	CCST	Kg	Floor ct solid.
FD17-01	142		657.81	657.83	0.02		15560	0.02	MGR	DGR		FGR		ILA				6	8		SO	BRCZ	SLT	SST	Kg	Sandy SLT band. Floor ct solid. @ ~6° BCN.
FD17-01	142		657.83	657.88	0.05			0.05	BL	DBR		VFGR		MBE	ILA				8		IN	BRCZ	HCST		Kg	Occnly thin coal stringers. Grades into coaly stone.
FD17-01	142		657.88	658.18	0.30			0.30	BL			VFGR		MBE					8		HBK	BRCZ	ST		Kg	COALY Stone?: light weight rock, black, with amorphous texture (no bedding/LA noticeable). Seams to be bkn mostly mechanically, but…HBK.
FD17-01	142		658.18	658.51	0.33		15561	0.33	BL										8		SBK	B	CDB	COAL	Kg	Mostly dull banded coal. SBK at floor. (Roof pick matches Compensated Density log.)
FD17-01	142	658.98	658.51	658.55		0.04		0.04											8			B	C-LOSS		Kg	
FD17-01	142		658.55	658.60		0.05		0.05											8			B	R-LOSS		Kg	
FD17-01	142		658.60	658.68	0.08			0.08	DBR	DGR		VFGR		MBE	TLA		7		8		IN	B	CCST		Kg	one lonely piece of CCST… minor coal stringers.
FD17-01	142		658.68	658.75	0.07			0.07	DGR			VFGR		MBE	TLA				8		IN	B	CST		Kg	Few coal stringers (2-3 mm thin) towards bottom; coal coating on bottom end.
FD17-01	142		658.75	658.80	0.05		15562	0.05	DBR			VFGR		MBE	TLA				8		SO	B	CCST		Kg	Grades into HCST.
FD17-01	142		658.80	658.84	0.04			0.04	DBR	BL		VFGR		MBE	TLA				8		SO	B	HCST		Kg	Bottom ct intact, irreg shaped.
FD17-01	142		658.84	658.90	0.06			0.06	BL			VFGR		ILA					8		SO	B	ST		Kg	(Floor of interval fits Compensated Density Log)
FD17-01	142		658.90	659.09	0.19			0.19	BL										8		IN	B	CD&B		Kg	mostly clarain.
FD17-01	142		659.09	659.14	0.05		15563	0.05	BL										8	MFI	IN	B	C&B		Kg	HCST with bands+stringers of bright coal (40-50). Thin calcite stringer near bottom. Floor ct irreg. shaped.
FD17-01	142		659.14	659.21	0.07			0.07	BL										8	MFI	IN	B	CDB		Kg	Minor/fine calcite on coal cleats.
FD17-01	142		659.21	659.26	0.05			0.05	DGR			VFGR		MBE	TLA				8		IN	B	CCST		Kg	Thin coal band @ bottom ct.
FD17-01	142		659.26	659.37	0.11		15564	0.11	DBR	BL		VFGR		TLA					8		SBK	B	HCST		Kg	Up to 20% coal stringers; thick coal coating @ bottom end(Possible C-LOSS @ bottom).
FD17-01	142		659.37	659.49	0.12			0.12	DBR	DGR		VFGR		MBE	TLA				8		IN	B	CCST		Kg	One 1 cm coal band at top.
FD17-01	142		659.49	659.54	0.05			0.05	BL	DBR		VFGR		ILA					8	WFI	SBK	B	C&B	C&B	Kg	Coal & bands: 60-40. Some calcite on cleats. Floor ct IN.
FD17-01	142		659.54	659.74	0.20		15565	0.20	BL										8	WFI	SBK	B	CD&B		Kg	Has 1 cm HCST band. Minor calcite near bottom.
FD17-01	142		659.74	659.90		0.16		0.16											8			B	C-LOSS		Kg	
FD17-01	142		659.90	660.04		0.14		0.14											8			B	R-LOSS		Kg	
FD17-01	142		660.04	660.07	0.03			0.03	BL										8		IN	B	C&B		Kg	Coal & bands:~ 65-35.
FD17-01	142		660.07	660.10	0.03			0.03	DBR	BL		VFGR							8		SBK	B	HCST		Kg	
FD17-01	142		660.10	660.22	0.12			0.12	BL										8	MFI	SBK	B	CD&B		Kg	
FD17-01	142		660.22	660.36	0.14		15565	0.14	BL										8	MFI	SBK	B	CDB		Kg	
FD17-01	143		660.36	660.40	0.04			0.04	BL										8		SBK	B	CDB		Kg	Bkn only @ top 2 cm; floor ct IN.
FD17-01	143		660.40	660.93	0.53			0.52	BL										8		IN	B	CD		Kg	Dull coal; very bright band marks bottom.
FD17-01	143		660.93	661.03	0.10			0.10	BL										8		SBK	B	CDB		Kg	Mostly IN, bkn only on bottom 4 cm.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	143		661.03	661.33	0.30			0.30	BL										8		SBK	B	CD&B		Kg	HBK bright coal at bottom end.
FD17-01	143		661.33	661.37	0.04			0.04	DGR	BL		VFGR							8		IN	BFCZ	CCST		Kg	(Possible C-LOSS @ bottom)
FD17-01	143		661.37	661.41	0.04		15566	0.04	BL										8		MBK	BFCZ	CD&B		Kg	
FD17-01	143	662.03	661.41	661.47	0.06			0.06	DBR			VFGR		MBE					8		SBK	BFCZ	CCST		Kg	Crumbled pieces of CCST+COAL at bottom. (Possible C-LOSS ?)
FD17-01	143		661.47	661.61	0.14			0.14	BL										8		SBK	BFCZ	CBN		Kg	Possible C-LOSS.
FD17-01	143		661.61	661.63	0.02			0.02	DBR	BL		VFGR		MBE	TLA				8		IN	BFCZ	HCST		Kg	
FD17-01	143		661.63	661.97	0.34		15567	0.34	DGR	BL		VFGR		MBE	TLA		10		8		SBK	BFCZ	CCST		Kg	Few coal stringers up to 2 cm thick. Grades into CST.
FD17-01	143		661.97	662.02	0.05			0.05	DGR	BL		VFGR		MBE	TLA				8		SBK	BFCZ	CCST		Kg	Few coal stringers up to 2 cm thick. Grades into CST.
FD17-01	143		662.02	662.05	0.03			0.03	DGR	BL		VFGR		MBE	TLA				8		SBK	BFCZ	CCST		Kg	Few coal stringers up to 2 cm thick. Grades into CST.
FD17-01	143		662.05	662.24	0.19			0.19	DGR			VFGR		MBE	TLA				12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.24	662.26	0.02			0.02	DGR			VFGR		MBE	TLA				12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.26	662.30	0.04			0.04	DGR			VFGR		MBE	TLA				12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.30	662.54	0.24			0.23	DGR			VFGR		MBE	TLA				12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.54	662.57	0.03			0.03	DGR			VFGR		MBE	TLA				12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.57	662.61	0.04			0.04	DGR			VFGR		MBE	TLA				12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.61	662.71	0.10			0.10	DGR			VFGR		MBE	TLA			12	12		IN		CST		Kg	Grades into SLT NOTE: FLOOR sample not available
FD17-01	143		662.71	662.80	0.09			0.09	MGR			VF-FGR		MBE					12		IN		SLT		Kg	Grades into Sst.
FD17-01	143		662.80	662.83	0.03			0.03	MGR			VF-FGR		MBE					4		IN		SLT		Kg	Grades into Sst.
FD17-01	143		662.83	662.86	0.03			0.03	MGR			VF-FGR		MBE					4		IN		SLT		Kg	Grades into Sst.
FD17-01	143		662.86	663.07	0.21			0.21	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.07	663.09	0.02			0.02	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.09	663.13	0.04			0.04	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.13	663.27	0.14			0.14	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.27	663.31	0.04			0.04	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.31	663.36	0.05			0.05	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.36	663.60	0.24			0.24	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.60	663.63	0.03			0.03	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.63	663.70	0.07			0.07	MGR	LGR		FGR		MBE	ILA				4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.70	663.71	0.01			0.01	MGR	LGR		FGR		MBE	ILA			4	4		IN		SST		Kg	Weak + irreg LA/bedding near bottom; tiny RCL from the CST below. Floor ct irreg/erosional, IN.
FD17-01	143		663.71	663.88	0.17			0.17	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		663.88	663.97	0.09			0.09	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		663.97	664.00	0.03			0.03	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.00	664.25	0.25			0.25	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.25	664.29	0.04			0.04	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.29	664.32	0.03			0.03	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.32	664.46	0.14			0.14	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.46	664.49	0.03			0.03	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.49	664.53	0.04			0.04	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	143		664.53	664.58	0.05			0.05	MGR			VFGR		MBE					4		IN		CST		Kg	Silty. CST.
FD17-01	144		664.58	664.66	0.08			0.08	GR			VF-FGR		MBE					4		SO		CST	SLT	Kg	as above.
FD17-01	144	665.07	664.66	664.71	0.05			0.05	MGR			VF-FGR		MBE					4		IN		CST		Kg	Silty CST; grades into CCST.
FD17-01	144		664.71	664.76	0.05			0.05	MGR			VF-FGR		MBE					4		IN		CST		Kg	Silty CST; grades into CCST.
FD17-01	144		664.76	664.80	0.04			0.04	MGR			VF-FGR		MBE					4		IN		CST		Kg	Silty CST; grades into CCST.
FD17-01	144		664.80	665.52	0.72			0.72	MGR			VF-FGR		MBE				4	4		IN		CST		Kg	Silty CST; grades into CCST.
FD17-01	144		665.52	666.58	1.06			1.04	DGR			VF-FGR		MBE				10	10		IN		CCST		Kg	Moderately carb with siderite concretions, some coal stringers. Bottom ct sharp @ ~10° BCN, intact.
FD17-01	144		666.58	667.10	0.52			0.51	MGR			VFGR		MBE					10		IN		CST		Kg	Silty CST; grades into SST.
FD17-01	144		667.10	667.34	0.24			0.24	MGR	LGR		VF-FGR		MBE					5		IN		SLT		Kg	Grades into SST.
FD17-01	144		667.34	667.67	0.33			0.33	LGR			FGR		MBE	TLA			3	3		SO		SST		Kg	
FD17-01	144	608.12	667.67	668.54	0.87			0.84	LGR			FGR		MBE	TLA			15	15		SO		SST		Kg	Bottom ct @ ~15° BCN.
FD17-01	144		668.54	668.80	0.26			0.26	MGR			FGR	MGR	LA	MBE				5		SO		SST		Kg	"salt & pepper" look; some coaly laminae.
FD17-01	145		668.80	670.72	1.92			1.91	LGR	MGR		MGR		TLA	ILA		5	4	5		IN		SST		Kg	as above.
FD17-01	145	611.17	670.72	673.11	2.39			2.38	LGR	MGR		MGR		TLA	XBE			4	4		IN		SST		Kg	As above; occnly XBE.
FD17-01	146		673.11	673.77	0.66			0.66	LGR	MGR		MGR		TLA	XBE			3	3		IN		SST		Kg	As above
FD17-01	146	674.22	673.77	676.79	3.02			3.01	LGR	MGR		MGR		TLA	XBE			5	5		IN		SST		Kg	Few coal stringers towards bottom
FD17-01	146	677.27	676.79	677.39	0.60			0.60	LGR	MGR		MGR		TLA	XBE				5		IN		SST		Kg	
FD17-01	147		677.39	679.85	2.46			2.45	LGR			MGR		MBE	XBE		5	4	5		IN		SST		Kg	"Salt & Pepper" look; coal stringers @ top 15 cm.
FD17-01	147	680.31	679.85	680.99	1.14			1.12	LGR			MGR		MBE	XBE			10	10		IN		SST		Kg	Aa above, with coaly+ carbonaceous stringers+clasts @ floor ct with coal below. Floor ct irreg shaped, IN. (matches the Compensated Density log!)
FD17-01	147		680.99	681.19	0.20			0.20	DBR	BL		VFGR		MBE	TLA				10		IN		HCST		Kg	Up to 5% coal stringers (more abundant @ bottom).
FD17-01	147		681.19	681.34	0.15			0.15	BL										10		IN		C&B		Kg	coal & HCST bands (40/50).
FD17-01	147		681.34	681.36	0.02			0.02	DBR	BL		VFGR		MBE	TLA				10		SO		HCST		Kg	Floor ct solid.
FD17-01	147		681.36	681.39	0.03			0.03	BL										10		IN		C&B	CBR	Kg	CBR + bands of HCST (60/40)

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	147		681.39	681.48	0.09			0.09	BL	DBR		VFGR		MBE	TLA				10		SO		HCST		Kg	With coal stringers. Grades into CCST
FD17-01	147		681.48	681.68	0.20			0.19	DBR			VFGR		MBE					15		IN		CCST		Kg	With 15-20% coal stringers (up to 2.5 cm thick).
FD17-01	148		681.68	681.78	0.10			0.10	DBR			VFGR		MBE					15		IN		CCST		Kg	With ~10% coal stringers. Grades into CST.
FD17-01	148		681.78	682.36	0.58			0.56	DGR			VFGR		MBE	TLA			15	15		IN		CST		Kg	Mod to weakly carb with minor coal stringers. Floor ct wavy (~27° BCN).
FD17-01	148		682.36	682.43	0.07			0.07	BL										15	MFI	IN		CD&B	HCST	Kg	Calcite as thin fracture fillings. May contain one thing (~1 cm) HCST band. Bottom ct IN, wavy (@ 28° BCN)
FD17-01	148		682.43	682.70	0.27			0.26	DGR	BL		VFGR		MBE					15		IN		CCST		Kg	A few thin coal stringers. Grades into HCST.
FD17-01	148		682.70	682.78	0.08			0.08	DBR	BL		VFGR		MBE	TLA				15		SO		HCST		Kg	With coal stringers (abundant near bottom).
FD17-01	148		682.78	682.82	0.04			0.04	BL										15		IN		C&B	HCST	Kg	(matches the COMPENSATED DENSITY Log!)
FD17-01	148		682.82	682.99		0.17		0.16											15				C-LOSS	R-LOSS	Kg	
FD17-01	148		682.99	683.01	0.02			0.02	BL										15		MBK		CBR		Kg	
FD17-01	148	683.36	683.01	683.25	0.24			0.23	BL										15		SO		CD&B		Kg	
FD17-01	148		683.25	683.30	0.05			0.05	BL										15		IN		CBN	COAL	Kg	coal…kind of hard. Bottom IN.
FD17-01	148		683.30	683.32	0.02			0.02	DBR	BL		VFGR		TLA					15		SBK		HCST		Kg	With coal stringers.
FD17-01	148		683.32	683.43	0.11			0.11	BL										15		SBK		CDB		Kg	(possible C-LOSS @ bottom?)
FD17-01	148		683.43	683.75		0.32		0.31											15				C-LOSS	R-LOSS	Kg	
FD17-01	148		683.75	683.83	0.08			0.08	DGR	BL		VFGR		MBE					15		IN		CCST		Kg	
FD17-01	148		683.83	683.86	0.03			0.03	BL										15		SBK		CBR		Kg	bkn only @ top; floor ct IN, irreg shaped..
FD17-01	148		683.86	683.92	0.06			0.06	DBR	BL		VFGR		TLA					15		IN		HCST		Kg	With thin coal stringers. Grades into CCST.
FD17-01	148		683.92	683.98	0.06			0.06	DGR	BL		VFGR		MBE					15		SBK		CCST		Kg	SBK to IN.
FD17-01	148		683.98	684.07	0.09			0.09	DBR	BL		VFGR		MBE	TLA				15		IN		HCST		Kg	Grades into CCST.
FD17-01	148		684.07	684.11	0.04			0.04	DGR	BL		VFGR		MBE					15		SBK		CCST		Kg	
FD17-01	148		684.11	684.33	0.22			0.22	BL	DBR		VFGR		MBE	ILA				8		IN		HCST		Kg	10-15 % CBR stringers.
FD17-01	148		684.33	684.37	0.04			0.04	BL										8		SBK		C&B		Kg	With bright stringers.
FD17-01	148		684.37	684.41	0.04			0.04	DGR	BL		VFGR		MBE					8		IN		CCST		Kg	Grades into CST.
FD17-01	148		684.41	684.98	0.57			0.56	DGR			VFGR		MBE					8		IN		CST		Kg	Silty near bottom. Floor ct IN, wavy, ~5° BCN.
FD17-01	148		684.98	686.29	1.31			1.30	MGR			FGR	VFGR	LA					8		IN		SST	CST	Kg	Interbedded SST/CST. BCN's 5-10°
FD17-01	148		686.29	686.52		0.23		0.23											8				R-LOSS		Kg	
FD17-01	149		686.52	687.00	0.48			0.48	MGR			VF-FGR			MBE			7	7		MBK		SLT		Kg	Grading into sst. Calcite coating on broken surfaces
FD17-01	149		687.00	689.31	2.31			2.28	MGR	GR		VF-FGR		LA	XBE			9	9	-	IN		SST	SLT	Kg	Well interbedded/ interlaminated sst and slt
FD17-01	149	689.46	689.31	690.74	1.43			1.43	MGR	GR		VF-FGR		LA	XBE			3	3		IN		SST	SLT	Kg	
FD17-01	150		690.74	691.64	0.90			0.90	MGR	GR		VF-FGR		LA	XBE		2	3	3		IN		SST	SLT	Kg	As above
FD17-01	150		691.64	692.36	0.72			0.72	LGR			F-MGR		LA	XBE			5	5		IN		SST		Kg	Fine salt and pepper sst
FD17-01	150	692.51	692.36	694.88	2.52			2.50	LGR			F-MGR		XBE	LA			7	7		IN		SST		Kg	As above
FD17-01	151		694.88	695.33	0.45			0.45	LGR			F-MGR		XBE	LA				8		IN		SST		Kg	
FD17-01	151	695.55	695.33	698.38	3.05			3.00	LGR			F-MGR		LA	XBE			10	10		SBK		SST		Kg	As above but better laminated
FD17-01	151	698.60	698.38	699.14	0.76			0.74	LGR			F-MGR		LA	XBE	WFR		14	14		IN		SST		Kg	
FD17-01	152		699.14	700.92	1.78			1.77	LGR	MGR		FGR		LA	MBE			6	6		IN		SST		Kg	Fines downward with few bands and clasts of cst. Sharp bottom contact (8 degrees)
FD17-01	152		700.92	701.43	0.51			0.51	MGR	LGR		VF-FGR		LA	TLA			7	7		IN		SLT	SST	Kg	
FD17-01	152	701.65	701.43	703.32	1.89			1.87	MGR	LGR		VF-FGR		LA	MBE		8		8		IN		SST	CST	Kg	With bands/lamina of cst. Becomes massive downwards
FD17-01	153		703.32	704.43	1.11			1.11	LGR			FGR		MBE	LA		4		4		IN		SST		Kg	
FD17-01	153	704.70	704.43	707.44	3.01			3.00	LGR	GR		FGR	VF-FGR	MBE			2	8	5		IN		SST		Kg	Irregular slt bands in the top half
FD17-01	153	707.75	707.44	707.53	0.09			0.09	LGR			VF-FGR		MBE					5		SO		SST		Kg	
FD17-01	154		707.53	710.52	2.99			2.97	LGR			VF-FGR		MBE	TLA		7	5	6		IN		SST		Kg	
FD17-01	154	710.79	710.52	711.82	1.30			1.29	LGR			VF-FGR		MBE	TLA				6		IN		SST		Kg	The last 40 cm is cut by a joint at approx. 10 degrees to core axis filled with white soft mineral (talc)
FD17-01	155		711.82	713.59	1.77			1.76	LGR		SWE	VF-FGR		MBE					6		MBK		SST		Kg	At 0.90 m from top is 1.50 m fractured zone with weathering on surfaces and moderately broken core. Filled with white mineral (gypsum/anhydrite). Similar structure near bottom
FD17-01	155	713.84	713.59	716.05	2.46			2.45	LGR			VF-FGR		MBE		MFR			5		SBK		SST		Kg	Top 1m cut by joint filled with white clay mineral mineral running at approx. 10 degrees to core axis. No visible laminations for BCN measurements
FD17-01	156		716.05	716.53	0.48			0.48	LGR			VF-FGR				WFR		5	5		SBK		SST		Kg	As above with top 5cm cut by fracture/joint continued in the next round
FD17-01	156	716.89	716.53	719.58	3.05			3.04	LGR			F-MGR		MBE		WFR		5	5		SBK		SST		Kg	Top 0.45 m cut by same type of joints as previously described
FD17-01	156	719.94	719.58	720.21	0.63			0.63	DGR	LGR		VF-FGR		WBE	ILA			5	5		SBK		CST	SST	Kg	Slightly broken at the top part. Cst with irregular sst bands. Small sandy RCL in the cst
FD17-01	157		720.21	720.63	0.42			0.42	LGR	DGR		FGR	VFGR	WBE	ILA		7	5	6		IN		SST	CST	Kg	As above but it is sst dominant. Sharp bottom contact at 5 BCN
FD17-01	157		720.63	721.45	0.82			0.82	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		721.45	721.49	0.04			0.04	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		721.49	721.58	0.09			0.09	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		721.58	721.78	0.20			0.20	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		721.78	721.83	0.05			0.05	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		721.83	721.89	0.06			0.06	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		721.89	722.11	0.22			0.22	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		722.11	722.15	0.04			0.04	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		722.15	722.20	0.05			0.05	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		722.20	722.44	0.24			0.24	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	157		722.44	722.47	0.03			0.03	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		722.47	722.51	0.04			0.04	LGR			FGR	FGR	TLA	ILA				5		IN		SST		Kg	With sideritic concretions
FD17-01	157		722.51	722.69	0.18			0.18	LGR			FGR	FGR	TLA	ILA			5	5		IN		SST		Kg	With sideritic concretions
FD17-01	157	722.99	722.69	722.78	0.09			0.09	LGR	MGR		FGR	FGR	TLA					10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		722.78	722.83	0.05			0.05	LGR	MGR		FGR	FGR	TLA					10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		722.83	722.99	0.16			0.16	LGR	MGR		FGR	FGR	TLA					10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		722.99	723.04	0.05			0.05	LGR	MGR		FGR	FGR	TLA					10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		723.04	723.10	0.06			0.06	LGR	MGR		FGR	FGR	TLA					10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		723.10	723.16	0.06			0.06	LGR	MGR		FGR	FGR	TLA					10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		723.16	723.31	0.15			0.15	LGR	MGR		FGR	FGR	TLA				10	10		IN		SST		Kg	SST with some silty bands/lamina
FD17-01	157		723.31	723.34	0.03			0.03	DGR	MGR		VFGR	FGR	WBE		PO	8		8		SBK		CST		Kg	With thin sst bands/lamina.
FD17-01	157		723.34	723.39	0.05			0.05	DGR	MGR		VFGR	FGR	WBE		PO			8		SBK		CST		Kg	With thin sst bands/lamina.
FD17-01	157		723.39	723.57	0.18			0.18	DGR	MGR		VFGR	FGR	WBE		PO			8		SBK		CST		Kg	With thin sst bands/lamina.
FD17-01	157		723.57	723.60	0.03			0.03	LGR			FGR		ILA			6		6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		723.60	723.64	0.04			0.04	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		723.64	723.69	0.05			0.05	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		723.69	723.87	0.18			0.18	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		723.87	723.91	0.04			0.04	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		723.91	724.00	0.09			0.09	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		724.00	724.29	0.29			0.29	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		724.29	724.32	0.03			0.03	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		724.32	724.38	0.06			0.06	LGR			FGR		ILA					6		SBK		SST		Kg	Few sideritic concretions. Cst lamina. Sharp bottom contact at 15 degrees BCN
FD17-01	157		724.38	724.39	0.01			0.01	DGR	MGR		VFGR	FGR	WBE	ILA		18		18		SBK		CST	SST	Kg	
FD17-01	157		724.39	724.43	0.04			0.04	DGR	MGR		VFGR	FGR	WBE	ILA				18		SBK		CST	SST	Kg	
FD17-01	157		724.43	724.50	0.07			0.07	DGR	MGR		VFGR	FGR	WBE	ILA				18		SBK		CST	SST	Kg	
FD17-01	158		724.50	724.65	0.15			0.15	MGR	LGR		FGR		ILA					8		SBK		SST		Kg	With coal bands+lams.
FD17-01	158		724.65	724.70	0.05			0.05	MGR	LGR		FGR		ILA					8		SBK		SST		Kg	With coal bands+lams.
FD17-01	158		724.70	724.72	0.02			0.02	MGR	LGR		FGR		ILA					8		SBK		SST		Kg	With coal bands+lams.
FD17-01	158		724.72	724.77	0.05			0.05	MGR	LGR		FGR		ILA				8	8		SBK		SST		Kg	With coal bands+lams.
FD17-01	158		724.77	724.90	0.13			0.13	DGR	LGR		VF-FGR		LA	MBE		13		12		SO		CST	SST	Kg	CST with sandy bands/lams. Floor ct sharp, IN.
FD17-01	158		724.90	724.99	0.09			0.09	DGR	LGR		VF-FGR		LA	MBE			10	12		SO		CST	SST	Kg	CST with sandy bands/lams. Floor ct sharp, IN.
FD17-01	158		724.99	725.02	0.03			0.03	LGR	MGR		FGR		TLA	MBE				12		SO		SST		Kg	
FD17-01	158		725.02	725.25	0.23			0.22	LGR	MGR		FGR		TLA	MBE				12		SO		SST		Kg	
FD17-01	158		725.25	725.26	0.01			0.01	LGR	MGR		FGR		TLA	MBE			12	12		SO		SST		Kg	
FD17-01	158		725.26	725.27	0.01			0.01	MGR			VF-FGR		MBE	ILA		13		11		SBK		CST	SST	Kg	Interbanded
FD17-01	158		725.27	725.35	0.08			0.08	MGR			VF-FGR		MBE	ILA				11		SBK		CST	SST	Kg	Interbanded
FD17-01	158		725.35	725.58	0.23			0.23	MGR			VF-FGR		MBE	ILA			8	11		SBK		CST	SST	Kg	Interbanded
FD17-01	158		725.58	725.77	0.19			0.19	LGR			FGR		TLA	XBE				11		IN		SST		Kg	Cut by joint || TCA with some white small crystals on surfaces (aragonite?)
FD17-01	158	726.03	725.77	726.24	0.47			0.47	LGR			FGR		TLA	XBE				5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.24	726.29	0.05			0.05	LGR			FGR		TLA	XBE				5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.29	726.34	0.05			0.05	LGR			FGR		TLA	XBE				5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.34	726.51	0.17			0.17	LGR			FGR		TLA	XBE				5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.51	726.55	0.04			0.04	LGR			FGR		TLA	XBE				5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.55	726.58	0.03			0.03	LGR			FGR		TLA	XBE				5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.58	726.77	0.19			0.19	LGR			FGR		TLA	XBE			5	5		IN		SST		Kg	Some coal stringers near bottom; Floor ct sharp, IN.
FD17-01	158		726.77	726.81	0.04			0.04	DGR	LBR		VF-FGR		ILA					2		IN		CST	SLT	Kg	One 2 cm thick coarse SST band makes transition to the CGL below. Floor ct sharp @ ~2° BCN.
FD17-01	158		726.81	726.86	0.05			0.05	DGR	LBR		VF-FGR		ILA				2	2		IN		CST	SLT	Kg	One 2 cm thick coarse SST band makes transition to the CGL below. Floor ct sharp @ ~2° BCN.
FD17-01	158		726.86	726.91	0.05			0.05											2		IN		CGL		Kg	Matrix supported, poorly sorted chert pebble CGL with many clasts of blueish grey colour; becomes more granular in bottom 0.25 cm (but still poorly sorted). Pebble size up to 2x4 cm. Floor ct with coal seam sharp @ ~0° BCN.
FD17-01	158		726.91	726.92	0.01			0.01											2		IN		CGL		Kg	Matrix supported, poorly sorted chert pebble CGL with many clasts of blueish grey colour; becomes more granular in bottom 0.25 cm (but still poorly sorted). Pebble size up to 2x4 cm. Floor ct with coal seam sharp @ ~0° BCN.
FD17-01	158		726.92	727.23	0.31			0.31											2		IN		CGL		Kg	Matrix supported, poorly sorted chert pebble CGL with many clasts of blueish grey colour; becomes more granular in bottom 0.25 cm (but still poorly sorted). Pebble size up to 2x4 cm. Floor ct with coal seam sharp @ ~0° BCN.
FD17-01	158		727.23	727.26	0.03			0.03											2		IN		CGL		Kg	Matrix supported, poorly sorted chert pebble CGL with many clasts of blueish grey colour; becomes more granular in bottom 0.25 cm (but still poorly sorted). Pebble size up to 2x4 cm. Floor ct with coal seam sharp @ ~0° BCN.
FD17-01	158		727.26	727.29	0.03			0.03											2		IN		CGL		Kg	Matrix supported, poorly sorted chert pebble CGL with many clasts of blueish grey colour; becomes more granular in bottom 0.25 cm (but still poorly sorted). Pebble size up to 2x4 cm. Floor ct with coal seam sharp @ ~0° BCN.
FD17-01	158		727.29	727.40	0.11			0.11											0		IN		CGL		Kg	Matrix supported, poorly sorted chert pebble CGL with many clasts of blueish grey colour; becomes more granular in bottom 0.25 cm (but still poorly sorted). Pebble size up to 2x4 cm. Floor ct with coal seam sharp @ ~0° BCN.
FD17-01	158		727.40	727.44	0.04		15551	0.04	GR			PEB	GRN	MBE					0		IN		CGL		Kg	Roof of Seam D: roof sample.
FD17-01	158		727.44	727.50	0.06			0.06	GR			PEB	GRN	MBE				0	0		IN		CGL		Kg	Roof of Seam D: roof sample.
FD17-01	158		727.50	727.80	0.30		15552	0.29	BL										11		MBK	D	CD&B	COAL	Kg	MBK only in the middle, the rest is IN. Floor ct gradational.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	158		727.80	727.83	0.03		15553	0.03	BL										11		SO	D	C&B		Kg	Almost 50-50 coal-HCST. Floor ct ~0° BCN, IN and very irreg shaped.
FD17-01	158		727.83	727.91	0.08			0.08	DBR	BL		VFGR		MBE	TLA			0	11		SO	D	HCST		Kg	Top and bottom 1 cm bands are coaly (probably ST). Floor ct irreg shaped (but IN).
FD17-01	158		727.91	727.96	0.05		15554	0.05											11		SO	D	CD	HCST	Kg	A dull and hard coal; somewhat heavy (minor HCST mm-thin stringers). Floor ct SO.
FD17-01	158		727.96	728.03	0.07			0.07	BL										11		SO	D	COAL	CD	Kg	Dull…
FD17-01	158		728.03	728.13	0.10			0.10	BL										11		IN	D	CDB		Kg	
FD17-01	158		728.13	728.22	0.09			0.09	BL										11		IN	D	CD		Kg	
FD17-01	158		728.22	728.44	0.22			0.22	BL										11		IN	D	CDB		Kg	(Floor ct SO, irreg shaped\\)
FD17-01	158		728.44	728.54	0.10		15555	0.10	BL										11		IN	D	HCST	COAL	Kg	HCST with 25-30% coal stringers.
FD17-01	158		728.54	728.57	0.03			0.03											11		IN	D	COAL	CDB	Kg	One irreg shaped CBN band (<1 cm thick)
FD17-01	158		728.57	728.61	0.04			0.04	BL										11		IN	D	C&B	CBN	Kg	Coal & bands of ST (40-50).
FD17-01	159		728.61	728.65		0.04		0.04											11			D	R-LOSS		Kg	
FD17-01	159		728.65	728.85	0.20		15556	0.20	BL										11		SBK	D	CDB		Kg	Thin durain bands near roof; 1cm CBN band in the middle. Bkn mostly @ floor.
FD17-01	159	729.08	728.85	729.28		0.43		0.42											11			D	C-LOSS		Kg	
FD17-01	159		729.28	729.30	0.02		15557	0.02											11			D	COAL		Kg	a little bit hard and heavier, but still…coal; thin calcite filling cleats.
FD17-01	159		729.30	729.48	0.18			0.18	BL										11		HBK	D	C&B	COAL	Kg	COAL mixed with minor pieces of HCST or ST(core rounded by drill bit).
FD17-01	159	730.00	729.48	729.75		0.27		0.27											11			D	C-LOSS		Kg	Core splitter change; possible C-LOSS
FD17-01	159		729.75	729.77	0.02		15557	0.02	BL										11		IN	D	ST		Kg	v. hard coal
FD17-01	159		729.77	729.82	0.05			0.05	BL										11		HBK	D	COAL	CBN	Kg	Pieces of hard, dull coal with bright stringers/laminae.
FD17-01	159		729.82	729.89	0.07		15558	0.07	BL										20		MBK		HCST		Kg	HCST with 25-30% coal stringers. SBK to MBK core. FLOOR SAMPLE for seam D.
FD17-01	159		729.89	730.00	0.11			0.10	DBR	BL		VFGR		MBE	TLA				20		SBK		CCST	HCST	Kg	With coal stringers; bkn only at top & bottom. FLOOR SAMPLE for seam D.
FD17-01	159		730.00	730.04	0.04		15877	0.04	BL										20		HBK		C&B		Kg	pieces of CBR mixed with CBN + HCST
FD17-01	159		730.04	730.08	0.04			0.04	DGR	BL		VFGR		MBE		PO			20		MBK		HCST		Kg	With up to 25% coal stringers.
FD17-01	159		730.08	730.12	0.04		15878	0.04	DGR			VFGR		MBE	TLA				20		IN		CST	CCST	Kg	Carbonaceous @ bottom.
FD17-01	159		730.12	730.17	0.05			0.05	DGR			VFGR		MBE	TLA				20		IN		CST	CCST	Kg	Carbonaceous @ bottom.
FD17-01	159		730.17	730.34	0.17			0.16	DGR			VFGR		MBE	TLA				20		IN		CST	CCST	Kg	Carbonaceous @ bottom.
FD17-01	159		730.34	730.39	0.05			0.05	BL	DBR		VFGR		MBE					20		IN		HCST		Kg	up to 20% coal stringers.
FD17-01	159		730.39	730.41	0.02			0.02	BL										20		HBK		COAL	CBB	Kg	(possible C-LOSS @ top?)
FD17-01	159		730.41	730.46	0.05			0.05	BL	DBR		VFGR		MBE					20		IN		HCST		Kg	some coal stringers; Floor ct, IN.
FD17-01	159		730.46	730.53	0.07			0.07	BL										20		IN		C&B	HCST	Kg	Coal & bands of HCST (40-60).
FD17-01	159		730.53	730.57	0.04			0.04	BL	DBR		VFGR		MBE	TLA				20		IN		HCST		Kg	with 10-15% coal stringers.
FD17-01	159		730.57	730.61	0.04			0.04	BL										20		HBK		C&B		Kg	wet almost PUL coal mixed with small pieces of rock.
FD17-01	159		730.61	730.71	0.10			0.09	BL	DBR		VFGR		MBE	TLA				20		SBK		HCST		Kg	up to 25% coal stringers. Grades into CCST.
FD17-01	159		730.71	730.75	0.04			0.04	DBR			VFGR		MBE	TLA				20		SBK		CCST		Kg	Thin coal stringers; Floor ct. IN.
FD17-01	159		730.75	730.77	0.02			0.02	DBR			VFGR		MBE	TLA				20		SBK		CCST		Kg	Thin coal stringers; Floor ct. IN.
FD17-01	159		730.77	730.97	0.20			0.19	DBR			VFGR		MBE	TLA			20	20		SBK		CCST		Kg	Thin coal stringers; Floor ct. IN.
FD17-01	159		730.97	731.00	0.03			0.03	DGR			VFGR		MBE	TLA				20		SBK		CST		Kg	Grades into SLT.
FD17-01	159		731.00	731.05	0.05			0.05	DGR			VFGR		MBE	TLA				20		SBK		CST		Kg	Grades into SLT.
FD17-01	159		731.05	731.08	0.03			0.03	DGR			VFGR		MBE	TLA				20		SBK		CST		Kg	Grades into SLT.
FD17-01	159		731.08	731.12	0.04			0.04	DGR			VFGR		MBE	TLA				20		SBK		CST		Kg	Grades into SLT.
FD17-01	159		731.12	731.27	0.15			0.14	GR	MGR		VF-FGR		ILA					20		IN		SLT		Kg	Grades into SST.
FD17-01	159		731.27	731.31	0.04			0.04	GR	MGR		VF-FGR		ILA					20		IN		SLT		Kg	Grades into SST.
FD17-01	159		731.31	731.35	0.04			0.04	GR	MGR		VF-FGR		ILA					20		IN		SLT		Kg	Grades into SST.
FD17-01	159		731.35	731.37	0.02			0.02	GR	MGR		VF-FGR		ILA					17		IN		SLT		Kg	Grades into SST.
FD17-01	159		731.37	731.57	0.20			0.19	LGR	MGR		FGR		MBE	ILA		20		17		IN		SST		Kg	
FD17-01	159		731.57	731.59	0.02			0.02	LGR	MGR		FGR		MBE	ILA				17		IN		SST		Kg	
FD17-01	159		731.59	731.60	0.01			0.01	LGR	MGR		FGR		MBE	ILA				17		IN		SST		Kg	
FD17-01	159		731.60	731.78	0.18			0.17	LGR	MGR		FGR		MBE	ILA			14	17		IN		SST		Kg	
FD17-01	159	732.13	731.78	731.80	0.02			0.02	LGR	MGR		FGR		MBE	ILA		20		20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		731.80	731.85	0.05			0.05	LGR	MGR		FGR		MBE	ILA				20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		731.85	731.90	0.05			0.05	LGR	MGR		FGR		MBE	ILA				20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		731.90	732.10	0.20			0.19	LGR	MGR		FGR		MBE	ILA				20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		732.10	732.15	0.05			0.05	LGR	MGR		FGR		MBE	ILA				20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		732.15	732.20	0.05			0.05	LGR	MGR		FGR		MBE	ILA				20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		732.20	732.26	0.06			0.06	LGR	MGR		FGR		MBE	ILA				20		IN		SST		Kg	Floor ct. irreg shaped, IN.
FD17-01	159		732.26	732.43	0.17			0.17	GR			VFGR		MBE	LA		10		10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	159		732.43	732.47	0.04			0.04	GR			VFGR		MBE	LA				10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	159		732.47	732.50	0.03			0.03	GR			VFGR		MBE	LA				10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	159		732.50	732.73	0.23			0.23	GR			VFGR		MBE	LA				10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	159		732.73	732.77	0.04			0.04	GR			VFGR		MBE	LA				10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	159		732.77	732.80	0.03			0.03	GR			VFGR		MBE	LA				10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	159		732.80	733.28	0.48			0.47	GR			VFGR		MBE	LA				10		IN		CST		Kg	Blueish grey, with occnl sideritic concretions. Mostly massive. Increasingly silty towards bottom.
FD17-01	160		733.28	733.45	0.17			0.17	GR			VF-FGR		MBE	ILA				13		IN		SLT		Kg	Grades into fine SST. Floor ct IN.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	160		733.45	733.69	0.24			0.23	MGR	LGR		FGR	MGR	XBE	TLA			15	15		IN		SST		Kg	With CST bands+lams towards bottom, defining LA @ ~15 BCN. Floor ct IN.
FD17-01	160		733.69	734.41	0.72			0.70	GR			VFGR		MBE	TLA				13		IN		CST		Kg	Sandy bands near top; increasingly carb near bottom; occnly sideritic concretions.
FD17-01	160		734.41	734.54	0.13			0.13	DGR	DBR		VFGR		MBE			10		10		SBK		CCST		Kg	Fissile; one irreg shaped siderite band in top half.
FD17-01	160	735.18	734.54	734.99		0.45		0.44											10				R-LOSS		Kg	
FD17-01	160		734.99	735.13	0.14			0.14	DBR	BL		VFGR		MBE	TLA				10		MBK		HCST		Kg	Coal stringers near top.
FD17-01	160		735.13	735.21	0.08			0.08	DBR			VFGR		MBE					10		IN		CCST		Kg	Some coal stringers. Grades into HCST
FD17-01	160		735.21	735.26	0.05			0.05	DGR	BL		VFGR		TLA					10		IN		HCST		Kg	Grades into CCST.
FD17-01	160		735.26	735.34	0.08			0.08	DBR			VFGR		MBE					10		SO		CCST		Kg	Some coal stringers. Grades into HCST
FD17-01	160		735.34	735.50	0.16			0.16	DBR	BL		VFGR		MBE	TLA	WFR			10		SBK		HCST	CCST	Kg	Interbedded HCST/CCST. Most of the coal stringers are near top. HFR @ bottom 3 cm.
FD17-01	160		735.50	735.64		0.14		0.14											10				C-LOSS	R-LOSS	Kg	Loss in coaly zone
FD17-01	160		735.64	735.70	0.06			0.06	BL						ILA	HFR			15		HBK		C&B		Kg	Coal & bands of HCST (60-40).
FD17-01	160		735.70	735.73		0.03		0.03											15				R-LOSS		Kg	
FD17-01	160		735.73	735.83	0.10			0.09	DBR	BL		VFGR		MBE	TLA				20		IN		HCST		Kg	Coal stringers throughout. Grades into CCST.
FD17-01	160		735.83	736.01	0.18			0.17	DGR	BL		VFGR		MBE	ILA				20		SO		CCST		Kg	Occnly thin coal stringers. Grades into CST.
FD17-01	160		736.01	736.43	0.42			0.39	GR			VFGR		MBE	LA			20	20		IN		CST		Kg	Minor thin coal stringers. Grades into SLT.
FD17-01	160		736.43	736.96	0.53			0.49	MGR			VF-FGR		MBE	LA			22	22		IN		SLT		Kg	Occasionally sandy bands. Floor ct irreg shaped (but IN).
FD17-01	160		736.96	737.91	0.95			0.88	MGR	LGR		FGR		ILA	BIO		22		22		IN		SST		Kg	Bottom 0.42 m: mottled look + signs of BIO. BCN in the middle ~22°
FD17-01	161		737.91	738.04	0.13			0.12	LGR	MGR		FGR		ILA					18	MFI	SO		SST		Kg	
FD17-01	161	738.23	738.04	741.13	3.09			3.05	LGR	MGR		FGR	VF-FGR	ILA			8	10	9	SFI	IN		SST		Kg	With SLT lams + bands
FD17-01	161	741.27	741.13	742.16	1.03			1.02	LGR	MGR		FGR	VFGR	ILA	WBE		13	4	9	MFI	IN		SST	SLT	Kg	As above; BCN varies: 13-23-26-15-8-4°°
FD17-01	162		742.16	744.26	2.10			2.08	LGR	MGR		FGR	VFGR	ILA	WBE		4	12	8	MFI	SBK		SST	SLT	Kg	V. irreg bedding/la (5 to 12° BCN)
FD17-01	162	744.32	744.26	746.46	2.20			2.13	LGR	MGR		FGR	VF-FGR	ILA	WBE		12	18	15	SFI	IN		SST	SLT	Kg	More silty bands downward.
FD17-01	163		746.46	747.15	0.69			0.67	MGR	LGR		VF-FGR		MBE	ILA		17	6	12	MFI	IN		SLT	SST	Kg	
FD17-01	163	747.37	747.15	747.57	0.42			0.41	MGR	LGR		VF-FGR	FGR	ILA	TLA		8		9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		747.57	747.59	0.02			0.02	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		747.59	747.63	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		747.63	747.79	0.16			0.16	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		747.79	747.83	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		747.83	747.88	0.05			0.05	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		747.88	748.09	0.21			0.21	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.09	748.12	0.03			0.03	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.12	748.15	0.03			0.03	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.15	748.35	0.20			0.20	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.35	748.43	0.08			0.08	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.43	748.45	0.02			0.02	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.45	748.49	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.49	748.69	0.20			0.20	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.69	748.73	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.73	748.77	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.77	748.98	0.21			0.21	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		748.98	749.02	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.02	749.06	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.06	749.29	0.23			0.23	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.29	749.34	0.05			0.05	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.34	749.46	0.12			0.12	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.46	749.51	0.05			0.05	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.51	749.56	0.05			0.05	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.56	749.61	0.05			0.05	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.61	749.80	0.19			0.19	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.80	749.84	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.84	749.86	0.02			0.02	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.86	749.90	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		749.90	750.12	0.22			0.22	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		750.12	750.15	0.03			0.03	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		750.15	750.19	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163		750.19	750.25	0.06			0.06	MGR	LGR		VF-FGR	FGR	ILA	TLA			10	9	MFI	IN		SST	SLT	Kg	Bedding varies (8-5-14-10) and slightly turns direction..
FD17-01	163	750.42	750.25	750.40	0.15			0.15	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	SFI	IN		SST	SLT	Kg	
FD17-01	163		750.40	750.44	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA				9	SFI	IN		SST	SLT	Kg	
FD17-01	163		750.44	750.48	0.04			0.04	MGR	LGR		VF-FGR	FGR	ILA	TLA			9	9	SFI	IN		SST	SLT	Kg	
FD17-01	164		750.48	750.70	0.22			0.22	LGR	MGR		VF-FGR	FGR	ILA	TLA				10	SFI	IN		SST	SST	Kg	
FD17-01	164		750.70	750.74	0.04			0.04	LGR	MGR		VF-FGR	FGR	ILA	TLA				10	SFI	IN		SST	SST	Kg	
FD17-01	164		750.74	750.78	0.04			0.04	LGR	MGR		VF-FGR	FGR	ILA	TLA				10	SFI	IN		SST	SST	Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	164		750.78	750.98	0.20			0.20	LGR	MGR		VF-FGR	FGR	ILA	TLA				10	SFI	IN		SST	SST	Kg	
FD17-01	164		750.98	751.02	0.04			0.04	LGR	MGR		VF-FGR	FGR	ILA	TLA				10	SFI	IN		SST	SST	Kg	
FD17-01	164		751.02	751.07	0.05			0.05	LGR	MGR		VF-FGR	FGR	ILA	TLA				10	SFI	IN		SST	SST	Kg	
FD17-01	164		751.07	751.08	0.01			0.01	LGR	MGR		VF-FGR	FGR	ILA	TLA			10	10	SFI	IN		SST	SST	Kg	
FD17-01	164		751.08	751.71	0.63			0.61	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		751.71	751.74	0.03			0.03	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		751.74	751.78	0.04			0.04	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		751.78	752.00	0.22			0.21	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.00	752.04	0.04			0.04	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.04	752.08	0.04			0.04	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.08	752.28	0.20			0.19	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.28	752.33	0.05			0.05	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.33	752.38	0.05			0.05	MGR			VF-FGR	VFGR	WBE	LA				13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.38	752.41	0.03			0.03	MGR			VF-FGR	VFGR	WBE	LA			13	13	WFI	SBK		SLT	CST	Kg	Bottom ct @ ~13 BCN (intact)
FD17-01	164		752.41	752.59	0.18			0.18	DGR	MGR		VFGR		MBE					13		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		752.59	752.61	0.02			0.02	DGR	MGR		VFGR		MBE					13		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		752.61	752.64	0.03			0.03	DGR	MGR		VFGR		MBE					13		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		752.64	752.85	0.21			0.20	DGR	MGR		VFGR		MBE					13		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		752.85	752.90	0.05			0.05	DGR	MGR		VFGR		MBE					13		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		752.90	752.93	0.03			0.03	DGR	MGR		VFGR		MBE					13		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		752.93	753.14	0.21			0.21	DGR	MGR		VFGR		MBE					10		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		753.14	753.17	0.03			0.03	DGR	MGR		VFGR		MBE					10		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		753.17	753.19	0.02			0.02	DGR	MGR		VFGR		MBE					10		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164		753.19	753.25	0.06			0.06	DGR	MGR		VFGR		MBE					10		IN		CST	CCST	Kg	Weakly to mod carb, with minor thin coal stringers.
FD17-01	164	753.47	753.25	753.41	0.16			0.16	DGR			VFGR		MBE				8	8		SO		CCST		Kg	
FD17-01	165		753.41	753.48	0.07			0.07	DBR			VFGR		MBE	LA			7	7		IN		CCST		Kg	
FD17-01	165		753.48	753.54	0.06		15568	0.06	DBR			VFGR		MBE	LA				7		IN		CCST		Kg	Floor ct with coal is IN. E Seam ROOF SAMPLE.
FD17-01	165		753.54	753.58	0.04			0.04	DBR			VFGR		MBE	LA			7	7		IN		CCST		Kg	Floor ct with coal is IN. E Seam ROOF SAMPLE.
FD17-01	165		753.58	753.60	0.02			0.02	BL										8		IN	ERCZ	CBR		Kg	Floor ct IN.
FD17-01	165		753.60	753.62	0.02		15569	0.02	BL						TLA				8		IN	ERCZ	C&B		Kg	
FD17-01	165		753.62	753.67	0.05			0.05	DBR	BL		VFGR		MBE	TLA				8		IN	ERCZ	HCST		Kg	with coal stringers. (Interval is 0.055 m)
FD17-01	165		753.67	753.74	0.07			0.07	BL										8		SBK	E	CBN	CBR	Kg	approx. 50% thin bright coal stringers. Floor ct IN @ ~ 8° BCN.
FD17-01	165		753.74	754.06	0.32		15570	0.32	BL										8		SBK	E	CD&B		Kg	Floor ct IN.
FD17-01	165		754.06	754.10	0.04			0.04	BL										8		IN	E	CBN		Kg	somewhat hard coal with tiny bright stringers.
FD17-01	165		754.10	754.20	0.10		15571	0.10	BL										8		IN	E	CDB		Kg	Minor 1 cm thin HCST band approx. in the middle; Some durain near top & near bottom.
FD17-01	165		754.20	754.24	0.04			0.04	DBR	BL		VFGR		MBE	TLA				8		IN	E	HCST		Kg	
FD17-01	165		754.24	754.39	0.15		15572	0.15	BL										8		SBK	E	CD&B		Kg	
FD17-01	165		754.39	754.53		0.14		0.14											8			E	C-LOSS		Kg	
FD17-01	165		754.53	754.88	0.35		15572	0.35	BL										8		SBK	E	CD&B		Kg	Durain in bottom 10-15 cm.
FD17-01	165		754.88	754.98	0.10		15573	0.10	DBR	BL		VFGR		MBE	ILA				8		IN		HCST		Kg	Up to 15% coal stringers. E Seam FLOOR SAMPLE.
FD17-01	165		754.98	755.02	0.04		15618-15619	0.04	DBR	BL		VFGR		MBE	ILA				8		IN		HCST		Kg	Up to 15% coal stringers. Grades into CCST
FD17-01	165		755.02	755.04	0.02			0.02	DBR	BL		VFGR		MBE	ILA				8		IN		HCST		Kg	Up to 15% coal stringers. Grades into CCST
FD17-01	165		755.04	755.07	0.03			0.03	DGR			VFGR		MBE				8	8		IN		CCST		Kg	Grades into CST (floor ct. IN).
FD17-01	165		755.07	755.11	0.04		15620	0.04	DGR	MGR		VFGR		MBE					8		IN		CST		Kg	Grades into SLT (floor ct. IN).
FD17-01	165		755.11	755.16	0.05			0.05	MGR			VF-FGR		MBE	ILA				8	WFI	SO		SLT		Kg	Grades into SST (floor ct. IN).
FD17-01	165		755.16	755.17	0.01			0.01	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.17	755.24	0.07			0.07	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.24	755.45	0.21			0.21	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.45	755.46	0.01			0.01	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.46	755.48	0.02			0.02	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.48	755.51	0.03			0.03	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.51	755.65	0.14			0.14	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.65	755.71	0.06			0.06	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.71	755.74	0.03			0.03	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.74	755.78	0.04			0.04	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.78	755.98	0.20			0.20	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		755.98	756.01	0.03			0.03	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		756.01	756.04	0.03			0.03	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		756.04	756.24	0.20			0.20	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		756.24	756.28	0.04			0.04	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		756.28	756.32	0.04			0.04	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.
FD17-01	165		756.32	756.43	0.11			0.11	MGR	LGR		FGR	MGR	WBE	ILA				8	MFI	IN		SST		Kg	With coaly+carb stringers/lams. Fines downwards.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	165	756.51	756.43	756.54	0.11			0.11	MGR	LGR		VF-FGR		LA					15	WFI	IN		SST	SLT	Kg	Floor ct. irreg shaped (but IN).
FD17-01	165		756.54	756.60	0.06			0.06	MGR	LGR		VF-FGR		LA					15	WFI	IN		SST	SLT	Kg	Floor ct. irreg shaped (but IN).
FD17-01	165		756.60	756.63	0.03			0.03	MGR	LGR		VF-FGR		LA					15	WFI	IN		SST	SLT	Kg	Floor ct. irreg shaped (but IN).
FD17-01	165		756.63	756.67	0.04			0.04	MGR	LGR		VF-FGR		LA					15	WFI	IN		SST	SLT	Kg	Floor ct. irreg shaped (but IN).
FD17-01	165		756.67	756.83	0.16			0.15	DGR	GR		VFGR		MBE	TLA				15		IN		CST	CCST	Kg	Top 0.37m: mod carb with coal stringers. Becomes siltier towards bottom.
FD17-01	165		756.83	756.87	0.04			0.04	DGR	GR		VFGR		MBE	TLA				15		IN		CST	CCST	Kg	Top 0.37m: mod carb with coal stringers. Becomes siltier towards bottom.
FD17-01	165		756.87	756.91	0.04			0.04	DGR	GR		VFGR		MBE	TLA				15		IN		CST	CCST	Kg	Top 0.37m: mod carb with coal stringers. Becomes siltier towards bottom.
FD17-01	165		756.91	757.15	0.24			0.23	DGR	GR		VFGR		MBE	TLA				15		IN		CST	CCST	Kg	Top 0.37m: mod carb with coal stringers. Becomes siltier towards bottom.
FD17-01	165		757.15	757.19	0.04			0.04	DGR	GR		VFGR		MBE	TLA				15		IN		CST	CCST	Kg	Top 0.37m: mod carb with coal stringers. Becomes siltier towards bottom.
FD17-01	165		757.19	757.22	0.03			0.03	DGR	GR		VFGR		MBE	TLA			15	15		IN		CST	CCST	Kg	Top 0.37m: mod carb with coal stringers. Becomes siltier towards bottom.
FD17-01	165		757.22	757.37	0.15			0.14	GR			VF-FGR		ILA	SLS				15	WFI	SO		SLT	SST	Kg	SST bands form soft sediment deformations in the middle of interval, settling downwards the floor ct.
FD17-01	165		757.37	757.41	0.04			0.04	GR			VF-FGR		ILA	SLS				15	WFI	SO		SLT	SST	Kg	SST bands form soft sediment deformations in the middle of interval, settling downwards the floor ct.
FD17-01	165		757.41	757.47	0.06			0.06	GR			VF-FGR		ILA	SLS				15	WFI	SO		SLT	SST	Kg	SST bands form soft sediment deformations in the middle of interval, settling downwards the floor ct.
FD17-01	165		757.47	757.50	0.03			0.03	GR			VF-FGR		ILA	SLS				15	WFI	SO		SLT	SST	Kg	SST bands form soft sediment deformations in the middle of interval, settling downwards the floor ct.
FD17-01	165		757.50	757.67	0.17			0.16	LGR	MGR		FGR		WBE	ILA				19	MFI	SO		SST		Kg	
FD17-01	165		757.67	757.71	0.04			0.04	LGR	MGR		FGR		WBE	ILA				19	MFI	SO		SST		Kg	
FD17-01	165		757.71	757.74	0.03			0.03	LGR	MGR		FGR		WBE	ILA				19	MFI	SO		SST		Kg	
FD17-01	165		757.74	757.85	0.11			0.10	LGR	MGR		FGR		WBE	ILA				19	MFI	SO		SST		Kg	
FD17-01	166		757.85	757.95	0.10			0.09	MGR	LGR		FGR	VF-FGR	TLA	ILA		25		19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		757.95	758.00	0.05			0.05	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.00	758.03	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.03	758.06	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.06	758.24	0.18			0.17	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.24	758.28	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.28	758.33	0.05			0.05	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.33	758.53	0.20			0.19	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.53	758.56	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.56	758.59	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.59	758.78	0.19			0.18	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.78	758.82	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.82	758.86	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		758.86	759.07	0.21			0.20	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		759.07	759.10	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		759.10	759.13	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		759.13	759.33	0.20			0.19	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		759.33	759.36	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		759.36	759.38	0.02			0.02	MGR	LGR		FGR	VF-FGR	TLA	ILA				19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166		759.38	759.50	0.12			0.11	MGR	LGR		FGR	VF-FGR	TLA	ILA			12	19	MFI	IN		SLT	SST	Kg	SLT with SST (LGR, FGR) interbeds. BCN varies: 25-30-20-15-8-5-2-10, with wider angles @ contacts SST/SLT; inside the slt shallow angles. Core broken @ bottom.
FD17-01	166	759.56	759.50	759.63	0.13			0.13	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR	15		13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		759.63	759.67	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		759.67	759.72	0.05			0.05	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	166		759.72	759.92	0.20			0.19	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		759.92	759.98	0.06			0.06	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		759.98	760.16	0.18			0.18	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		760.16	760.20	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		760.20	760.24	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		760.24	760.48	0.24			0.23	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		760.48	760.52	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		760.52	760.55	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		760.55	761.07	0.52			0.51	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.07	761.10	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.10	761.14	0.04			0.04	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.14	761.37	0.23			0.22	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.37	761.39	0.02			0.02	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.39	761.42	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR			13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.42	761.65	0.23			0.22	MGR	LGR		FGR	VF-FGR	TLA	ILA	MFR		10	13	WFI	SBK		SLT	SST	Kg	Aa above, with more subtle BCN's. Bkn/fractured along joints running @~10° TCA.
FD17-01	166		761.65	761.69	0.04			0.04	MGR	DGR		VFGR			MBE				10		SO		CST		Kg	*(not sure if this piece of core belongs in this above sequence…)*
FD17-01	166		761.69	761.72	0.03			0.03	MGR	DGR		VFGR			MBE				10		SO		CST		Kg	*(not sure if this piece of core belongs in this above sequence…)*
FD17-01	166		761.72	761.95	0.23			0.23	MGR	DGR		VFGR			MBE				10		SO		CST		Kg	*(not sure if this piece of core belongs in this above sequence…)*
FD17-01	166		761.95	761.98	0.03			0.03	MGR	DGR		VFGR			MBE				10		SO		CST		Kg	*(not sure if this piece of core belongs in this above sequence…)*
FD17-01	166		761.98	762.01	0.03			0.03	MGR	DGR		VFGR			MBE				10		SO		CST		Kg	*(not sure if this piece of core belongs in this above sequence…)*
FD17-01	166		762.01	762.08	0.07			0.07	MGR	DGR		VFGR			MBE			10	10		SO		CST		Kg	*(not sure if this piece of core belongs in this above sequence…)*
FD17-01	167		762.08	762.16	0.08			0.08	MGR	DGR		VFGR		LA	MBE		15		15		IN		CST		Kg	
FD17-01	167		762.16	762.18	0.02			0.02	MGR	DGR		VFGR		LA	MBE				15		IN		CST		Kg	
FD17-01	167		762.18	762.22	0.04			0.04	MGR	DGR		VFGR		LA	MBE				15		IN		CST		Kg	
FD17-01	167		762.22	762.37	0.15			0.14	MGR	DGR		VFGR		LA	MBE				15		IN		CST		Kg	
FD17-01	167		762.37	762.39	0.02			0.02	MGR	DGR		VFGR		LA	MBE				15		IN		CST		Kg	
FD17-01	167		762.39	762.42	0.03			0.03	MGR	DGR		VFGR		LA	MBE				15		IN		CST		Kg	
FD17-01	167		762.42	762.45	0.03			0.03	MGR	DGR		VFGR		LA	MBE				15		IN		CST		Kg	
FD17-01	167	762.61	762.45	762.61	0.16			0.16	MGR	DGR		VFGR		MBE	LA				5		IN		CST		Kg	
FD17-01	167		762.61	762.70	0.09			0.09	MGR	DGR		VFGR		MBE	LA			5	5		IN		CST		Kg	
FD17-01	167		762.70	762.72	0.02		15574	0.02	MGR	DGR		VFGR		MBE	LA				5		IN		CST		Kg	ROOF SAMP.E for Seam F1
FD17-01	167		762.72	762.75	0.03			0.03	MGR	DGR		VFGR		MBE	LA				5		IN		CST		Kg	ROOF SAMP.E for Seam F1
FD17-01	167		762.75	762.78	0.03			0.03	MGR	DGR		VFGR		MBE	LA				5		IN		CST		Kg	ROOF SAMP.E for Seam F1
FD17-01	167		762.78	762.80	0.02			0.02	MGR	DGR		VFGR		MBE	LA				5		IN		CST		Kg	ROOF SAMP.E for Seam F1
FD17-01	167		762.80	763.04	0.24		15575	0.24	BL										8		IN	F1	CD		Kg	
FD17-01	167		763.04	763.16	0.12			0.12	BL										8		SO	F1	CD&B		Kg	
FD17-01	167		763.16	763.21	0.05		15576	0.05	BL										8		IN	F1	ST		Kg	Some CBR stringers @ floor ct (IN).
FD17-01	167		763.21	763.29	0.08			0.08	DBR	BL		VFGR		MBE					8		SO	F1	HCST		Kg	Floor ct very irreg shaped.
FD17-01	167		763.29	763.42	0.13		15577	0.13	BL										8		SBK	F1	CBB		Kg	
FD17-01	167		763.42	763.44	0.02			0.02	BL	DGR		VFGR							8		MBK	F1	ST		Kg	Stoney coal(?) Possible LOSS above.
FD17-01	167		763.44	763.48	0.04			0.04	BL										8		IN	F1	COAL	CD	Kg	Dull & hard! Floor ct IN
FD17-01	167		763.48	763.52	0.04			0.04	BL										8		SBK	F1	CD&B		Kg	Bkn at floor.
FD17-01	167		763.52	763.68	0.16			0.16	BL										8	MFI	IN	F1	CBB		Kg	Floor ct irreg shaped (but IN).
FD17-01	167		763.68	763.73	0.05		15578	0.05	BL			VFGR							8		SO	F1	ST		Kg	with 5-6 mm thin vitrain stringers at bottom.
FD17-01	167		763.73	763.78	0.05			0.05	BL										8		IN	F1	CBB		Kg	Floor ct irreg shaped (but IN).
FD17-01	167		763.78	763.83	0.05			0.05	BL	DBR		VFGR							8		IN	F1	HCST		Kg	with coal stringers; very irreg shaped floor ct.
FD17-01	167		763.83	764.18	0.35		15579	0.35	BL										8		IN	F1	CD&B		Kg	SBK at bottom 3 cm.
FD17-01	167		764.18	764.28	0.10			0.10	BL										8		IN	F1	CBN	COAL	Kg	V. dull and somewhat heavier, with a few thin bright stringers. Bottom 4 cm looks Dull & hard...
FD17-01	167		764.28	764.48	0.20			0.20	BL							PO			8		IN	F1	CD&B		Kg	HBK @ bottom 2 cm.
FD17-01	167		764.48	764.51	0.03		15580	0.03	DBR	BL		VFGR		MBE	ILA				8		SBK		HCST		Kg	Coal stringers @ top; floor IN. FLOOR SAMPLE for seam F1.
FD17-01	167		764.51	764.54	0.03			0.03	DBR	BL		VFGR		MBE	ILA				8		SBK		HCST		Kg	Coal stringers @ top; floor IN. FLOOR SAMPLE for seam F1.
FD17-01	167		764.54	764.59	0.05			0.05	DGR	BL		VFGR		MBE	TLA			5	5		IN		CCST		Kg	Coal stringers…here & there. Floor ct IN. FLOOR SAMPLE for seam F1.
FD17-01	167		764.59	764.70	0.11			0.11	BL	LBR		FGR		ILA					5		IN		CSST		Kg	Fine carb sandstone. Grades into SLT (floor ct. IN).
FD17-01	167		764.70	764.72	0.02			0.02	BL	LBR		FGR		ILA					22		IN		CSST		Kg	Fine carb sandstone. Grades into SLT (floor ct. IN).
FD17-01	167		764.72	764.76	0.04			0.04	BL	LBR		FGR		ILA					22		IN		CSST		Kg	Fine carb sandstone. Grades into SLT (floor ct. IN).
FD17-01	167		764.76	765.01	0.25			0.23	BL	LBR		FGR		ILA					22		IN		CSST		Kg	Fine carb sandstone. Grades into SLT (floor ct. IN).
FD17-01	167		765.01	765.04	0.03			0.03	MGR	DGR		VF-FGR		MBE					22		IN		SLT		Kg	Grades into CST (floor ct. IN).
FD17-01	167		765.04	765.17	0.13			0.12	MGR	DGR		VF-FGR		MBE				22	22		IN		SLT		Kg	Grades into CST (floor ct. IN).
FD17-01	167		765.17	765.20	0.03			0.03	DGR			VFGR		MBE					22		IN		CST		Kg	Grades into CCST.
FD17-01	167		765.20	765.22	0.02			0.02	DGR			VFGR		MBE					22		IN		CST		Kg	Grades into CCST.
FD17-01	167		765.22	765.34	0.12			0.11	DGR			VFGR		MBE					22		IN		CST		Kg	Grades into CCST.
FD17-01	167		765.34	765.44	0.10			0.09	DGR	BL		VFGR		MBE					22		IN		CCST		Kg	Grades into HCST

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	167		765.44	765.49	0.05			0.05	BL	DBR		VFGR		TLA		PO			22		IN		HCST		Kg	
FD17-01	167		765.49	765.51	0.02			0.02	BL										22		SBK		CBB		Kg	Almost IN piece of coal; visible vitrain.
FD17-01	167	765.66	765.51	765.59		0.08		0.07											22				C-LOSS		Kg	0.08 m
FD17-01	167		765.59	765.62	0.03			0.03	DBR	BL		VFGR							10		SO		HCST		Kg	
FD17-01	167		765.62	765.64	0.02			0.02	BL										10		IN		C&B		Kg	Coal & bands of HCST (50-50).
FD17-01	167		765.64	765.69	0.05			0.05	DBR	BL		VFGR		MBE	TLA				10		SO		HCST		Kg	With 15-20% coal stringers. Grades into CCST.
FD17-01	167		765.69	765.73	0.04			0.04	DBR	BL		VFGR		MBE	TLA			10	10		SO		HCST		Kg	With 15-20% coal stringers. Grades into CCST.
FD17-01	167		765.73	765.78	0.05			0.05	DGR	BL		VFGR		MBE					10		IN		CCST	HCST	Kg	Thin coal stringers. Bkn @ bottom.
FD17-01	167		765.78	765.85	0.07			0.07	DGR	BL		VFGR		MBE					5		IN		CCST	HCST	Kg	Thin coal stringers. Bkn @ bottom.
FD17-01	167		765.85	765.98	0.13			0.13	DGR	BL		VFGR		MBE	TLA				5		IN		CCST	CST	Kg	Aa above. Grades into HCST.
FD17-01	167		765.98	766.02	0.04			0.04	DGR	BL		VFGR		MBE	TLA				5		IN		CCST	CST	Kg	Aa above. Grades into HCST.
FD17-01	167		766.02	766.06	0.04			0.04	DGR	BL		VFGR		MBE	TLA				5		IN		CCST	CST	Kg	Aa above. Grades into HCST.
FD17-01	167		766.06	766.10	0.04			0.04	DGR	BL		VFGR		MBE	TLA		5		5		IN		CCST	CST	Kg	Aa above. Grades into HCST.
FD17-01	167		766.10	766.14	0.04			0.04	BL	DBR		VFGR		TLA				4	4		SO		HCST		Kg	Floor ct at ~4° BCN (IN).
FD17-01	167		766.14	766.22	0.08			0.08	BL					ILA					5		SO		ST	CBN	Kg	Hard + competent coal with minor bright lams.
FD17-01	168		766.22	766.26	0.04			0.04	BL							PO			5		IN		C&B		Kg	Coal & bands of HCST (50-50). Floor ct IN.
FD17-01	168		766.26	766.28	0.02			0.02	BL							PO			5		IN		C&B		Kg	Coal & bands of HCST (50-50). Floor ct IN.
FD17-01	168		766.28	766.30	0.02			0.02	DGR	BL		VFGR		MBE					5		SO		CCST		Kg	Floor ct IN.
FD17-01	168		766.30	766.32	0.02			0.02	BL										5		IN		CBN	COAL	Kg	
FD17-01	168		766.32	766.37	0.05			0.05	BL										5		IN		CBN	COAL	Kg	
FD17-01	168		766.37	766.40	0.03			0.03	BL										5		SO		C&B		Kg	Coal & bands of HCST (50-50); visible vitrain. Floor ct IN.
FD17-01	168		766.40	766.45	0.05			0.05	DGR	BL		VFGR		MBE	TLA				5		SO		HCST	CCST	Kg	Floor ct IN.
FD17-01	168		766.45	766.48	0.03			0.03	BL										5		SO		CBB		Kg	
FD17-01	168		766.48	766.50	0.02			0.02	DBR	BL		VFGR		TLA					10		SO		CCST	C&B	Kg	Coal stringers mostly @ top 2 cm.
FD17-01	168		766.50	766.53	0.03			0.03	DBR	BL		VFGR		TLA					10		SO		CCST	C&B	Kg	Coal stringers mostly @ top 2 cm.
FD17-01	168		766.53	766.56	0.03			0.03	DBR	BL		VFGR		TLA					10		SO		CCST	C&B	Kg	Coal stringers mostly @ top 2 cm.
FD17-01	168		766.56	766.62	0.06			0.06	DBR	BL		VFGR		TLA					10		SO		CCST	C&B	Kg	Coal stringers mostly @ top 2 cm.
FD17-01	168		766.62	766.73	0.11			0.11	BL	DBR		VFGR		TLA					10		IN		HCST		Kg	With 15-20% coal stringers. Grades into CCST. Floor ct IN.
FD17-01	168		766.73	766.76	0.03			0.03	DGR	BL		VFGR		MBE			5		10		IN		CCST		Kg	Coal stringers mostly near bottom; floor ct IN.
FD17-01	168		766.76	766.80	0.04			0.04	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Coal stringers mostly near bottom; floor ct IN.
FD17-01	168		766.80	766.85	0.05			0.05	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Coal stringers mostly near bottom; floor ct IN.
FD17-01	168		766.85	767.02	0.17			0.17	DGR	BL		VFGR		MBE				15	10		IN		CCST		Kg	Coal stringers mostly near bottom; floor ct IN.
FD17-01	168		767.02	767.08	0.06			0.06	BL										10		IN		C&B		Kg	Up to 50% coal stringers.
FD17-01	168		767.08	767.10	0.02			0.02	BL										10		IN		C&B		Kg	Up to 50% coal stringers.
FD17-01	168		767.10	767.12	0.02			0.02	DBR	BL		VFGR		MBE	TLA				10		SO		HCST		Kg	Grades into CCST.
FD17-01	168		767.12	767.15	0.03			0.03	DBR	BL		VFGR		MBE	TLA				10		SO		HCST		Kg	Grades into CCST.
FD17-01	168		767.15	767.20	0.05			0.05	DBR	BL		VFGR		MBE	TLA				10		SO		HCST		Kg	Grades into CCST.
FD17-01	168		767.20	767.35	0.15			0.15	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.35	767.41	0.06			0.06	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.41	767.46	0.05			0.05	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.46	767.63	0.17			0.17	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.63	767.67	0.04			0.04	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.67	767.70	0.03			0.03	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.70	767.89	0.19			0.19	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.89	767.90	0.01			0.01	DGR	BL		VFGR		MBE					10		IN		CCST		Kg	Very massive (no visible bedding/LA). Grades into HCST
FD17-01	168		767.90	767.95	0.05		15581	0.05	DGR	BL		VFGR		MBE					10		SO		CCST		Kg	As above. ROOF SAMPLE for Seam F2
FD17-01	168		767.95	768.00	0.05			0.05	BL	DBR		VFGR		TLA	MBE				10		SO		HCST		Kg	With thin coal stringers. Floor ct with coal sharp and IN. ROOF SAMPLE for seam F2
FD17-01	168		768.00	768.30	0.30		15582	0.30	BL										7		SBK	F2	CD		Kg	
FD17-01	168		768.30	768.33	0.03			0.03	BL										7		SO	F2	CBN		Kg	Hard coal with few rock (CCST?) stringers/bands.
FD17-01	168		768.33	768.43	0.10		15583	0.10											7		SO	F2	ST		Kg	
FD17-01	168		768.43	768.47	0.04			0.04	DBR	BL		VFGR		MBE					7		SO	F2	CCST		Kg	Coal coating on bottom end.
FD17-01	168		768.47	768.50	0.03			0.03											7		SBK	F2	CBN		Kg	
FD17-01	168		768.50	768.70	0.20		15584	0.20	BL										7		IN	F2	CDB		Kg	Kind of hard coal...White clay staining on cleats & bkn surfaces.
FD17-01	168	768.17	768.70	768.80	0.10			0.10											7		MBK	F2	CDB		Kg	as above.
FD17-01	168		768.80	768.95	0.15		15585	0.15	BL										7		MBK	F2	CBN	COAL	Kg	Dull hard
FD17-01	168		768.95	769.05	0.10			0.10											7		IN	F2	ST		Kg	
FD17-01	168		769.05	769.59	0.54		15586	0.54	BL										7		SBK	F2	CD		Kg	
FD17-01	168		769.59	769.92	0.33			0.33	BL										7		IN	F2	CDB		Kg	
FD17-01	168		769.92	769.94	0.02		15587	0.02	BL										7		MBK	F2	CBB		Kg	
FD17-01	168		769.94	770.38	0.44			0.44	BL										7		SBK	F2	CDB		Kg	
FD17-01	168		770.38	770.60	0.22			0.22	BL										7		SBK	F2	CD		Kg	
FD17-01	169		770.60	771.85	1.25		15588	1.24	BL										7		IN	F2	CD&B		Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	169	771.15	771.85	771.90	0.05			0.05	BL										7		MBK	F2	CBB		Kg	Changed core splitter @ this marker.
FD17-01	169		771.90	772.25	0.35			0.35	BL										7		IN	F2	CDB		Kg	May contain some/minor hard coal bands. IN to SBK core. Floor ct IN.
FD17-01	169		772.25	772.28	0.03			0.03	DBR	BL		VFGR		MBE	TLA				7		SO	F2	ST		Kg	
FD17-01	169		772.28	772.32	0.04		15589	0.04	BL						ILA				7		SO	F2	COAL	C&B	Kg	Mostly coal (CD) with ~25% rock bands (thin).
FD17-01	169		772.32	772.34	0.02			0.02	BL										7		SBK	F2	CBR		Kg	
FD17-01	169		772.34	772.45	0.11			0.11	BL										7		IN	F2	CDB		Kg	
FD17-01	169		772.45	772.57	0.12			0.12	BL										7		SBK	F2	CD&B		Kg	
FD17-01	169		772.57	772.59	0.02			0.02	BL										7		SO		ST	CBN	Kg	...a bit heavier+harder coal. FLOOR SAMPLE for seam F2.
FD17-01	169		772.59	772.63	0.04		15590	0.04	BL										5		IN		CBN		Kg	A kind of hard coal (but light). Floor contact IN, at ~0° BCN. FLOOR SAMPLE for seam F2.
FD17-01	169		772.63	772.67	0.04			0.04	DGR	BL		VFGR		MBE	TLA		3		3		IN		CCST		Kg	A few coal stringers . FLOOR SAMPLE for seam F2.
FD17-01	169		772.67	772.71	0.04			0.04	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		772.71	772.74	0.03		15623	0.03	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		772.74	772.80	0.06			0.06	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		772.80	773.01	0.21		15893	0.21	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		773.01	773.05	0.04			0.04	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		773.05	773.08	0.03		15624	0.03	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		773.08	773.12	0.04			0.04	DGR	BL		VFGR		MBE	TLA				3		IN		CCST		Kg	With coal stringers up to 12mm thick. Grades into HCST.
FD17-01	169		773.12	773.15	0.03			0.03	BL	DBR		VFGR		MBE	TLA				3		SO		HCST		Kg	With coal stringers. Floor ct IN.
FD17-01	169		773.15	773.22	0.07		15625	0.07	BL										3		IN		C&B		Kg	Coal & rock bands (40-60).
FD17-01	169		773.22	773.28	0.06			0.06	BL										3		IN		CBN		Kg	Floor ct IN.
FD17-01	169		773.28	773.38	0.10		15876	0.10	DBR	BL		VFGR		TLA					3		IN		HCST		Kg	With coal stringers. Grades into CCST.
FD17-01	169		773.38	773.40	0.02			0.02	DBR	BL		VFGR		TLA					3		IN		HCST		Kg	With coal stringers. Grades into CCST.
FD17-01	169		773.40	773.43	0.03			0.03	DGR	BL		VFGR		TLA	MBE				7		IN		CCST		Kg	Occnly thin coal stringers. Grades into CST.
FD17-01	169		773.43	773.58	0.15			0.15	DGR	BL		VFGR		TLA	MBE				7		IN		CCST		Kg	Occnly thin coal stringers. Grades into CST.
FD17-01	169		773.58	773.63	0.05			0.05	DGR	BL		VFGR		TLA	MBE				10		IN		CCST		Kg	Occnly thin coal stringers. Grades into CST.
FD17-01	169		773.63	773.66	0.03			0.03	DGR	BL		VFGR		TLA	MBE				10		IN		CCST		Kg	Occnly thin coal stringers. Grades into CST.
FD17-01	169		773.66	773.74	0.08			0.08	DGR	BL		VFGR		TLA	MBE				10		IN		CCST		Kg	Occnly thin coal stringers. Grades into CST.
FD17-01	169		773.74	773.94	0.20			0.20	DGR			VFGR		MBE	TLA				10		IN		CST	CCST	Kg	A few CCST bands (2 - 6 cm thick). Grades into SLT.
FD17-01	169		773.94	773.98	0.04			0.04	DGR			VFGR		MBE	TLA				10		IN		CST	CCST	Kg	A few CCST bands (2 - 6 cm thick). Grades into SLT.
FD17-01	169		773.98	774.00	0.02			0.02	DGR			VFGR		MBE	TLA				10		IN		CST	CCST	Kg	A few CCST bands (2 - 6 cm thick). Grades into SLT.
FD17-01	169		774.00	774.24	0.24			0.24	DGR			VFGR		MBE	TLA			10	10		IN		CST	CCST	Kg	A few CCST bands (2 - 6 cm thick). Grades into SLT.
FD17-01	169		774.24	774.27	0.03			0.03	MGR			VF-FGR		WBE	ILA				10		SBK		SLT		Kg	Bkn over bottom 0.15 m along set of joints running @ ~ 15° TCA.
FD17-01	169		774.27	774.31	0.04			0.04	MGR			VF-FGR		WBE	ILA				10		SBK		SLT		Kg	Bkn over bottom 0.15 m along set of joints running @ ~ 15° TCA.
FD17-01	169		774.31	774.49	0.18			0.18	MGR			VF-FGR		WBE	ILA				10		SBK		SLT		Kg	Bkn over bottom 0.15 m along set of joints running @ ~ 15° TCA.
FD17-01	169		774.49	774.52	0.03			0.03	MGR			VF-FGR		WBE	ILA				13		SBK		SLT		Kg	Bkn over bottom 0.15 m along set of joints running @ ~ 15° TCA.
FD17-01	169		774.52	774.57	0.05			0.05	MGR			VF-FGR		WBE	ILA				13		SBK		SLT		Kg	Bkn over bottom 0.15 m along set of joints running @ ~ 15° TCA.
FD17-01	169		774.57	774.67	0.10			0.10	MGR			VF-FGR		WBE	ILA				13		SBK		SLT		Kg	Bkn over bottom 0.15 m along set of joints running @ ~ 15° TCA.
FD17-01	170	774.80	774.67	774.78	0.11			0.11	LGR	MGR		FGR	VFGR	ILA	XBE	WFR	7		13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		774.78	774.83	0.05			0.05	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		774.83	774.90	0.07			0.07	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		774.90	775.16	0.26			0.25	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.16	775.20	0.04			0.04	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.20	775.25	0.05			0.05	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.25	775.45	0.20			0.19	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.45	775.49	0.04			0.04	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.49	775.53	0.04			0.04	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.53	775.74	0.21			0.20	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.74	775.79	0.05			0.05	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.79	775.84	0.05			0.05	LGR	MGR		FGR	VFGR	ILA	XBE	WFR			13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		775.84	777.35	1.51			1.47	LGR	MGR		FGR	VFGR	ILA	XBE	WFR		18	13	MFI	MBK		SLT	SST	Kg	Interbedded SST/SLT; bottom ct gradational.
FD17-01	170		777.35	777.63	0.28			0.27	DGR	MGR		VFGR		MBE					13		IN		CST		Kg	Slightly carb.
FD17-01	170	777.85	777.63	778.39	0.76			0.75	DGR			VFGR		MBE	LA		10	10	10		SBK		CST	CCST	Kg	With mod carb bands, thin coal stringers. (bottom ct intact, somewhat irreg).
FD17-01	170		778.39	778.91	0.52			0.51	MGR			FGR	VF-FGR	ILA	TLA			10	10		IN		SST	CST	Kg	
FD17-01	171		778.91	780.75	1.84			1.81	DGR	LGR		VFGR	FGR	ILA	WBE				10	WFI	SBK		CST	SST	Kg	Very irreg shaped SST bands/lams in a CST mass; locally RM and SLS.
FD17-01	171	780.90	780.75	783.18	2.43			2.42	MGR	LGR		FGR	VFGR	ILA	WBE			5	5	MFI	IN		SST	CST	Kg	As above, but with SST dominant. Better defined bedding/LA near bottom (15 to 5°).
FD17-01	172		783.18	783.78	0.60			0.59	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above.
FD17-01	172	783.95	783.78	784.60	0.82			0.81	MGR	LGR		FGR	VFGR	ILA	WBE		8		8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		784.60	784.63	0.03			0.03	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		784.63	784.67	0.04			0.04	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		784.67	784.92	0.25			0.25	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		784.92	784.95	0.03			0.03	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		784.95	784.96	0.01			0.01	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	172		784.96	785.17	0.21			0.21	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		785.17	785.19	0.02			0.02	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		785.19	785.22	0.03			0.03	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		785.22	785.30	0.08			0.08	MGR	LGR		FGR	VFGR	ILA	WBE				8	MFI	IN		SST	CST	Kg	As above; SST gradually decreases along the bottom 0.26m.
FD17-01	172		785.30	785.40	0.10			0.10	MGR	DGR		VFGR		MBE	LA		8		7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		785.40	785.45	0.05			0.05	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		785.45	785.49	0.04			0.04	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		785.49	785.73	0.24			0.24	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		785.73	785.77	0.04			0.04	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		785.77	785.80	0.03			0.03	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		785.80	786.04	0.24			0.24	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		786.04	786.07	0.03			0.03	MGR	DGR		VFGR		MBE	LA				7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		786.07	786.10	0.03			0.03	MGR	DGR		VFGR		MBE	LA			6	7		IN		CST	CCST	Kg	Weakly carb towards bottom.
FD17-01	172		786.10	786.12	0.02			0.02	BL					TLA		PO			7		HBK		COAL		Kg	Possible C-LOSS…
FD17-01	172		786.12	786.20	0.08			0.08	DBR	BL		VFGR		TLA		PO			7		SBK		CCST		Kg	with coal stringers and thick coal coating on bottom end (possible C-LOSS…)
FD17-01	172		786.20	786.22	0.02			0.02	BL										7		SBK		CD&B		Kg	Bkn @ top; bottom ct intact.
FD17-01	172		786.22	786.32	0.10			0.10	BL	DBR		VFGR		TLA		PO			7		SBK		HCST		Kg	with coal stringers (up to 20%).
FD17-01	172		786.32	786.33	0.01			0.01	DGR	DBR		VFGR		MBE					7		IN		CCST		Kg	Bottom ct IN.
FD17-01	172		786.33	786.35	0.02			0.02	DGR	DBR		VFGR		MBE					7		IN		CCST		Kg	Bottom ct IN.
FD17-01	172		786.35	786.47	0.12			0.12	DGR	DBR		VFGR		MBE					3		IN		CCST		Kg	Bottom ct IN.
FD17-01	172		786.47	786.49	0.02			0.02	BL			VFGR		TLA		SSH			3		MBK		C&B		Kg	
FD17-01	172		786.49	786.56	0.07			0.07	DBR	DGR		VFGR		TLA			2		3		IN		CST	CCST	Kg	with carb bands and occnl coal stringers.
FD17-01	172		786.56	786.60	0.04			0.04	DBR	DGR		VFGR		TLA					3		IN		CST	CCST	Kg	with carb bands and occnl coal stringers.
FD17-01	172		786.60	786.63	0.03			0.03	DBR	DGR		VFGR		TLA					3		IN		CST	CCST	Kg	with carb bands and occnl coal stringers.
FD17-01	172		786.63	786.79	0.16			0.16	DBR	DGR		VFGR		TLA				3	3		IN		CST	CCST	Kg	with carb bands and occnl coal stringers.
FD17-01	172	786.99	786.79	787.15		0.36		0.36											3				R-LOSS		Kg	
FD17-01	172		787.15	787.18	0.03			0.03	BL	DBR		VFGR				MSH			3		HBK		HCST	COAL	Kg	(possible R+C-LOSS @ top ?)
FD17-01	172		787.18	787.22	0.04			0.04	BL	DBR		VFGR				MSH			3		HBK		HCST	COAL	Kg	(possible R+C-LOSS @ top ?)
FD17-01	172		787.22	787.43	0.21			0.21	DGR	BL		VFGR		MBE	ILA				3		MBK		CCST	SLT	Kg	Top ~1.5 cm; HCST grading into CCST; one SLT band 3-4 cm thick near top; occnly coal stringers.
FD17-01	172		787.43	787.44	0.01			0.01	DGR	BL		VFGR		MBE	ILA				15		MBK		CCST	SLT	Kg	Top ~1.5 cm; HCST grading into CCST; one SLT band 3-4 cm thick near top; occnly coal stringers.
FD17-01	172		787.44	787.48	0.04			0.04	DGR	BL		VFGR		MBE	ILA				15		MBK		CCST	SLT	Kg	Top ~1.5 cm; HCST grading into CCST; one SLT band 3-4 cm thick near top; occnly coal stringers.
FD17-01	172		787.48	787.59	0.11			0.11	DGR	BL		VFGR		MBE	ILA				15		MBK		CCST	SLT	Kg	Top ~1.5 cm; HCST grading into CCST; one SLT band 3-4 cm thick near top; occnly coal stringers.
FD17-01	173		787.59	787.66	0.07			0.07	DGR	MGR		VFGR		MBE	ILA				15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		787.66	787.70	0.04			0.04	DGR	MGR		VFGR		MBE	ILA				15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		787.70	787.71	0.01			0.01	DGR	MGR		VFGR		MBE	ILA				15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		787.71	787.95	0.24			0.23	DGR	MGR		VFGR		MBE	ILA				15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		787.95	787.98	0.03			0.03	DGR	MGR		VFGR		MBE	ILA				15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		787.98	788.02	0.04			0.04	DGR	MGR		VFGR		MBE	ILA				15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		788.02	788.06	0.04			0.04	DGR	MGR		VFGR		MBE	ILA			15	15		SO		CST		Kg	Grading into SLT. Bottom ct @ ~15° BCN.
FD17-01	173		788.06	788.23	0.17			0.17	MGR			VF-FGR		LA	MBE		13		9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.23	788.27	0.04			0.04	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.27	788.29	0.02			0.02	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.29	788.56	0.27			0.27	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.56	788.62	0.06			0.06	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.62	788.67	0.05			0.05	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.67	788.83	0.16			0.16	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.83	788.88	0.05			0.05	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.88	788.93	0.05			0.05	MGR			VF-FGR		LA	MBE				9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.93	788.99	0.06			0.06	MGR			VF-FGR		LA	MBE			5	9		IN		SLT	CST	Kg	Better defined bedding downward: 13-10-5° BCN. Grades into CST.
FD17-01	173		788.99	789.04	0.05			0.05	MGR	LBR		VFGR	FGR	ILA	SLS		6		15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.04	789.07	0.03			0.03	MGR	LBR		VFGR	FGR	ILA	SLS				15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.07	789.08	0.01			0.01	MGR	LBR		VFGR	FGR	ILA	SLS				15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.08	789.25	0.17			0.16	MGR	LBR		VFGR	FGR	ILA	SLS				15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.25	789.32	0.07			0.07	MGR	LBR		VFGR	FGR	ILA	SLS				15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.32	789.37	0.05			0.05	MGR	LBR		VFGR	FGR	ILA	SLS				15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.37	789.41	0.04			0.04	MGR	LBR		VFGR	FGR	ILA	SLS			24	15		SO		CST	SST	Kg	Irreg bedding defined by LBR sandy bands/LA;; soft sediment deformation @ bottom 0.15 m. Bottom ct intact and irreg.
FD17-01	173		789.41	789.55	0.14			0.14	DGR	MGR		VFGR		MBE	TLA				12		IN		CST	CCST	Kg	Increasingly carb towards bottom; locally thin coal stringers. (Marker block is placed in his box but logged for the next box).
FD17-01	173		789.55	789.58	0.03			0.03	DGR	MGR		VFGR		MBE	TLA				12		IN		CST	CCST	Kg	Increasingly carb towards bottom; locally thin coal stringers. (Marker block is placed in his box but logged for the next box).
FD17-01	173		789.58	789.62	0.04			0.04	DGR	MGR		VFGR		MBE	TLA				12		IN		CST	CCST	Kg	Increasingly carb towards bottom; locally thin coal stringers. (Marker block is placed in his box but logged for the next box).
FD17-01	173		789.62	789.80	0.18			0.18	DGR	MGR		VFGR		MBE	TLA			12	12		IN		CST	CCST	Kg	Increasingly carb towards bottom; locally thin coal stringers. (Marker block is placed in his box but logged for the next box).
FD17-01	174	790.04	789.80	789.83	0.03			0.03	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST
FD17-01	174		789.83	789.85	0.02			0.02	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	174		789.85	789.87	0.02			0.02	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST
FD17-01	174		789.87	790.05	0.18			0.18	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST
FD17-01	174		790.05	790.07	0.02			0.02	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST
FD17-01	174		790.07	790.13	0.06			0.06	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST
FD17-01	174		790.13	790.28	0.15		15894	0.15	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	SLT with clayey and sandy bands. Top 11 cm is CST
FD17-01	174		790.28	790.38	0.10			0.10	DGR	MGR		VF-FGR		SLS	ILA				12		IN		SLT	SST	Kg	ROOF SAMPLE for seam G: taken for Geotch test. Will be sampled later!
FD17-01	174		790.38	790.48		0.10		0.10											9			G	C-LOSS		Kg	
FD17-01	174		790.48	790.53	0.05			0.05	BL										9		IN	G	CD&B		Kg	
FD17-01	174		790.53	790.62	0.09		15591	0.09	BL										9		IN	G	CBB		Kg	
FD17-01	174		790.62	790.69	0.07			0.07	BL										9		MBK	G	CD		Kg	
FD17-01	174		790.69	790.74	0.05			0.05	BL										9		SBK	G	CBN	COAL	Kg	Harder coal. Bony coal?
FD17-01	174		790.74	790.77	0.03		15592	0.03	BL										9		IN	G	CBN		Kg	A little bit harder and heavier . Few mm of a bright band @ the bottom
FD17-01	174		790.77	791.04	0.27			0.27	BL										9		IN	G	C&B		Kg	As above, with minor HCST bands.
FD17-01	174		791.04	791.14	0.10		15593	0.10	BL										9		SBK	G	CD&B		Kg	
FD17-01	174		791.14	791.19	0.05			0.05	BL										9		HBK	G	CBB		Kg	
FD17-01	174		791.19	791.40		0.21		0.21											9			G	C-LOSS		Kg	CAVE
FD17-01	174		791.40	791.43	0.03		15594	0.03	BL							HSH			9		HBK	G	HCST		Kg	Very sheared with polished surfaces
FD17-01	174		791.43	791.60	0.17			0.17	BL	DBR									9		IN	G	ST		Kg	heavier than coal
FD17-01	174		791.60	791.84		0.24		0.24											9			G	C-LOSS		Kg	
FD17-01	174		791.84	791.93	0.09			0.09	BL										9		MBK	G	CD&B		Kg	HBK at bottom
FD17-01	174		791.93	792.32	0.39		15595	0.39	BL										9		SBK	G	CDB		Kg	
FD17-01	174		792.32	792.39	0.07			0.07	BL										9		IN	G	CBN		Kg	Top 2 cm has vitraine stringers 5-8 mm thick
FD17-01	174		792.39	792.46	0.07			0.07	BL										9		IN	G	CBR		Kg	
FD17-01	174		792.46	792.52	0.06			0.06	DGR	MGR				MBE	ILA				9		SO	G	SLT	SST	Kg	Sandy SLT
FD17-01	174		792.52	792.57	0.05		15596	0.05	DGR	MGR				MBE	ILA				9		SO	G	SLT	SST	Kg	Sandy SLT
FD17-01	174		792.57	792.78	0.21			0.21	DGR	MGR				MBE	ILA			10	9		SO	G	SLT	SST	Kg	Sandy SLT
FD17-01	174		792.78	792.80	0.02			0.02	DGR			VFGR		MBE					9		SO	G	CST		Kg	
FD17-01	174		792.80	792.92	0.12		15597	0.12	BL										9		SBK	G	CBB	CBR	Kg	Bottom 3 cm is broken vitraine
FD17-01	174		792.92	793.05	0.13			0.13	BL										9		MBK	G	CBB		Kg	MBK to HBK core. Minor hard pieces/
FD17-01	174	793.09	793.05	793.21		0.16		0.16											9			G	C-LOSS		Kg	
FD17-01	174		793.21	793.46	0.25		15597	0.25	BL										9		HBK	G	CD&B		Kg	
FD17-01	174		793.46	793.49	0.03		15598	0.03	BL	DBR						PO			9		SBK	G	HCST		Kg	
FD17-01	174		793.49	793.60	0.11			0.11	BL										9		SBK	G	CBN	COAL	Kg	Has thin bright bands/stringers but it's hard and competent and a little bit heavier
FD17-01	174		793.60	793.64	0.04		15599	0.04	MGR	DGR		VFGR		MBE			7		7		IN		CST	CCST	Kg	FLOOR SAMPLE for Seam G.
FD17-01	174		793.64	793.70	0.06			0.06	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	FLOOR SAMPLE for Seam G.
FD17-01	174		793.70	793.86	0.16			0.16	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		793.86	793.90	0.04			0.04	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		793.90	793.92	0.02			0.02	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		793.92	793.94	0.02			0.02	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		793.94	794.20	0.26			0.26	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		794.20	794.23	0.03			0.03	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		794.23	794.26	0.03			0.03	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	174		794.26	794.42	0.16			0.16	MGR	DGR		VFGR		MBE					7		IN		CST	CCST	Kg	Sideritic concretions
FD17-01	175		794.42	794.46	0.04			0.04	MGR	DGR		VFGR		MBE			4		6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		794.46	794.49	0.03			0.03	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		794.49	794.52	0.03			0.03	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		794.52	794.72	0.20			0.20	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		794.72	794.75	0.03			0.03	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		794.75	794.79	0.04			0.04	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		794.79	795.04	0.25			0.25	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.04	795.08	0.04			0.04	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.08	795.12	0.04			0.04	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.12	795.34	0.22			0.22	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.34	795.38	0.04			0.04	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.38	795.40	0.02			0.02	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.40	795.60	0.20			0.20	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.60	795.62	0.02			0.02	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.62	795.67	0.05			0.05	MGR	DGR		VFGR		MBE					6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.67	795.86	0.19			0.19	MGR	DGR		VFGR		MBE				7	6	WFI	SBK		CST	CCST	Kg	sideritic concretion along top 0.77 m; after that rock is slightly carb. Some bedding definition towards bottom with SST lams/bands..
FD17-01	175		795.86	795.89	0.03			0.03	MGR	LGR		FGR	VF-FGR	TLA	ILA				23	SFI	SO		SST		Kg	
FD17-01	175		795.89	795.94	0.05			0.05	MGR	LGR		FGR	VF-FGR	TLA	ILA				23	SFI	SO		SST		Kg	
FD17-01	175		795.94	795.99	0.05			0.05	MGR	LGR		FGR	VF-FGR	TLA	ILA				23	SFI	SO		SST		Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	175		795.99	796.01	0.02			0.02	MGR	LGR		FGR	VF-FGR	TLA	ILA			23	23	SFI	SO		SST		Kg	
FD17-01	175	796.14	796.01	796.22	0.21			0.20	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.22	796.26	0.04			0.04	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.26	796.29	0.03			0.03	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.29	796.43	0.14			0.13	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.43	796.47	0.04			0.04	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.47	796.52	0.05			0.05	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.52	796.62	0.10			0.10	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.62	796.64	0.02			0.02	MGR	LGR		FGR		TLA	ILA				16	SFI	IN		SST		Kg	Very irreg bedding/LA along the bottom half; also few thin coal stringers here. Bottom ct somewhat irreg, @ ~15° BCN.
FD17-01	175		796.64	796.70	0.06			0.06	MGR	GR		VF-FGR		TLA	ILA		10		13	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		796.70	796.90	0.20			0.19	MGR	GR		VF-FGR		TLA	ILA				13	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		796.90	796.95	0.05			0.05	MGR	GR		VF-FGR		TLA	ILA				14	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		796.95	797.00	0.05			0.05	MGR	GR		VF-FGR		TLA	ILA				14	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		797.00	797.22	0.22			0.21	MGR	GR		VF-FGR		TLA	ILA				15	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		797.22	797.26	0.04			0.04	MGR	GR		VF-FGR		TLA	ILA				16	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		797.26	797.31	0.05			0.05	MGR	GR		VF-FGR		TLA	ILA				16	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		797.31	797.82	0.51			0.49	MGR	GR		VF-FGR		TLA	ILA			(20)	17	MFI	IN		SLT	SST	Kg	ILA near floor contact.
FD17-01	175		797.82	798.65	0.83			0.82	MGR	DGR		VFGR		MBE	TLA			10	10	WFI	SBK		CST		Kg	Locally thon coal stringers. Increasingly silty towards bottom.
FD17-01	176		798.65	799.05	0.40			0.38	MGR			VF-FGR		TLA	ILA			18	18	MFI	SBK		SLT	CST	Kg	SBK near bottom along joint running @ 5-10° TCA.
FD17-01	176	799.19	799.05	802.18	3.13			3.11	MGR			VF-FGR		TLA	ILA		10	4	7	MFI	MBK		SLT	CST	Kg	BKN mostly along some joints running || TCA.
FD17-01	176	802.23	802.18	802.81	0.63			0.63	MGR			VF-FGR		TLA			4	5	5	SFI	IN		SLT	CST	Kg	Becomes sandier downward.
FD17-01	177		802.81	805.25	2.44			2.43	MGR	LGR		FGR	VF-FGR	TLA	ILA		7	5	6	SFI	IN		SST	SLT	Kg	Interlaminated/interbedded SST/SLT.
FD17-01	177	805.28	805.25	807.10	1.85			1.84	LGR			FGR		ILA	TLA		8	4	6	SFI	IN		SST		Kg	
FD17-01	178		807.10	808.10	1.00			0.99	LGR			FGR		TLA	ILA			7	7	SFI	IN		SST		Kg	locally calcite stringer/band. Bottom ct intact.
FD17-01	178		808.10	808.12	0.02			0.02	MGR	LGR		VF-FGR		TLA					7	MFI	SO		SLT	SST	Kg	
FD17-01	178		808.12	808.16	0.04			0.04	MGR	LGR		VF-FGR		TLA					7	MFI	SO		SLT	SST	Kg	
FD17-01	178		808.16	808.30	0.14			0.14	MGR	LGR		VF-FGR		TLA					7	MFI	SO		SLT	SST	Kg	
FD17-01	178	808.33	808.30	808.38	0.08			0.08	MGR	LGR		VF-FGR		TLA	ILA		3		7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.38	808.42	0.04			0.04	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.42	808.45	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.45	808.68	0.23			0.23	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.68	808.72	0.04			0.04	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.72	808.75	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.75	808.90	0.15			0.15	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.90	808.94	0.04			0.04	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.94	808.97	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		808.97	809.17	0.20			0.20	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.17	809.20	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.20	809.25	0.05			0.05	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.25	809.53	0.28			0.28	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.53	809.56	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.56	809.59	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.59	809.83	0.24			0.24	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.83	809.88	0.05			0.05	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.88	809.90	0.02			0.02	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		809.90	810.10	0.20			0.20	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.10	810.13	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.13	810.16	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.16	810.39	0.23			0.23	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.39	810.42	0.03			0.03	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.42	810.46	0.04			0.04	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.46	810.71	0.25			0.25	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.71	810.75	0.04			0.04	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.75	810.77	0.02			0.02	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.77	810.92	0.15			0.15	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		810.92	811.01	0.09			0.09	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		811.01	811.06	0.05			0.05	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		811.06	811.27	0.21			0.21	MGR	LGR		VF-FGR		TLA	ILA				7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178		811.27	811.29	0.02			0.02	MGR	LGR		VF-FGR		TLA	ILA			10	7	MFI	IN		SLT	SST	Kg	Bedding varies along interval (3-23 BCN), also occnly turns direction (slightly)
FD17-01	178	811.38	811.29	811.32	0.03			0.03	MGR	LGR		VF-FGR		TLA					9	MFI	SO		SLT		Kg	
FD17-01	178		811.32	811.36	0.04			0.04	MGR	LGR		VF-FGR		TLA					9	MFI	SO		SLT		Kg	
FD17-01	178		811.36	811.42	0.06			0.06	MGR	LGR		VF-FGR		TLA				9	9	MFI	SO		SLT		Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	179		811.42	811.60	0.18			0.18	MGR	LGR		VF-FGR		WBE	ILA		9		9	MFI	IN		SLT	SST	Kg	
FD17-01	179		811.60	811.63	0.03			0.03	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		811.63	811.66	0.03			0.03	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		811.66	811.96	0.30			0.30	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		811.96	811.99	0.03			0.03	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		811.99	812.04	0.05			0.05	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.04	812.25	0.21			0.21	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.25	812.28	0.03			0.03	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.28	812.30	0.02			0.02	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.30	812.51	0.21			0.21	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.51	812.55	0.04			0.04	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.55	812.57	0.02			0.02	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.57	812.81	0.24			0.24	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.81	812.86	0.05			0.05	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.86	812.89	0.03			0.03	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		812.89	813.16	0.27			0.27	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		813.16	813.18	0.02			0.02	MGR	LGR		VF-FGR		WBE	ILA				9	MFI	IN		SLT	SST	Kg	
FD17-01	179		813.18	813.21	0.03			0.03	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.21	813.45	0.24			0.24	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.45	813.48	0.03			0.03	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.48	813.52	0.04			0.04	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.52	813.83	0.31			0.31	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.83	813.85	0.02			0.02	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.85	813.88	0.03			0.03	MGR	LGR		VF-FGR		MBE	BIO				10	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		813.88	814.06	0.18			0.18	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		814.06	814.09	0.03			0.03	MGR	LGR		VF-FGR		MBE	BIO				9	-	IN		SLT	CST	Kg	Sandy and silty bands, local bioturbation, slightly carbonaceous at the bottom (10 cm); coal coating @ bottom.
FD17-01	179		814.09	814.13	0.04			0.04	MGR	DGR		VFGR		MBE					9		IN		CST	CCST	Kg	slightly carbonaceous; coal coating @ bottom. ROOF SAMPLE for seam J
FD17-01	179		814.13	814.15	0.02		15600	0.02	MGR	DGR		VFGR		MBE					9		IN		CST	CCST	Kg	slightly carbonaceous; coal coating @ bottom. ROOF SAMPLE for seam J
FD17-01	179		814.15	814.18	0.03			0.03	MGR	DGR		VFGR		MBE					9		IN		CST	CCST	Kg	slightly carbonaceous; coal coating @ bottom. ROOF SAMPLE for seam J
FD17-01	179		814.18	814.20	0.02			0.02	DGR	BL		VFGR							9		SBK		CCST	COAL	Kg	(Possible C-LOSS at bottom!) ROOF SAMPLE for seam J
FD17-01	179		814.20	814.24	0.04		15601	0.04	BL							PO			11	MFI	MBK	JU	CBN		Kg	With thin calcite stringers. Ground pieces of hard and quite competent Coal. Roof contact seems to be unbroken (but the rest of coal is bkn)
FD17-01	180	814.43	814.24	814.72		0.48		0.47											11			JU	C-LOSS		Kg	CAVE
FD17-01	180		814.72	814.88	0.16		15602	0.16	DBR	BL		VFGR		MBE	TLA				11		SBK	JU	HCST	COAL	Kg	With coal stringers; thick (~ 5mm) coal coating on bottom end. (possible C-LOSS @ the beginning of interval).
FD17-01	180		814.88	814.96	0.08			0.08	BL										11		IN	JU	CDB		Kg	
FD17-01	180		814.96	815.11	0.15			0.15	DBR			VFGR		MBE				12	11		IN	JU	CCST	COAL	Kg	2-3 mm thick coal band @ both top and bottom end. Floor ct IN (~ 12° BCN)
FD17-01	180		815.11	815.15	0.04		15603	0.04	DBR			VFGR		MBE				13	11		IN	JU	CCST	COAL	Kg	2-3 mm thick coal band @ both top and bottom end. Floor ct IN (~ 12° BCN)
FD17-01	180		815.15	815.19	0.04			0.04	DBR			VFGR		MBE				13	11		IN	JU	CCST	COAL	Kg	2-3 mm thick coal band @ both top and bottom end. Floor ct IN (~ 12° BCN)
FD17-01	180		815.19	815.23	0.04			0.04	BL									10	11		IN	JU	ST		Kg	Stoney coal
FD17-01	180		815.23	815.25	0.02			0.02	BL										11		IN	JU	CBN		Kg	Bony coal (?)
FD17-01	180		815.25	815.30	0.05			0.05	BL										11		IN	JU	COAL	CDB	Kg	
FD17-01	180		815.30	815.40	0.10			0.10	DBR	BL		VFGR							11		IN	JU	HCST		Kg	Irreg floor ct.
FD17-01	180		815.40	815.44	0.04			0.04	BL					ILA		PO			11		SBK	JU	C&B	COAL	Kg	Mostly coal with minor v. think HCST lams.
FD17-01	180		815.44	815.47	0.03		15604	0.03	DBR			VFGR		MBE		PO			11		SBK	JU	CCST		Kg	Bkn only @ top; floor ct IN and irreg shaped.
FD17-01	180		815.47	815.51	0.04			0.04	BL										11		IN	JU	CBN	COAL	Kg	Vitrain lams visible; CBR coating on bottom end.
FD17-01	180		815.51	815.57	0.06			0.06	DBR	MBR		VF-FGR		MBE	LA				11		SO	JU	CST	SLT	Kg	has a 2 cm thick SLT band. Coal coating on top end. Grades into CCST.
FD17-01	180		815.57	815.63	0.06			0.06	DBR			VFGR		MBE	LA		12		11		IN	JU	CCST		Kg	with coal stringers; grades into HCST.
FD17-01	180		815.63	815.65	0.02			0.02	BL	DBR		VFGR		TLA					11		IN	JU	HCST	C&B	Kg	Mostly coal…
FD17-01	180		815.65	815.70	0.05			0.05	BL			VFGR							11		IN	JU	C&B	HCST	Kg	Many bright stringers/lams.
FD17-01	180		815.70	815.90	0.20		15605	0.20	DBR	MBR		VFGR		MBE	LA				11		IN	JU	CCST	CST	Kg	Interbanded CCST/CST; occnly coal stringers. Floor ct. IN
FD17-01	180		815.90	816.03	0.13			0.13	BL										11		IN	J	COAL	CDB	Kg	Hard and kind of heavier… but with lots of bright stringers (mostly at the bottom end)
FD17-01	180		816.03	816.10	0.07		15606	0.07	BL							PO			11		SBK	J	COAL	CD&B	Kg	Top end is MSH with PO.
FD17-01	180		816.10	816.70	0.60			0.59	BL										11		MBK	J	CD&B	COAL	Kg	Portions with HBK core
FD17-01	180		816.70	816.75	0.05			0.05	BL										11		SBK	J	CBB	COAL	Kg	
FD17-01	180		816.75	816.79	0.04			0.04											11		IN	J	CBN		Kg	Floor ct intact
FD17-01	180		816.79	816.82	0.03			0.03	DBR			VFGR							11		SO	J	CCST		Kg	
FD17-01	180		816.82	816.91	0.09			0.09	BL										11		IN	J	CD&B		Kg	
FD17-01	180		816.91	817.01	0.10			0.10	BL							MFR			11		MBK	J	CD		Kg	MBK to HBK @ bottom 3-4 cm.
FD17-01	180		817.01	817.03	0.02		15607	0.02	BL										11		SBK	J	COAL	CDB	Kg	Floor ct IN.
FD17-01	180		817.03	817.06	0.03			0.03	BL										11		SO	J	CBN	COAL	Kg	Band of v. hard + competent coal (maybe bony?).
FD17-01	180		817.06	817.10	0.04			0.04	BL										11		SO	J	COAL	CD	Kg	
FD17-01	180		817.10	817.12	0.02			0.02	BL										11		SO	J	CBN	COAL	Kg	Band of hard coal (as the previous one)
FD17-01	180		817.12	817.30	0.18			0.18	BL										11		IN	J	CDB		Kg	Floor ct IN.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	180		817.30	817.38	0.08		15608	0.08	BL										11		SBK	J	CBN		Kg	
FD17-01	180		817.38	817.52	0.14			0.14	DBR			VFGR		TLA	MBE				11		SO	J	HCST	CCST	Kg	Bottom 5 cm is CCST.
FD17-01	180	817.47	817.52	817.56		0.04		0.04											11			J	R-LOSS		Kg	
FD17-01	180		817.56	817.60	0.04		15608	0.04	BL										11		MBK	J	CBN	COAL	Kg	Hard, heavy, dull aspect with bright lams.
FD17-01	180		817.60	817.88	0.28		15609	0.27	BL										11		MBK	J	CDB		Kg	bright stringers near top
FD17-01	180		817.88	818.48	0.60			0.59	BL							MFR			11		SBK	J	CD&B		Kg	Dull hard @ bottom ~10 cm. Floor ct IN.
FD17-01	181		818.48	818.64	0.16		15610	0.16	BL										11		IN	J	CDB		Kg	IN (top ~10 cm) to SBK.
FD17-01	181		818.64	819.34	0.70			0.69	BL										11		SBK	J	CD&B		Kg	PO @ bottom of interval.
FD17-01	181		819.34	819.36	0.02		15611	0.02	BL			VFGR							11		HBK		CCST	COAL	Kg	HBK to PUL coal mixed with rock (CCST). FLOOR SAMPLE for seam J
FD17-01	181		819.36	819.38	0.02			0.02	DGR	MGR		VFGR							9		SO		CST		Kg	Weakly carb; thick (5-6 mm) coal coating on top end; thin band of calcite stringers @ top. Floor ct IN, @ 9° BCN. FLOOR SAMPLE for seam J
FD17-01	181		819.38	819.41	0.03			0.03	DGR	MGR		VFGR						9	9		SO		CST		Kg	Weakly carb; thick (5-6 mm) coal coating on top end; thin band of calcite stringers @ top. Floor ct IN, @ 9° BCN. FLOOR SAMPLE for seam J
FD17-01	181		819.41	819.44	0.03			0.03	MGR			FGR	VF-FGR	ILA	BIO				14	MFI	SO		SST	SLT	Kg	FLOOR SAMPLE for seam J
FD17-01	181		819.44	819.53	0.09			0.09	MGR			FGR	VF-FGR	ILA	BIO				14	MFI	IN		SST	SLT	Kg	Cut by wavy joints running @ ~10 TA. Thin coal stringers near the bottom; also coal coating on the bottom end.
FD17-01	181		819.53	819.83	0.30			0.29	MGR			FGR	VF-FGR	ILA	BIO				14	MFI	IN		SST	SLT	Kg	Cut by wavy joints running @ ~10 TA. Thin coal stringers near the bottom; also coal coating on the bottom end.
FD17-01	181		819.83	819.88	0.05			0.05	BL							PO			14		HBK		COAL	CSST	Kg	HBK to PUL coal mixed with rock (carb SST?); coal is very shiny.
FD17-01	181		819.88	819.95		0.07		0.07											14				R-LOSS	C-LOSS	Kg	
FD17-01	181		819.95	820.03	0.08			0.08	MGR	DGR		VF-FGR		ILA		PO			20	MFI	IN		SLT	SST	Kg	Sandy SLT with coal stringers; top and bottom ends are black with PO; some HBK ro PUL coal @ bottom.
FD17-01	181		820.03	820.08	0.05			0.05	MGR	DGR		VF-FGR		ILA		PO			20	MFI	IN		SLT	SST	Kg	Sandy SLT with coal stringers; top and bottom ends are black with PO; some HBK ro PUL coal @ bottom.
FD17-01	181		820.08	820.11	0.03			0.03	DGR	BL		VFGR		TLA		PO			20		SBK		CCST	COAL	Kg	CCST with coal stringers; PO surfaces.
FD17-01	181		820.11	820.13	0.02			0.02	MGR			VF-FGR		WBE	ILA	PO			24	MFI	SO		CST	SLT	Kg	PO @ top of interval. Floor ct IN, @ 24° BCN.
FD17-01	181		820.13	820.19	0.06			0.05	MGR			VF-FGR		WBE	ILA	PO		24	24	MFI	SO		CST	SLT	Kg	PO @ top of interval. Floor ct IN, @ 24° BCN.
FD17-01	181		820.19	820.28	0.09			0.09	MGR	LGR		FGR		WBE	ILA				4	MFI	IN		SST	SLT	Kg	
FD17-01	181		820.28	820.32	0.04			0.04	MGR	LGR		FGR		WBE	ILA				4	MFI	IN		SST	SLT	Kg	
FD17-01	181		820.32	820.35	0.03			0.03	MGR	LGR		FGR		WBE	ILA				4	MFI	IN		SST	SLT	Kg	
FD17-01	181		820.35	820.57	0.22			0.22	MGR	LGR		FGR		WBE	ILA			4	4	MFI	IN		SST	SLT	Kg	
FD17-01	182		820.57	820.60	0.03			0.03	DGR	MGR		VFGR		WBE			25		27	WFI	SBK		CST	CCST	Kg	SBK @ top (core twisted by drill bit); few thin carb bands. BCN varies: 25-20-22-28° Bottom end coal coated.
FD17-01	182		820.60	820.62	0.02			0.02	DGR	MGR		VFGR		WBE					27	WFI	SBK		CST	CCST	Kg	SBK @ top (core twisted by drill bit); few thin carb bands. BCN varies: 25-20-22-28° Bottom end coal coated.
FD17-01	182		820.62	820.83	0.21			0.19	DGR	MGR		VFGR		WBE					27	WFI	SBK		CST	CCST	Kg	SBK @ top (core twisted by drill bit); few thin carb bands. BCN varies: 25-20-22-28° Bottom end coal coated.
FD17-01	182		820.83	820.87	0.04			0.04	DGR	MGR		VFGR		WBE					27	WFI	SBK		CST	CCST	Kg	SBK @ top (core twisted by drill bit); few thin carb bands. BCN varies: 25-20-22-28° Bottom end coal coated.
FD17-01	182		820.87	820.90	0.03			0.03	DGR	MGR		VFGR		WBE					27	WFI	SBK		CST	CCST	Kg	SBK @ top (core twisted by drill bit); few thin carb bands. BCN varies: 25-20-22-28° Bottom end coal coated.
FD17-01	182		820.90	820.97	0.07			0.06	DGR	MGR		VFGR		WBE				28	27	WFI	SBK		CST	CCST	Kg	SBK @ top (core twisted by drill bit); few thin carb bands. BCN varies: 25-20-22-28° Bottom end coal coated.
FD17-01	182		820.97	821.00	0.03			0.03	BL	DGR		VFGR		TLA					14		HBK		HCST	CBR	Kg	Mixed with pieces of CBR (Possible C-LOSS at top?)
FD17-01	182		821.00	821.09	0.09			0.09	MGR	DGR		VFGR		LA	MBE		17		14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.09	821.13	0.04			0.04	MGR	DGR		VFGR		LA	MBE				14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.13	821.15	0.02			0.02	MGR	DGR		VFGR		LA	MBE				14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.15	821.40	0.25			0.24	MGR	DGR		VFGR		LA	MBE				14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.40	821.43	0.03			0.03	MGR	DGR		VFGR		LA	MBE				14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.43	821.45	0.02			0.02	MGR	DGR		VFGR		LA	MBE				14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.45	821.51	0.06			0.06	MGR	DGR		VFGR		LA	MBE			10	14	WFI	IN		CST	SLT	Kg	Bottom ct wavy, @ ~10° CBN, intact.
FD17-01	182		821.51	821.65	0.14			0.14	DGR	MGR		VFGR		MBE	LA		10		15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		821.65	821.67	0.02			0.02	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		821.67	821.70	0.03			0.03	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		821.70	821.89	0.19			0.18	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		821.89	821.94	0.05			0.05	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		821.94	821.97	0.03			0.03	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		821.97	822.00	0.03			0.03	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		822.00	822.12	0.12			0.12	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		822.12	822.16	0.04			0.04	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		822.16	822.20	0.04			0.04	DGR	MGR		VFGR		MBE	LA				15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		822.20	822.32	0.12			0.12	DGR	MGR		VFGR		MBE	LA			20	15	WFI	SBK		CST		Kg	At ~13 cm from roof: bkn with CBR, surfaces with thick coal coating; fractured @ floor contact.
FD17-01	182		822.32	822.40	0.08			0.08	DGR			VFGR		MBE					15				CCST	CST	Kg	Slightly carb. Bottom ct wavy/irreg, intact.
FD17-01	182		822.40	822.42	0.02			0.02	DGR			VFGR		MBE					15				CCST	CST	Kg	Slightly carb. Bottom ct wavy/irreg, intact.
FD17-01	182		822.42	822.45	0.03			0.03	DGR			VFGR		MBE					15				CCST	CST	Kg	Slightly carb. Bottom ct wavy/irreg, intact.
FD17-01	182		822.45	822.60	0.15			0.15	DGR			VFGR		MBE					12				CCST	CST	Kg	Slightly carb. Bottom ct wavy/irreg, intact.
FD17-01	182		822.60	822.66	0.06			0.06	MGR	LGR		VF-FGR		LA	MBE		3		12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.
FD17-01	182		822.66	822.70	0.04			0.04	MGR	LGR		VF-FGR		LA	MBE				12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.
FD17-01	182		822.70	822.74	0.04			0.04	MGR	LGR		VF-FGR		LA	MBE				12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.
FD17-01	182		822.74	822.92	0.18			0.18	MGR	LGR		VF-FGR		LA	MBE				12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.
FD17-01	182		822.92	822.95	0.03			0.03	MGR	LGR		VF-FGR		LA	MBE				12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.
FD17-01	182		822.95	823.00	0.05			0.05	MGR	LGR		VF-FGR		LA	MBE				12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	182		823.00	823.12	0.12			0.12	MGR	LGR		VF-FGR		LA	MBE			20	12	MFI	SO		SLT	CST	Kg	Bottom ct wavy, @ ~20° CBN, intact.
FD17-01	182		823.12	823.65	0.53			0.52	GR			VFGR		MBE	TLA			10	10	WFI	IN		CST		Kg	
FD17-01	182	823.57	823.65	823.71	0.06			0.06	GR			VFGR		MBE	TLA			10	10	WFI	IN		CST		Kg	Bottom ct intact.
FD17-01	182		823.71	824.49	0.78			0.77	LGR	MGR		FGR		ILA	XBE		10		10	WFI	IN		SST		Kg	Grades into SLT.
FD17-01	182		824.49	824.77	0.28			0.28	GR			VF-FGR		ILA	MBE				10	WFI	SO		SLT		Kg	
FD17-01	183		824.77	825.59	0.82			0.78	GR			VF-FGR		LA	MBE		8	27	18	WFI	IN		SLT	CST	Kg	Irreg sandy bands around floor contact.
FD17-01	183		825.59	826.68	1.09			1.07	LGR	GR		FGR	VF-FGR	ILA				12	12	MFI	IN		SST	CST	Kg	RCL of cst @ roof contact; 14 cm thick CST band @ floor.
FD17-01	183	826.62	826.68	829.08	2.40			2.28	LGR	MGR		FGR	VF-FGR	TLA	ILA		17	19	18	MFI	IN		SST	SLT	Kg	With sitly+clayey bands 1-12 cm thick; bottom 13 cm is practically CST. BCN varies along interval: 17-24--28-38-30-20-18.
FD17-01	184		829.08	829.70	0.62			0.55	LGR	MGR		FGR	VF-FGR	WBE			25	30	28	MFI	IN		SST		Kg	
FD17-01	184	829.67	829.70	830.08	0.38			0.34	LGR	GR		FGR	VF-FGR	WBE	ILA		28	27	28	MFI	IN		SST	SLT	Kg	Increasingly silty
FD17-01	184		830.08	832.78	2.70			2.50	GR			VF-FGR		WBE	ILA		27	16	22	MFI	IN		SLT		Kg	SLT with bands of SST & CST.BCN varies along interval: 27-30-37-36-30-18-10-16-19-16.
FD17-01	184	832.71	832.78	833.17	0.39			0.37	GR			VF-FGR		WBE	ILA		20	20	20	MFI	IN		SLT	SST	Kg	Grades into SST.
FD17-01	185		833.17	835.87	2.70			2.50	LGR	GR		MGR	VF-FGR	ILA			15	28	22	SFI	IN		SST		Kg	Med-fine grain SST (with interval of "salt & pepper") with occnl SLT bands; fines downwards. Bedding varies (14-25°) and turns direction @ ~1.6m below top:; occnly XBE.
FD17-01	185	835.76	835.87	836.17	0.30			0.28	GR	LGR		VF-FGR		WBE			18		22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.17	836.20	0.03			0.03	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.20	836.25	0.05			0.05	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.25	836.56	0.31			0.29	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.56	836.61	0.05			0.05	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.61	836.64	0.03			0.03	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.64	836.85	0.21			0.19	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.85	836.89	0.04			0.04	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.89	836.94	0.05			0.05	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		836.94	837.17	0.23			0.21	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		837.17	837.22	0.05			0.05	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		837.22	837.27	0.05			0.05	GR	LGR		VF-FGR		WBE					22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	185		837.27	837.34	0.07			0.06	GR	LGR		VF-FGR		WBE				26	22	MFI	IN		SST	SLT	Kg	Silty SST with variable bedding (15-32°), also slightly turning direction; mottled look towards bottom or interval.
FD17-01	186		837.34	837.45	0.11			0.10	GR			VF-FGR		WBE	ILA		20		20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.45	837.48	0.03			0.03	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.48	837.54	0.06			0.06	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.54	837.58	0.04			0.04	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.58	837.82	0.24			0.23	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.82	837.85	0.03			0.03	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.85	837.89	0.04			0.04	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		837.89	838.09	0.20			0.19	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.09	838.14	0.05			0.05	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.14	838.18	0.04			0.04	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.18	838.37	0.19			0.18	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.37	838.41	0.04			0.04	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.41	838.47	0.06			0.06	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.47	838.66	0.19			0.18	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.66	838.70	0.04			0.04	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.70	838.73	0.03			0.03	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186		838.73	838.91	0.18			0.17	GR			VF-FGR		WBE	ILA				20	WFI	IN		SLT	CST	Kg	BCN as above; fines downward (more clayey).
FD17-01	186	838.18	838.91	839.02	0.11			0.10	MGR			VFGR		MBE					22		SO		CST	SLT	Kg	Silty CST
FD17-01	186		839.02	839.08	0.06			0.06	MGR			VFGR		MBE					22		SO		CST	SLT	Kg	Silty CST
FD17-01	186		839.08	839.12	0.04			0.04	MGR			VFGR		MBE					22		SO		CST	SLT	Kg	Silty CST
FD17-01	186		839.12	839.14	0.02			0.02	MGR			VFGR		MBE				22	22		SO		CST	SLT	Kg	Silty CST
FD17-01	186		839.14	839.32	0.18			0.17	GR	LGR		FGR	VF-FGR	TLA	ILA		25		14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.32	839.35	0.03			0.03	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.35	839.40	0.05			0.05	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.40	839.63	0.23			0.22	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.63	839.67	0.04			0.04	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.67	839.71	0.04			0.04	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.71	839.93	0.22			0.21	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.93	839.97	0.04			0.04	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.97	839.99	0.02			0.02	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		839.99	840.19	0.20			0.19	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		840.19	840.22	0.03			0.03	GR	LGR		FGR	VF-FGR	TLA	ILA				14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		840.22	840.26	0.04			0.04	GR	LGR		FGR	VF-FGR	TLA	ILA			3	14		IN		SST	SLT	Kg	BCN shallows downwards as the rock fines into CST; coal coating on bottom end.
FD17-01	186		840.26	840.29	0.03			0.03	DGR	BL		VFGR		MBE		PO	3		3		SBK		CCST		Kg	coal coating on end surface; polished surfaces (possible C-LOSS @ bottom).
FD17-01	186		840.29	840.32		0.03		0.03											15				R-LOSS		Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°) Roof	BCN (°) Floor	BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-01	186		840.32	840.40		0.08		0.08											15				C-LOSS	R-LOSS	Kg	
FD17-01	186		840.40	840.47	0.07			0.07	BL	DBR		VFGR							15		MBK		C&B	HCST	Kg	bkn mostly at bottom (possible C-LOSS).
FD17-01	186		840.47	840.57	0.10			0.10	DGR	BL		VFGR		MBE		PO			15		SBK		CCST		Kg	With coal stringers near top; some bands (~1 cm thick) of aragonite (no fizz!) arranged approx. @ 20° BCN (along bedding)
FD17-01	186		840.57	840.60	0.03			0.03	DGR	BL		VFGR		MBE		PO			15		SBK		CCST		Kg	With coal stringers near top; some bands (~1 cm thick) of aragonite (no fizz!) arranged approx. @ 20° BCN (along bedding)
FD17-01	186		840.60	840.64	0.04			0.04	DGR	BL		VFGR		MBE		PO			15		SBK		CCST		Kg	With coal stringers near top; some bands (~1 cm thick) of aragonite (no fizz!) arranged approx. @ 20° BCN (along bedding)
FD17-01	186		840.64	840.72	0.08			0.08	DGR	BL		VFGR		MBE		PO			15		SBK		CCST		Kg	With coal stringers near top; some bands (~1 cm thick) of aragonite (no fizz!) arranged approx. @ 20° BCN (along bedding)
FD17-01	186		840.72	840.84	0.12			0.12	DGR			VFGR		MBE			22		16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		840.84	840.88	0.04			0.04	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		840.88	840.91	0.03			0.03	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		840.91	841.10	0.19			0.18	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.10	841.13	0.03			0.03	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.13	841.16	0.03			0.03	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.16	841.39	0.23			0.22	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.39	841.42	0.03			0.03	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.42	841.45	0.03			0.03	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.45	841.47	0.02			0.02	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.47	841.52	0.05			0.05	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.52	841.55	0.03			0.03	DGR			VFGR		MBE					16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	186		841.55	841.66	0.11			0.11	DGR			VFGR		MBE				10	16		IN		CST	CCST	Kg	Weakly carb. Gradational top contact with above.
FD17-01	187		841.66	841.89	0.23			0.22	DGR	BL		VFGR		MBE					16		IN		CCST		Kg	V. massive, hard to determine a bedding.
FD17-01	187		841.89	841.93	0.04			0.04	DGR	BL		VFGR		MBE					16		IN		CCST		Kg	V. massive, hard to determine a bedding.
FD17-01	187		841.93	841.95	0.02			0.02	DGR	BL		VFGR		MBE					16		IN		CCST		Kg	V. massive, hard to determine a bedding.
FD17-01	187		841.95	842.05	0.10		15612	0.10	DGR	BL		VFGR		MBE					16		IN		CCST		Kg	As above. Coal coatings on bottom end. ROOF SAMPLE for seam K
FD17-01	187	841.86	842.05	842.24		0.19		0.18											16			K	C-LOSS		Kg	
FD17-01	187		842.24	842.51	0.27		15613	0.27	BL										11		MBK	K	COAL	CDB	Kg	Possible coal loss @ top. Locally white thin aragonite stringers.
FD17-01	187		842.51	842.56	0.05			0.05	DGR	BL		VFGR		MBE					11		SO	K	CCST		Kg	Grades into CST.
FD17-01	187		842.56	842.67	0.11			0.11	DGR			VFGR		MBE					11		IN	K	CST		Kg	Somewhat silty.
FD17-01	187		842.67	842.71	0.04			0.04	DGR			VFGR		MBE					11		IN	K	CST		Kg	Somewhat silty.
FD17-01	187		842.71	842.73	0.02		15614	0.02	DGR			VFGR		MBE					11		IN	K	CST		Kg	Somewhat silty.
FD17-01	187		842.73	842.82	0.09			0.09	DGR			VFGR		MBE					11		IN	K	CST		Kg	Somewhat silty.
FD17-01	188		842.82	842.87	0.05			0.05	DBR	BL		VF-FGR							11		HBK	K	SLT	CST	Kg	Rounded fragments of rock mixed with black sand or some coal (probably fallen from the walls of the CAVE indicated by the density log).
FD17-01	188		842.87	842.90		0.03		0.03											11			K	R-LOSS		Kg	CAVE
FD17-01	188		842.90	843.59		0.69		0.68											11			K	C-LOSS		Kg	
FD17-01	188		843.59	843.94	0.35		15615	0.34	BL										11		HBK	K	COAL	ST	Kg	Ground coal pieces mixed into pulverized coal; contains significant pieces of hard coal (ST and/or CBN). A mess… Possible C-LOSS at bottom..
FD17-01	188		843.94	844.54		0.60		0.59											11			K	C-LOSS		Kg	
FD17-01	188		844.54	845.26	0.72		15616	0.71	BL										11		SBK	K	CD&B		Kg	Mostly IN, bkn only @ top and bottom.
FD17-01	188	844.90	845.26	845.28	0.02			0.02	BL										11		HBK	K	CBB		Kg	Possible coal loss @ top.
FD17-01	188		845.28	845.38	0.10		15617	0.10	DBR	BL		VFGR		MBE					5		SBK		CCST		Kg	Thin white (aragonite?) stringers @ bottom.
FD17-01	189		845.38	845.41	0.03			0.03	DGR	BL		VFGR		TLA					5		HBK		CCST		Kg	
FD17-01	189		845.41	845.43		0.02		0.02											5				R-LOSS		Kg	
FD17-01	189		845.43	845.44	0.01			0.01	DGR	MGR		VFGR		MBE					5		SBK		CST	CCST	Kg	Weakly carb. Floor ct IN.
FD17-01	189		845.44	845.46	0.02			0.02	DGR	MGR		VFGR		MBE					5		SBK		CST	CCST	Kg	Weakly carb. Floor ct IN.
FD17-01	189		845.46	845.67	0.21			0.21	DGR	MGR		VFGR		MBE					5		SBK		CST	CCST	Kg	Weakly carb. Floor ct IN.
FD17-01	189		845.67	845.69	0.02			0.02	DGR	MGR		VFGR		MBE					5		SBK		CST	CCST	Kg	Weakly carb. Floor ct IN.
FD17-01	189		845.69	845.72	0.03			0.03	DGR	MGR		VFGR		MBE					5		SBK		CST	CCST	Kg	Weakly carb. Floor ct IN.
FD17-01	189		845.72	845.77	0.05			0.05	DGR	MGR		VFGR		MBE				5	5		SBK		CST	CCST	Kg	Weakly carb. Floor ct IN.
FD17-01	189		845.77	845.93	0.16			0.16	MGR			VFGR		MBE					5		IN		cst	SLT	Kg	Silty CST. Bottom ct IN, sharp @ ~5 BCN.
FD17-01	189		845.93	845.97	0.04			0.04	MGR			VFGR		MBE					5		IN		cst	SLT	Kg	Silty CST. Bottom ct IN, sharp @ ~5 BCN.
FD17-01	189		845.97	845.99	0.02			0.02	MGR			VFGR		MBE					5		IN		cst	SLT	Kg	Silty CST. Bottom ct IN, sharp @ ~5 BCN.
FD17-01	189		845.99	846.01	0.02			0.02	MGR			VFGR		MBE					5		IN		cst	SLT	Kg	Silty CST. Bottom ct IN, sharp @ ~5 BCN.
FD17-01	189		846.01	846.16	0.15			0.15	GR			VFGR		MBE					5		SO		CST		Kg	V. hard rock, barely scratched by steel knife. (Chert ?) bottom ct marked by enrichment in sand/silt.
FD17-01	189		846.16	846.20	0.04			0.04	GR			VFGR		MBE					5		SO		CST		Kg	V. hard rock, barely scratched by steel knife. (Chert ?) bottom ct marked by enrichment in sand/silt.
FD17-01	189		846.20	846.22	0.02			0.02	GR			VFGR		MBE					5		SO		CST		Kg	V. hard rock, barely scratched by steel knife. (Chert ?) bottom ct marked by enrichment in sand/silt.
FD17-01	189		846.22	846.26	0.04			0.04	GR			VFGR		MBE					5		SO		CST		Kg	V. hard rock, barely scratched by steel knife. (Chert ?) bottom ct marked by enrichment in sand/silt.
FD17-01	189		846.26	846.39	0.13			0.13	GR			VFGR		MBE					5		SO		CST		Kg	V. hard rock, barely scratched by steel knife. (Chert ?) bottom ct marked by enrichment in sand/silt.
FD17-01	189		846.39	846.49	0.10			0.10	MGR			VFGR		MBE					5		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		846.49	846.52	0.03			0.03	MGR			VFGR		MBE					5		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		846.52	846.58	0.06			0.06	MGR			VFGR		MBE					5		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		846.58	846.80	0.22			0.22	MGR			VFGR		MBE					5		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		846.80	846.82	0.02			0.02	MGR			VFGR		MBE					14		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-01		Project:	Flatbed	
Collar Bearing (°):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (°):	90°	*Handheld GPS*	Easting:	635350.00	Logged By: Adriana Matesoi
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088447.00	Log Start Date: 04 08 2017
Total Depth (m):	866.39		Projection:	UTM NAD 83 Zone 10	Log End Date: 11 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (°)		BCN True Thickness Calculations (°)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-01	189		846.82	846.85	0.03			0.03	MGR			VFGR		MBE					14		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		846.85	847.06	0.21			0.20	MGR			VFGR		MBE					14		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		847.06	847.10	0.04			0.04	MGR			VFGR		MBE					14		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		847.10	847.13	0.03			0.03	MGR			VFGR		MBE					14		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		847.13	847.20	0.07			0.07	MGR			VFGR		MBE					14		IN		CST		Kg	Includes one 17 cm thick sand-enriched band (@ ~0.05 m from top). Weak bedding 3-6 BCN. Grades into SLT.
FD17-01	189		847.20	847.32	0.12			0.12	MGR			VF-FGR		MBE					14		SO		SLT		Kg	Gradual sand enrichment.
FD17-01	189		847.32	847.35	0.03			0.03	MGR			VF-FGR		MBE					14		SO		SLT		Kg	Gradual sand enrichment.
FD17-01	189		847.35	847.37	0.02			0.02	MGR			VF-FGR		MBE					14		SO		SLT		Kg	Gradual sand enrichment.
FD17-01	189		847.37	847.46	0.09			0.09	MGR			VF-FGR		MBE					14		SO		SLT		Kg	Gradual sand enrichment.
FD17-01	189		847.46	847.55	0.09			0.09	MGR			FGR		WBE	ILA		13		14		IN		SLT	SST	Kg	Sandy SLT. Grades into SST.
FD17-01	189		847.55	847.61	0.06			0.06	MGR			FGR		WBE	ILA				14		IN		SLT	SST	Kg	Sandy SLT. Grades into SST.
FD17-01	189		847.61	847.84	0.23			0.22	MGR			FGR		WBE	ILA			14	14		IN		SLT	SST	Kg	Sandy SLT. Grades into SST.
FD17-01	189		847.84	847.88	0.04			0.04	LGR			FGR	MGR	LA			14		16		SO		SST		Kg	Fine "salt & pepper" SST. BCN: 14-16-18.
FD17-01	189		847.88	847.92	0.04			0.04	LGR			FGR	MGR	LA					16		SO		SST		Kg	Fine "salt & pepper" SST. BCN: 14-16-18.
FD17-01	189		847.92	848.10	0.18			0.17	LGR			FGR	MGR	LA					16		SO		SST		Kg	Fine "salt & pepper" SST. BCN: 14-16-18.
FD17-01	189		848.10	848.12	0.02			0.02	LGR			FGR	MGR	LA					16		SO		SST		Kg	Fine "salt & pepper" SST. BCN: 14-16-18.
FD17-01	189		848.12	848.16	0.04			0.04	LGR			FGR	MGR	LA					16		SO		SST		Kg	Fine "salt & pepper" SST. BCN: 14-16-18.
FD17-01	189		848.16	848.22	0.06			0.06	LGR			FGR	MGR	LA				18	16		SO		SST		Kg	Fine "salt & pepper" SST. BCN: 14-16-18.
FD17-01	189	847.95	848.22	849.54	1.32			1.22	LGR			FGR	MGR	LA	XBE		22	23	23		IN		SST		Kg	Locally XBE. RCL of CST + carb material in bottom~0.20 m. Bottom ct IN, irreg shaped.
FD17-01	189		849.54	849.64	0.10			0.09	MGR	DGR		VFGR		SLS	RCL				23		SO		CST		Kg	
FD17-01	190		849.64	849.73	0.09			0.09	MGR			VFGR		ILA	RCL				10		SO		CST		Kg	Bottom ct IN, erosional (with RCL).
FD17-01	190		849.73	850.70	0.97			0.96	LGR			FGR	MGR	LA	MBE		10	9	10		IN		SST		Kg	BCN varies: 3-10° .Bottom ct. IN, @ ~9° BCN.
FD17-01	190		850.70	851.12	0.42			0.41	DGR			VF-FGR	VFGR	SLS	MBE		9		9		IN		SLT	CST	Kg	Silty @ top half.
FD17-01	190	851.00	851.12	851.27	0.15			0.15	DGR	MGR		VFGR		ILA	SLS			5	5		SO		CST		Kg	Irreg bottom ct..
FD17-01	190		851.27	852.12	0.85			0.82	MGR	LGR		FGR	VF-FGR	ILA	MBE		10	(22)	15	WFI	IN		SST	SLT	Kg	Fine SST with bands/lams of SLT+CST. Locally sideritic concretions. BCN varies-10-22. Bottom ct IN, quite irreg.
FD17-01	190		852.12	853.89	1.77			1.74	LGR			FGR	MGR	TLA	XBE			10	10	WFI	IN		SST		Kg	Thin calcite stringers near top. BCN varies: 5-18°(and slightly turn direction @ 0.50m above bottom of interval).
FD17-01	191		853.89	854.29	0.40			0.39	LGR			FGR	MGR	LA	XBE		10		10	WFI	IN		SST		Kg	XBE over bottom half.
FD17-01	191	854.05	854.29	854.54	0.25			0.25	LGR			FGR	MGR	XBE					10		SO		SST		Kg	Bottom ct IN, @ ~ 5° BCN.
FD17-01	191		854.54	856.22	1.68			1.60	MGR	LGR		VF-FGR		LA	ILA		15	20	18		IN		SST	CST	Kg	Interbanded/interLA SST/CST; bedding varies: 15-30°; local soft sediment. Deformations. Coarsens towards floor ct.
FD17-01	191		856.22	857.39	1.17			1.14	LGR			MGR		LA	XBE		15	10	13		IN		SST		Kg	"salt & pepper" look.
FD17-01	191	857.10	857.39	858.06	0.67			0.64	LGR			MGR		LA			13	20	17		IN		SST		Kg	As above, with less XBE.
FD17-01	192		858.06	859.92	1.86			1.78	LGR			MGR		LA	XBE		18	15	17		IN		SST		Kg	At ~ 0.26 m above the floor: one 6-7 cm thick DGR band with chert clasts. Floor ct. IN, @ 15° BCN
FD17-01	192		859.92	860.35	0.43			0.42	LGR	DGR		FGR	VFGR	TLA	SLS		15	10	13		IN		SST	CST	Kg	fine SST with bands/lams CST; occnly soft sediment deformations. Sbk @ bottom.
FD17-01	192	860.15	860.35	862.20	1.85			1.82	LGR	DGR		FGR	VF-FGR	LA			10	10	10		IN		SST	CST	Kg	As above, with more uniform LA/ bedding.
FD17-01	193		862.20	862.75	0.55			0.54	LGR	DGR		FGR	VF-FGR	LA			10	10	10		IN		SST	CST	Kg	with dense CST laminae; coarsens towards bottom.
FD17-01	193		862.75	863.29	0.54			0.52	LGR			MGR		MBE	LA			15	15		IN		SST		Kg	
FD17-01	193	863.19	863.29	863.91	0.62			0.60	LGR			MGR	FGR	MBE	LA		15	10	13		IN		SST		Kg	Fines towards bottom ct.
FD17-01	193		863.91	865.94	2.03			1.79	LGR	MGR		FGR	VFGR	LA	MBE		18	38	28		IN		SLT	SST	Kg	occasionally thin CST bands. At 0.25m above bottom of interval: bedding turns direction then suddenly gets steep to 38° BCN; Bedding is cut by an unconformity @ 0° BCN.
FD17-01	193		865.94	866.39	0.45			0.42	MGR			VF-FGR		MBE					20		SO		CST	SLT	Kg	Silty CST; very massive…
FD17-01	193	866.24	866.39	866.39																							End of Hole.

Gordon Creek Project

(Flatbed Property)

Lithology Descriptive Logs

FD17-02

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-02	Project:	Flatbed
Collar Bearing (˚):	-	*Handheld GPS* Collar Elev. (m):	1243.00
Hole Angle (˚):	90˚	*Handheld GPS* Easting:	635419.00
Core Diameter:	HQ3	*Handheld GPS* Northing:	6086618.00
Total Depth (m):	608.38	Projection:	UTM NAD 83 Zone 10

Logged By: Özlem S Özlem Suleyman
Log Start Date: 06 08 2017
Log End Date: 22 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-02	1		0.00	11.17		11.17		11.17															OVB	R-LOSS		
FD17-02	1		11.17	11.28	0.11			0.11	LGR	GR	SWE	FGR	MGR							SFI	IN		OVB	SST		50 % of slt with fine sst bands and medium grain sized sst. The med grain sized sst reacts strongly to acid. Base of OVB is at 11.28 m
FD17-02	1	11.28	11.28	14.33	3.05			3.00	LGR	GR	MWE	MGR							10	SFI	IN		SST		Ksh	
FD17-02	1	14.33	14.33	15.18	0.85			0.84	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	Silty cst with sst lamina. BDC varies from 2 to 10 degrees normal
FD17-02	2		15.18	17.37	2.19			2.18	DGR	LGR		VF-FGR	FGR	LA			1	10	6	-	IN		SLT	SST	Ksh	Silty cst to sst lamina. Climbing ripple laminations present. At the top, the bed is very horizontal and starts slant to 10 degrees towards the end of the core
FD17-02	2	17.37	17.37	19.34	1.97			1.96	DGR	LGR		VF-FGR	FGR	LA			2	8	5	-	IN		SLT	SST	Ksh	BCN varies from 2 to 8 degrees to core normal. Clayey siltstone with sandy lamina
FD17-02	3		19.34	20.42	1.08			1.07	DGR	LGR		VF-FGR	FGR	TLA	ILA		6	10	8	-	SBK		SLT	SST	Ksh	Some irregular laminations. Slt with sst laminations
FD17-02	3	20.42	20.42	23.55	3.13			3.12	DGR	LGR		VF-FGR	FGR	TLA	ILA		6	4	5	-	IN		SLT	SST	Ksh	
FD17-02	4	23.47	23.55	26.52	2.97			2.95	DGR	LGR		VF-FGR	FGR	TLA	ILA		5	8	7	-	HBK		SLT	SST	Ksh	Irregularly laminated in some areas of the core.
FD17-02	4	26.52	26.52	27.74	1.22			1.20	DGR	LGR		VF-FGR	FGR	TLA	ILA		10	10	10	-	IN		SLT	SST	Ksh	There was only one lamination measured 13. Every thing else was 10 degrees to core normal
FD17-02	5		27.74	29.57	1.83			1.82	DGR	LGR		VF-FGR	FGR	LA			5	5	5	-	IN		SLT	SST	Ksh	
FD17-02	5	29.57	29.57	31.96	2.39			2.37	DGR	LGR		VF-FGR	FGR	LA			7	9	8	-	SBK		SLT	SST	Ksh	The sst laminations sizes are bigger. Not as thinly. A cross lamination found.
FD17-02	6		31.96	32.68	0.72			0.71	DGR	LGR		VF-FGR	FGR	TLA			5	12	9	-	IN		SLT	SST	Ksh	More sst laminations present. Climbing ripples laminations present. Small beds. Cross-laminations present
FD17-02	6	32.61	32.68	35.66	2.98			2.93	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	SBK		SLT	SST	Ksh	There is a small section of highly broken rock. Cross-laminations present
FD17-02	6	35.66	35.66	36.13	0.47			0.46	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	Silty cst with sst laminations. Cross-laminations present
FD17-02	7		36.13	38.75	2.62			2.59	DGR	LGR		VF-FGR	FGR	ILA	LA	FLT	7	11	9	-	IN		SLT	SST	Ksh	Clayey slt with sst laminations. there is a micro fault (.02 m displacement). a micro syncline is present
FD17-02	7	38.71	38.75	40.52	1.77			1.75	DGR	LGR		VF-FGR	FGR	ILA	LA		6	9	8	-	IN		SLT	SST	Ksh	silty claystone with sst laminations and beds
FD17-02	8		40.52	41.87	1.35			1.34	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	silty claystone with sst laminations and beds
FD17-02	8	41.76	41.87	44.91	3.04			3.00	DGR	LGR		VF-FGR	FGR	TLA					9	-	SBK		SLT	SST	Ksh	silty claystone with sst laminations and beds
FD17-02	9	44.81	44.91	47.92	3.01			2.96	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	SBK		SLT	SST	Ksh	
FD17-02	9	47.85	47.92	49.13	1.21			1.20	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	10		49.13	50.90	1.77			1.76	DGR	LGR		VF-FGR	FGR	TLA			6	7	7	-	IN		SLT	SST	Ksh	
FD17-02	10	50.90	50.90	53.34	2.44			2.42	DGR	LGR		VF-FGR	FGR	TLA			7	7	7	-	IN		SLT	SST	Ksh	
FD17-02	11		53.34	53.93	0.59			0.59	DGR	LGR		VF-FGR	FGR	TLA			7	7	7	-	IN		SLT	SST	Ksh	
FD17-02	11	53.95	53.93	56.93	3.00			2.93	DGR	LGR		VF-FGR	FGR	TLA	ILA		15	10	13	-	SBK		SLT	SST	Ksh	Climbing ripple laminations present. BCN for a very small group of laminations were 15 degree to axis
FD17-02	11	57.00	56.93	57.57	0.64			0.64	DGR	LGR		VF-FGR	FGR	TLA			3	6	5	-	IN		SLT	SST	Ksh	
FD17-02	12		57.57	60.06	2.49			2.47	DGR	LGR		VF-FGR	FGR	TLA			6	10	8	-	IN		SLT	SST	Ksh	
FD17-02	12	60.05	60.06	61.93	1.87			1.85	DGR	LGR		VF-FGR	FGR	TLA			7	11	9	-	IN		SLT	SST	Ksh	
FD17-02	13		61.93	63.07	1.14			1.14	DGR	LGR		VF-FGR	FGR	TLA	LA		2	2	2	-	SBK		SLT	SST	Ksh	Some small beds present as well
FD17-02	13	63.09	63.07	66.14	3.07			3.05	DGR	LGR		VF-FGR	FGR	TLA	BIO	FLT	4	10	7	-	IN		SLT	SST	Ksh	A micro fault of displacement or 0.02 is present. It is 0.065 m long. The core laminations become steeper (10 degrees) after microfault
FD17-02	14	66.14	66.14	69.19	3.05			3.00	DGR	LGR		VF-FGR	FGR	LA	MBE		10	10	10	-	IN		SLT	SST	Ksh	Some laminations are thick enough to call beds
FD17-02	14	69.19	69.19	70.45	1.26			1.24	DGR	LGR		VF-FGR	FGR	TLA	RCL		10	10	10	-	SBK		SLT	SST	Ksh	Some sandy RCL present at the bottom part of the silty core
FD17-02	15		70.45	72.23	1.78			1.75	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	The core starts with very horizontal lines dipping at almost 0 degrees but then it starts to dip 10 degrees throughout the core.
FD17-02	15	72.24	72.23	74.80	2.57			2.54	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	16		74.80	75.29	0.49			0.49	DGR	LGR		VF-FGR	FGR	TLA					7	-	IN		SLT	SST	Ksh	
FD17-02	16	75.29	75.29	78.30	3.01			3.00	DGR	LGR		VF-FGR	FGR	TLA			5	5	5	-	IN		SLT	SST	Ksh	
FD17-02	16	78.33	78.30	79.10	0.80			0.79	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	17		79.10	81.39	2.29			2.27	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	17	81.38	81.39	83.45	2.06			2.04	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	18		83.45	84.31	0.86			0.85	DGR	LGR		VF-FGR	FGR	TLA			7	9	8	-	IN		SLT	SST	Ksh	
FD17-02	18	84.43	84.31	87.52	3.21			3.20	DGR	LGR		VF-FGR	FGR	TLA			0	10	5	-	MBK		SLT	SST	Ksh	I put 0 degrees for BCN because it was extremely flat to measure dip
FD17-02	19	87.48	87.52	90.58	3.06			3.01	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	19	90.53	90.58	91.78	1.20			1.18	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	20		91.78	93.57	1.79			1.78	DGR	LGR		VF-FGR	FGR	TLA			8	5	7	-	IN		SLT	SST	Ksh	
FD17-02	20	93.57	93.57	96.09	2.52			2.51	DGR	LGR		VF-FGR	FGR	TLA			6	6	6	-	IN		SLT	SST	Ksh	
FD17-02	21		96.09	96.56	0.47			0.47	DGR	LGR		VF-FGR	FGR	TLA			3	8	6	-	IN		SLT	SST	Ksh	
FD17-02	21	96.62	96.56	99.64	3.08			3.08	DGR	LGR		VF-FGR	FGR	TLA	LA		5	0	3	-	IN		SLT	SST	Ksh	Laminations became horizontal
FD17-02	21	99.67	99.64	100.46	0.82			0.81	DGR	LGR		VF-FGR	FGR	TLA	LA		10	5	8	-	IN		SLT	SST	Ksh	
FD17-02	22		100.46	102.72	2.26			2.25	DGR	LGR		VF-FGR	FGR	LA			0	8	4	-	IN		SLT	SST	Ksh	
FD17-02	22	102.72	102.72	104.80	2.08			2.07	DGR	LGR		VF-FGR	FGR	LA			10	0	5	-	IN		SLT	SST	Ksh	
FD17-02	23		104.80	105.70	0.90			0.90	DGR	LGR		VF-FGR	FGR	TLA		FLT	6	6	6	-	IN		SLT	SST	Ksh	A micro fault of displacement of .02 m present
FD17-02	23	105.77	105.70	108.84	3.14			3.11	DGR	LGR		VF-FGR	FGR	TLA	XBE		6	10	8	-	IN		SLT	SST	Ksh	Cross-stratified laminations
FD17-02	23	108.81	108.84	109.12	0.28			0.28	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	SBK		SLT	SST	Ksh	
FD17-02	24		109.12	112.01	2.89			2.85	DGR	LGR		VF-FGR	FGR	TLA	XBE		10	10	10	-	IN		SLT	SST	Ksh	Cross-stratified laminations
FD17-02	24	111.86	112.01	113.44	1.43			1.41	DGR	LGR		VF-FGR	FGR	TLA	XBE		10	10	10	-	IN		SLT	SST	Ksh	Cross-stratified laminations
FD17-02	25		113.44	115.17	1.73			1.71	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	25	114.91	115.17	117.80	2.63			2.60	DGR	LGR		VF-FGR	FGR	TLA			10	8	9	-	IN		SLT	SST	Ksh	
FD17-02	26		117.80	118.27	0.47			0.47	DGR	LGR		VF-FGR	FGR	ILA	TLA		2	2	2	-	IN		SLT	SST	Ksh	Fewer laminations. 85% of silty clay and 15% sst laminations
FD17-02	26	117.96	118.27	121.32	3.05			3.02	DGR	LGR		F-MGR	VF-FGR	MBE	LA		10	7	9	-	SBK		SST	SLT	Ksh	Laminations are not thin any more. The top 16 cm has fewer laminations then the laminations increase in size and amount
FD17-02	26	121.01	121.32	121.99	0.67			0.66	DGR	LGR		VF-FGR	F-MGR	MBE			10	10	10	-	IN		SLT	SST	Ksh	silty sst with sst laminations and beds
FD17-02	27		121.99	124.36	2.37			2.33	DGR	LGR		VF-FGR	F-MGR	MBE			10	10	10	-	IN		SLT	SST	Ksh	Silty sst interbedded with sst
FD17-02	27	124.05	124.36	126.24	1.88			1.86	DGR	LGR		VF-FGR	FGR	MBE			6	10	8	-	IN		SLT	SST	Ksh	
FD17-02	28		126.24	127.39	1.15			1.14	DGR	LGR		VF-FGR	FGR	LA	ILA		7	6	7	-	IN		SLT	SST	Ksh	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-02		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1243.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	635419.00	Logged By: Özlem S Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6086618.00	Log Start Date: 06 08 2017
Total Depth (m):	608.38		Projection:	UTM NAD 83 Zone 10	Log End Date: 22 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-02	28	127.10	127.39	130.47	3.08			3.05	DGR	LGR		VF-FGR	FGR	LA	ILA		7	10	9	-	IN		SLT	SST	Ksh	
FD17-02	28	130.15	130.47	130.63	0.16			0.16	DGR	LGR		VF-FGR	FGR	LA	ILA		5	5	5	-	IN		SLT	SST	Ksh	
FD17-02	29		130.63	133.56	2.93			2.92	DGR	LGR		VF-FGR	FGR	ILA			8	2	5	-	IN		SLT	SST	Ksh	
FD17-02	29	133.20	133.56	135.04	1.48			1.47	DGR	LGR		VF-FGR	FGR	LA	ILA		8	7	8	-	IN		SLT	SST	Ksh	Siderite band present
FD17-02	30		135.04	136.61	1.57			1.57	DGR	LGR		VF-FGR	FGR	LA	ILA		2	5	4	-	IN		SLT	SST	Ksh	Silty cst with sst laminations interbedded with sst
FD17-02	30	136.25	136.61	139.39	2.78			2.77	DGR	LGR		VF-FGR	FGR	LA	ILA		5	5	5	-	IN		SLT	SST	Ksh	Silty cst with sst laminations
FD17-02	31		139.39	139.66	0.27			0.27	DGR	LGR		VF-FGR	FGR	TLA	ILA		10	10	10	-	IN		SLT	SST	Ksh	Thick laminations
FD17-02	31	139.29	139.66	142.70	3.04			3.00	DGR	LGR		VF-FGR	FGR	TLA	ILA		8	10	9	-	IN		SLT	SST	Ksh	Silty cst with sst laminations
FD17-02	31	142.34	142.70	143.63	0.93			0.93	DGR	LGR		VF-FGR	FGR	TLA	ILA		0	0	0	-	IN		SLT	SST	Ksh	horizontal laminations throughout this rock
FD17-02	32		143.63	145.78	2.15			2.12	DGR	LGR		VF-FGR	FGR	TLA	ILA		10	8	9	-	IN		SLT	SST	Ksh	Silty cst with sst laminations
FD17-02	32	145.39	145.78	148.07	2.29			2.24	DGR	LGR		VF-FGR	FGR	LA	ILA		15	10	13	-	IN		SLT	SST	Ksh	Silty cst with sst laminations with a few beds
FD17-02	33		148.07	148.78	0.71			0.70	DGR	LGR		VF-FGR	FGR	LA			10	9	10	-	IN		SLT	SST	Ksh	Silty cst with sst laminations and a few beds
FD17-02	33	148.44	148.78	151.81	3.03			3.00	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	Cst with sandy laminations interbedded with sst beds.
FD17-02	33	151.49	151.81	152.30	0.49			0.49	DGR	LGR		VF-FGR	FGR	TLA			2	2	2	-	IN		SLT	SST	Ksh	Silty cst with sst laminations
FD17-02	34		152.30	154.80	2.50			2.49	DGR	LGR		VF-FGR	FGR	TLA			0	10	5	-	IN		SLT	SST	Ksh	Very few sst laminations. Clayey slt
FD17-02	34	154.53	154.80	156.64	1.84			1.82	DGR	LGR		VF-FGR	FGR	TLA			5	10	8	-	IN		SLT	SST	Ksh	Very few sst laminations. Clayey slt
FD17-02	35		156.64	157.80	1.16			1.15	DGR	LGR		VF-FGR	FGR	TLA			10	7	9	-	IN		SLT	SST	Ksh	
FD17-02	35	157.58	157.80	160.80	3.00			2.98	DGR	LGR		VF-FGR	FGR	TLA			6	7	7	-	IN		SLT	SST	Ksh	
FD17-02	35	160.63	160.80	160.97	0.17			0.17	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	SBK		SLT	SST	Ksh	
FD17-02	36		160.97	163.85	2.88			2.88	DGR	LGR		VF-FGR	FGR	TLA	ILA		0	0	0	-	IN		SLT	SST	Ksh	
FD17-02	36	163.68	163.85	165.25	1.40			1.38	DGR	LGR		VF-FGR	FGR	TLA	ILA		10	8	9	-	IN		SLT	SST	Ksh	
FD17-02	37		165.25	166.88	1.63			1.61	DGR	LGR		VF-FGR	FGR	TLA			10	8	9	-	IN		SLT	SST	Ksh	Fewer laminations
FD17-02	37	166.73	166.88	169.55	2.67			2.65	DGR	LGR		VF-FGR	FGR	TLA			5	10	8	-	IN		SLT	SST	Ksh	Fewer laminations and more beds
FD17-02	38		169.55	169.93	0.38			0.37	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	38	169.77	169.93	172.99	3.06			3.04	DGR	LGR		VF-FGR	FGR	TLA			4	9	7	-	IN		SLT	SST	Ksh	
FD17-02	38	172.82	172.99	173.86	0.87			0.86	DGR	LGR		VF-FGR	FGR	TLA			7	8	8	-	SBK		SLT	SST	Ksh	
FD17-02	39		173.86	176.10	2.24			2.21	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	39	175.87	176.10	178.26	2.16			2.13	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	40		178.26	179.06	0.80			0.79	DGR	LGR		VF-FGR	FGR	TLA			10	8	9	-	IN		SLT	SST	Ksh	
FD17-02	40	178.92	179.06	182.01	2.95			2.92	DGR	LGR		VF-FGR	FGR	TLA			7	9	8	-	SBK		SLT	SST	Ksh	
FD17-02	40	181.97	182.01	182.57	0.56			0.55	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	41		182.57	185.03	2.46			2.44	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	Siderite band present
FD17-02	41	185.01	185.03	187.97	2.94			2.90	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	42	188.06	187.97	191.11	3.14			3.11	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	SBK		SLT	SST	Ksh	
FD17-02	42	191.11	191.11	191.29	0.18			0.18	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	Only 5% of sandy laminations.
FD17-02	43		191.29	194.24	2.95			2.91	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	43	194.16	194.24	195.68	1.44			1.44	DGR	LGR		VF-FGR	FGR	TLA			7	1	4	-	SBK		SLT	SST	Ksh	Towards the end of the core the laminations are very horizontal
FD17-02	44		195.68	197.11	1.43			1.41	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	Sandy laminations increase in number
FD17-02	44	197.21	197.11	199.93	2.82			2.78	DGR	LGR		VF-FGR	FGR	TLA	BIO		10	10	10	-	IN		SLT	SST	Ksh	Only 1 lamination dips at 12 degrees to normal. A disturbed sand bed is present 0.9 m from the bottom of the core possibly due to bioturbation
FD17-02	45		199.93	200.30	0.37			0.37	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	45	200.25	200.30	203.22	2.92			2.87	DGR	LGR		VF-FGR	FGR	TLA			10	12	11	-	IN		SLT	SST	Ksh	
FD17-02	45	203.30	203.22	204.19	0.97			0.95	DGR	LGR		VF-FGR	FGR	TLA			11	10	11	-	SBK		SLT	SST	Ksh	
FD17-02	46		204.19	206.38	2.19			2.16	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	Thicker laminations
FD17-02	46	206.35	206.38	208.51	2.13			2.11	DGR	LGR		VF-FGR	FGR	LA			10	7	9	-	IN		SLT	SST	Ksh	
FD17-02	47		208.51	209.40	0.89			0.88	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	47	209.40	209.40	212.45	3.05			2.98	DGR	LGR		VF-FGR	FGR	TLA			10	14	12	-	IN		SLT	SST	Ksh	A small section (.14 m) dips 14 degrees core normal. Then it becomes very horizontal the rest of the core.
FD17-02	47	212.45	212.45	212.80	0.35			0.35	DGR	LGR		VF-FGR	FGR	TLA			6	6	6	-	IN		SLT	SST	Ksh	
FD17-02	48		212.80	214.02	1.22			1.21	DGR	LGR		VF-FGR	FGR	TLA			7	7	7	-	IN		SLT	SST	Ksh	The sand percentage increase towards the bottom of the core. Grainsize of the core is getting coarser. Gradually becoming a sst
FD17-02	48		214.02	215.49	1.47			1.46	LGR	DGR		MGR	VF-FGR		RCL				7	-	IN		SST	SLT	Ksh	Sideritic and silty RCL present at the top part of the core or the contact of slt and sst. 60 % sandy and 40% silty
FD17-02	48	215.49	215.49	217.17	1.68			1.67	LGR	DGR		MGR	VF-FGR		RCL				7	-	IN		SST	SLT	Ksh	The grain size starts to decrease at the bottom of the core
FD17-02	49		217.17	218.54	1.37			1.36	DGR	LGR		VF-FGR	FGR	MBE	BIO				7	-	IN		SST	SLT	Ksh	Silty sandstone. Possibly formed in high energy environment (turbid) environment. Also possibility of bioturbation
FD17-02	49	218.54	218.54	221.64	3.10			3.08	DGR	LGR		VF-FGR	FGR	MBE	BIO				7	-	IN		SST	SLT	Ksh	Silty sandstone. Possibly formed in high energy environments making the sand and silt not settle or deposit. Also, possibility of bioturbation. Carbonaceous inclusion at the bottom
FD17-02	50	221.59	221.64	224.65	3.01			3.01	DGR	LGR		VF-FGR	FGR	LA			0	0	0	-	IN		SST	SLT	Ksh	Weak sandy laminations
FD17-02	50	224.64	224.65	225.95	1.30			1.30	DGR	LGR		VF-FGR	FGR				4	2	3	-	SBK		SST	SLT	Ksh	Weak sandy laminations
FD17-02	51		225.95	227.74	1.79			1.79	DGR	LGR		VF-FGR	FGR	LA			5	3	4	-	IN		SST	SLT	Ksh	Laminations at the top of the core
FD17-02	51	227.69	227.74	230.17	2.43			2.42	DGR	LGR		VF-FGR	FGR	LA			5	5	5	-	IN		SST	SLT	Ksh	Very few and faded laminations
FD17-02	52		230.17	230.76	0.59			0.59	DGR	LGR		VF-FGR	FGR	TLA			0	0	0	-	IN		SST	SLT	Ksh	Muddy laminations
FD17-02	52	230.73	230.76	233.71	2.95			2.95	DGR	LGR		VF-FGR	FGR	TLA			2	1	2	-	IN		SLT	SST	Ksh	Very few laminations. Possibility of an angular shaped siderite concretion
FD17-02	52	233.78	233.71	234.46	0.75			0.75	DGR	LGR		VF-FGR	FGR	LA			0	0	0	-	IN		SLT	SST	Ksh	Very few laminations.
FD17-02	53		234.46	236.79	2.33			2.32	DGR	LGR		VF-FGR	FGR	LA	ILA		6	6	6	-	IN		SLT	SST	Ksh	
FD17-02	53	236.83	236.79	238.66	1.87			1.87	DGR	LGR		VF-FGR	FGR	LA			2	4	3	-	IN		SLT	SST	Ksh	
FD17-02	54		238.66	239.84	1.18			1.18	DGR	LGR		VF-FGR	FGR	MBE					4	-	IN		SLT	SST	Ksh	Sandy slt (possibility of a turbid). Siderite concretion present 30 cm towards the end of the core section
FD17-02	54	239.88	239.84	242.93	3.09			3.08	DGR	LGR		VF-FGR	FGR	MBE					4	-	IN		SLT	SST	Ksh	Sandy slt (signs of high energy environment).

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-02		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1243.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	635419.00	Logged By: Özlem S Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6086618.00	Log Start Date: 06 08 2017
Total Depth (m):	608.38		Projection:	UTM NAD 83 Zone 10	Log End Date: 22 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-02	55	242.93	242.93	246.01	3.08			3.08	DGR	LGR		VF-FGR	FGR	LA			2	4	3	-	IN		SLT	SST	Ksh	Massive siltstone with sst
FD17-02	55	245.97	246.01	247.27	1.26			1.26	DGR	LGR		VF-FGR	FGR	ILA			2	6	4	-	IN		SLT	SST	Ksh	Lesser sst
FD17-02	56		247.27	249.06	1.79			1.79	DGR	LGR		VF-FGR	FGR	ILA			2	5	4	-	IN		SLT	SST	Ksh	Massive silty sst with very few thin irregular laminations
FD17-02	56	249.02	249.06	251.57	2.51			2.50	DGR	LGR		VF-FGR	FGR	ILA			7	3	5	-	IN		SLT	SST	Ksh	Massive silty sst with very few thin irregular laminations
FD17-02	57		251.57	252.10	0.53			0.53	DGR	LGR		VF-FGR	FGR				3	2	3	-	IN		SLT	SST	Ksh	
FD17-02	57	252.07	252.10	255.15	3.05			3.04	DGR	LGR		VF-FGR	FGR	ILA			3	6	5	-	IN		SLT	SST	Ksh	
FD17-02	57	255.12	255.15	255.66	0.51			0.51	DGR	LGR		VF-FGR	FGR	ILA			4	5	5	-	IN		SLT	SST	Ksh	
FD17-02	58		255.66	258.17	2.51			2.50	DGR	LGR		VF-FGR	FGR	ILA			3	6	5	-	IN		SLT	SST	Ksh	Very few irregular laminations
FD17-02	58	258.17	258.17	259.99	1.82			1.81	DGR	LGR		VF-FGR	FGR	ILA		SL	6	6	6	-	IN		SLT	SST	Ksh	Very few irregular laminations. Carbonaceous inclusions.
FD17-02	59		259.99	261.21	1.22			1.22	DGR	LGR		VF-FGR	FGR	TLA	ILA		3	1	2	-	IN		SLT	SST	Ksh	Massive slt with sst
FD17-02	59	261.21	261.21	264.26	3.05			3.03	DGR	LGR		VF-FGR	FGR	TLA	ILA	SL	7	5	6	-	IN		SLT	SST	Ksh	Massive slt with sst. Carbonaceous inclusions
FD17-02	60	264.26	264.26	267.27	3.01			2.99	DGR	LGR		VF-FGR	FGR	TLA	ILA	FZ	6	7	7	-	MBK		SLT	SST	Ksh	Massive sandy siltstone. Calcite inclusions are present
FD17-02	60	267.31	267.27	268.54	1.27			1.27	DGR	LGR		VF-FGR	FGR	TLA	ILA		0	0	0	-	IN		SLT	SST	Ksh	Massive sandy siltstone. Calcite inclusions present
FD17-02	61		268.54	270.32	1.78			1.78	DGR	LGR		VF-FGR	FGR	TLA	ILA		1	2	2	-	MBK		SLT	SST	Ksh	Calcite inclusions present. Very few sst laminations
FD17-02	61	270.36	270.32	272.87	2.55			2.55	DGR	LGR		VF-FGR	FGR	TLA	RCL		7	0	4	-	MBK		SLT	SST	Ksh	Calcite inclusions and sandy RCL present. Very few sst laminations.
FD17-02	62		272.87	273.41	0.54			0.54	DGR	LGR		VF-FGR	FGR	TLA			3	2	3	-	IN		SLT	SST	Ksh	Very few laminations
FD17-02	62	273.41	273.41	276.38	2.97			2.96	DGR	LGR		VF-FGR	FGR	TLA			5	5	5	-	IN		SLT	SST	Ksh	Very few laminations
FD17-02	62	276.45	276.38	277.00	0.62			0.62	DGR	LGR		VF-FGR	FGR	TLA			0	0	0	-	IN		SLT	SST	Ksh	Very few laminations
FD17-02	63		277.00	279.48	2.48			2.47	DGR	LGR		VF-FGR	FGR	TLA			5	5	5	-	IN		SLT	SST	Ksh	Very few laminations. Siderite band present
FD17-02	63	279.50	279.48	281.19	1.71			1.70	DGR	LGR		VF-FGR	FGR	TLA			4	6	5	-	IN		SLT	SST	Ksh	Very few laminations
FD17-02	64		281.19	285.62	4.43			4.36	DGR	LGR		VF-FGR	FGR	ILA			10	10	10	-	IN		SLT	SST	Ksh	Very few med grained sst bands present. Very few (2-3%) sst irregular laminations found.
FD17-02	65	285.60	285.62	288.70	3.08			3.03	DGR	LGR		VF-FGR	FGR	ILA		SL	10	10	10	-	SBK		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	65	288.65	288.70	289.77	1.07			1.06	DGR	LGR		VF-FGR	FGR	ILA			10	7	9	-	IN		SLT	SST	Ksh	Aragonite crystals present
FD17-02	66		289.77	291.75	1.98			1.96	DGR	LGR		VF-FGR	FGR	ILA			8	9	9	-	IN		SLT	SST	Ksh	Sideritic bands present
FD17-02	66	291.69	291.75	293.82	2.07			2.06	DGR	LGR		VF-FGR	FGR	ILA			2	7	5	-	SBK		SLT	SST	Ksh	
FD17-02	67		293.82	294.78	0.96			0.96	DGR	LGR		VF-FGR	FGR	ILA	BIO		5	5	5	-	IN		SLT	SST	Ksh	Trace fossils present
FD17-02	67	294.74	294.78	297.83	3.05			3.02	DGR	LGR		VF-FGR	FGR	ILA			10	7	9	-	IN		SLT	SST	Ksh	
FD17-02	67	297.79	297.83	297.99	0.16			0.16	DGR	LGR		VF-FGR	FGR	TLA	BIO				8	-	SO		SLT	SST	Ksh	Sideritic concretions and sandy burrows present
FD17-02	68		297.99	300.84	2.85			2.83	DGR	LGR		VF-FGR	FGR	ILA			8	5	7	-	IN		SLT	SST	Ksh	Massive sst pieces in slt. Very few ILA
FD17-02	68	300.84	300.84	302.33	1.49			1.48	DGR	LGR		VF-FGR	FGR	ILA			8	8	8	-	IN		SLT	SST	Ksh	Massive sst pieces in slt. Very few ILA
FD17-02	69		302.33	303.64	1.31			1.30	DGR	LGR		VF-FGR	FGR	ILA			9	8	9	-	IN		SLT	SST	Ksh	Sideritic concretion present. Very few sst laminations
FD17-02	69	303.89	303.64	306.74	3.10			3.07	DGR	LGR		VF-FGR	FGR	ILA			7	9	8	-	SBK		SLT	SST	Ksh	Very few laminations
FD17-02	70		306.74	306.81	0.07			0.07	DGR	LGR		VF-FGR	FGR		BIO				7	-	IN		SLT	SST	Ksh	Sandy worm burrows present. Sideritic concretions below the burrows
FD17-02	70	306.93	306.81	309.91	3.10			3.08	DGR	LGR		VF-FGR	FGR	ILA			7	5	6	-	IN		SLT	SST	Ksh	
FD17-02	70	309.98	309.91	310.93	1.02			1.02	DGR	LGR		VF-FGR	FGR	ILA			4	6	5	-	IN		SLT	SST	Ksh	
FD17-02	71		310.93	313.03	2.10			2.09	DGR	LGR		VF-FGR	FGR	ILA			5	5	5	-	IN		SLT	SST	Ksh	
FD17-02	71	313.03	313.03	315.28	2.25			2.24	DGR	LGR		VF-FGR	FGR	ILA			6	6	6	-	IN		SLT	SST	Ksh	
FD17-02	72		315.28	316.01	0.73			0.72	DGR	LGR		VF-FGR	FGR	ILA			8	10	9	-	IN		SLT	SST	Ksh	
FD17-02	72	316.08	316.01	319.06	3.05			3.03	DGR	LGR		VF-FGR	FGR	ILA		FZ	7	7	7	-	MBK		CST	SST	Ksh	Carbonaceous cst with minor sst bands. Fault zone due to the breakage (polarization) and slicken side of the broken pieces around 55cm from marker 316.08 (40 cm in length)
FD17-02	72	319.13	319.06	319.37	0.31			0.31	DGR	LGR		VF-FGR	FGR	TLA			7	7	7	-	IN		SLT	SST	Ksh	Very few faded thin laminations
FD17-02	73		319.37	322.26	2.89			2.88	DGR	LGR		VF-FGR	FGR	TLA			2	7	5	-	IN		SLT	SST	Ksh	Sideritic concretion present. The last 0.30 m of the core has calcite inclusions
FD17-02	73	322.17	322.26	323.70	1.44			1.42	DGR	LGR		VF-FGR	FGR	TLA		SL	10	10	10	-	MBK		SLT	SST	Ksh	Carbonaceous slt. Veins infilled with calcite. Very few TLA. 2 Faults or fractures of .15 m (10 degrees to core axis)
FD17-02	74		323.70	325.38	1.68			1.66	DGR	LGR		VF-FGR	FGR	TLA		MFR	10	8	9	-	SBK		SLT	SST	Ksh	The previous fractures at the end of previous core continues in the top of this core. They are 0.82 m and dip 10 degrees core axis. Slicken sided.
FD17-02	74	325.22	325.38	327.88	2.50			2.46	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	Some sst bands present
FD17-02	75		327.88	328.44	0.56			0.55	DGR	LGR		VF-FGR	FGR	ILA			10	10	10	-	IN		SLT	SST	Ksh	Sandy slt with a few irregular sandy bands and laminations
FD17-02	75	328.27	328.44	331.40	2.96			2.93	DGR	LGR		VF-FGR	FGR	ILA			8	8	8	-	IN		SLT	SST	Ksh	Sandy slt with a few irregular sandy bands and laminations
FD17-02	75	331.32	331.40	332.17	0.77			0.76	DGR	LGR		VF-FGR	FGR						7	-	IN		SLT	SST	Ksh	Massive slt with a few sst bands
FD17-02	76		332.17	334.27	2.10			2.09	DGR	LGR		VF-FGR	FGR	ILA		SL	3	8	6	-	IN		SLT	SST	Ksh	Carbonaceous inclusions and sideritic concretions present
FD17-02	76	334.37	334.27	336.53	2.26			2.25	DGR	LGR		VF-FGR	FGR	LA			8	5	7	-	IN		SLT	SST	Ksh	Very few laminations
FD17-02	77		336.53	337.41	0.88			0.88	DGR	LGR		VF-FGR	FGR	TLA			0	0	0	-	IN		SLT	SST	Ksh	clayey slt with very few sst laminations
FD17-02	77	337.41	337.41	340.46	3.05			3.02	DGR	LGR		VF-FGR	FGR	TLA	MBE		9	8	9	-	IN		SLT	SST	Ksh	A massive sst bed
FD17-02	77	340.46	340.46	340.84	0.38			0.38	DGR	LGR		VF-FGR	FGR				3	3	3	-	IN		SLT	SST	Ksh	Clayey siltstone with fine sst laminations
FD17-02	78		340.84	343.60	2.76			2.76	DGR	LGR		VF-FGR	FGR	TLA			1	0	1	-	IN		SLT	SST	Ksh	Very few sst laminations. Sideritic concretion present
FD17-02	78	343.51	343.60	345.09	1.49			1.48	DGR	LGR		VF-FGR	FGR	TLA		SL	5	5	5	-	SBK		SLT	SST	Ksh	16 cm long fracture dipping 10 degrees to core axis at the end of the core box. Carbonaceous inclusions.
FD17-02	79		345.09	346.94	1.85			1.85	DGR	LGR		VF-FGR	FGR	TLA		WFR	2	1	2	-	MBK		SLT	SST	Ksh	At the top of the core, it's broken and then fracture (5 degrees). Possibility for the fracture to be natural
FD17-02	79	346.56	346.94	349.32	2.38			2.38	DGR	LGR		VF-FGR	FGR				4	2	3	-	IN		SLT	SST	Ksh	Massive slt with few sst bands
FD17-02	80		349.32	349.75	0.43			0.43	DGR	LGR		VF-FGR	FGR						5	-	IN		SLT	SST	Ksh	
FD17-02	80	349.61	349.75	352.86	3.11			3.09	DGR	LGR		VF-FGR	FGR	TLA			8	6	7	-	SBK		SLT	SST	Ksh	Possible sideritic concretions. Very few laminations
FD17-02	80	352.65	352.86	353.56	0.70			0.70	DGR	LGR		VF-FGR	FGR	TLA			0	0	0	-	IN		SLT	SST	Ksh	Possible sideritic concretions. Very few laminations
FD17-02	81		353.56	355.83	2.27			2.26	DGR	LGR		VF-FGR	FGR	TLA			4	5	5	-	SBK		SLT	SST	Ksh	Thinly laminated at the lower part of the core. Sideritic concretion (4 -5cm long)
FD17-02	81	355.70	355.83	357.82	1.99			1.97	DGR	LGR		VF-FGR	FGR	TLA			5	10	8	-	IN		SLT	SST	Ksh	Siltstone with very few sst laminations
FD17-02	82		357.82	358.95	1.13			1.13	DGR	LGR		VF-FGR	FGR	TLA			0	0	0	-	IN		SLT	SST	Ksh	Possible sideritic concretion of 6cm
FD17-02	82	358.75	358.95	361.86	2.91			2.88	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-02		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1243.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	635419.00	Logged By: Özlem S Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6086618.00	Log Start Date: 06 08 2017
Total Depth (m):	608.38		Projection:	UTM NAD 83 Zone 10	Log End Date: 22 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-02	82	361.80	361.86	362.07	0.21			0.21	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	83		362.07	365.02	2.95			2.93	DGR	LGR		VF-FGR	FGR	ILA			8	6	7	-	IN		SLT	SST	Ksh	Very few laminations. Pellets found
FD17-02	83	364.85	365.02	366.43	1.41			1.40	DGR	LGR		VF-FGR	FGR	ILA		SL	8	7	8	-	IN		SLT	SST	Ksh	Very few laminations. Carbonaceous inclusions
FD17-02	84		366.43	367.90	1.47			1.46	DGR	LGR		VF-FGR	FGR	LA			6	7	7	-	SBK		SLT	SST	Ksh	
FD17-02	84	367.89	367.90	370.63	2.73			2.72	DGR	LGR		VF-FGR	FGR	LA	BIO		6	6	6	-	SBK		SLT	SST	Ksh	A burrow and trace fossils infilled with sand identified
FD17-02	85		370.63	371.02	0.39			0.39	DGR	LGR		VF-FGR	FGR	LA			5	10	8	-	IN		SLT	SST	Ksh	
FD17-02	85	370.94	371.02	374.18	3.16			3.13	DGR	LGR		VF-FGR	FGR	LA			9	8	9	-	IN		SLT	SST	Ksh	
FD17-02	85	373.99	374.18	375.00	0.82			0.81	DGR	LGR		VF-FGR	FGR	LA			7	8	8	-	IN		SLT	SST	Ksh	Sideritic band (2 cm)
FD17-02	86		375.00	377.24	2.24			2.21	DGR	LGR		VF-FGR	FGR	LA	ILA		9	10	10	-	IN		SLT	SST	Ksh	
FD17-02	86	377.04	377.24	379.36	2.12			2.09	DGR	LGR		VF-FGR	FGR	TLA	ILA		10	10	10	-	IN		SLT	SST	Ksh	A 4 cm sideritic band present
FD17-02	87		379.36	380.43	1.07			1.07	DGR	LGR		VF-FGR	FGR	TLA			5	6	6	-	IN		SLT	SST	Ksh	
FD17-02	87	380.09	380.43	383.36	2.93			2.91	DGR	LGR		VF-FGR	FGR	TLA	BIO		7	7	7	-	IN		SLT	SST	Ksh	Small burrows present at the bottom of the core. Carbonaceous inclusions
FD17-02	87	383.13	383.36	383.46	0.10			0.10	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	88		383.46	386.36	2.90			2.88	DGR	LGR		VF-FGR	FGR	LA			5	7	6	-	IN		SLT	SST	Ksh	
FD17-02	88	386.18	386.36	387.80	1.44			1.43	DGR	LGR	SWE	VF-FGR	FGR	ILA			8	6	7	-	IN		SLT	SST	Ksh	
FD17-02	89		387.80	389.42	1.62			1.60	DGR	LGR		VF-FGR	FGR	LA			10	6	8	-	IN		SLT	SST	Ksh	Thicker sandy laminations
FD17-02	89	389.23	389.42	392.09	2.67			2.65	DGR	LGR		VF-FGR	FGR	LA			7	8	8	-	SBK		SLT	SST	Ksh	Thicker sandy laminations.
FD17-02	90		392.09	392.50	0.41			0.41	DGR	LGR		VF-FGR	FGR	LA			5	10	8	-	IN		SLT	SST	Ksh	Thicker sandy laminations
FD17-02	90	392.28	392.50	395.63	3.13			3.10	DGR	LGR		VF-FGR	FGR	LA			10	5	8	-	IN		SLT	SST	Ksh	Thicker sandy laminations
FD17-02	90	395.33	395.63	396.28	0.65			0.65	DGR	LGR		VF-FGR	FGR	LA			5	5	5	-	IN		SLT	SST	Ksh	Thicker sandy laminations
FD17-02	91		396.28	398.71	2.43			2.41	DGR	LGR		VF-FGR	FGR	ILA			8	8	8	-	IN		SLT	SST	Ksh	Carbonaceous siltstones
FD17-02	91	398.37	398.71	400.49	1.78			1.76	DGR	LGR		VF-FGR	FGR	ILA			8	8	8	-	IN		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	92		400.49	401.48	0.99			0.97	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	Thicker laminations
FD17-02	92	401.42	401.48	404.47	2.99			2.97	DGR	LGR		VF-FGR	FGR	LA	MBE		5	9	7	-	SBK		SLT	SST	Ksh	Laminations and beds from 2 to 5 cm. siderite band of 3 cm thickness is sandwiched between a 2 cm sst lamination and aragonite crystals. Carbonaceous inclusions
FD17-02	92	404.47	404.47	404.79	0.32			0.32	DGR	LGR		VFGR	FGR	LA			7	7	7	-	SBK		CST	SST	Ksh	Thicker laminations. Carbonaceous inclusions
FD17-02	93		404.79	407.52	2.73			2.72	DGR	LGR		VF-FGR	FGR	LA	MBE		6	6	6	-	IN		SLT	SST	Ksh	Carbonaceous inclusions. Sideritic band of 2.5 cm accompanied with some traces of bioturbations
FD17-02	93	407.52	407.52	409.13	1.61			1.59	DGR	LGR		VF-FGR	FGR	LA	MBE	SL	10	10	10	-	IN		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	94		409.13	410.59	1.46			1.45	DGR	LGR		VF-FGR	FGR	LA			5	10	8	-	MBK		SLT	SST	Ksh	
FD17-02	94	410.57	410.59	413.24	2.65			2.59	DGR	LGR		VF-FGR	FGR	LA	BIO		13	12	13	-	SBK		SLT	SST	Ksh	Carbonaceous inclusions. Siderite band at the bottom of the core accompanied with some traces of bioturbation
FD17-02	95		413.24	413.69	0.45			0.45	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	IN		SLT	SST	Ksh	
FD17-02	95	413.61	413.69	416.74	3.05			3.02	DGR	LGR		VF-FGR	FGR	TLA			(8)	(8)	8		IN		SLT	SST	Ksh	
FD17-02	95	416.66	416.74	417.44	0.70			0.69	DGR	LGR		VF-FGR	FGR	TLA			8	7	8	-	IN		SLT	SST	Ksh	A 5 cm siderite band at the top of the core
FD17-02	96		417.44	419.81	2.37			2.33	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	SBK		SLT	SST	Ksh	A 6 cm siderite band. Weakly laminated
FD17-02	96	419.71	419.81	421.67	1.86			1.84	DGR	LGR		VF-FGR	FGR	TLA			8	7	8	-	IN		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	97		421.67	422.79	1.12			1.10	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	A 12 cm siderite band
FD17-02	97	422.76	422.79	425.81	3.02			2.99	DGR	LGR		VF-FGR	FGR	LA			8	8	8	-	SBK		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	97	425.81	425.81	425.88	0.07			0.07	DGR	LGR		VF-FGR	FGR	MBE			5	5	5	-	SBK		SLT	SST	Ksh	
FD17-02	98		425.88	428.85	2.97			2.96	DGR	LGR		VF-FGR	FGR	LA		SL	2	9	6	-	IN		SLT	SST	Ksh	Laminations of 2 cm and beds up to 2.5 cm. Carbonaceous inclusions
FD17-02	98	428.85	428.85	430.13	1.28			1.28	DGR	LGR		VF-FGR	FGR	LA			3	3	3	-	IN		SLT	SST	Ksh	Laminations up to 2 cm.
FD17-02	99		430.13	431.94	1.81			1.81	DGR	LGR		VF-FGR	FGR	LA			3	5	4	-	IN		SLT	SST	Ksh	Laminations up to 2 cm.
FD17-02	99	431.90	431.94	434.47	2.53			2.52	DGR	LGR		VF-FGR	FGR	MBE		SL	5	7	6	-	IN		SLT	SST	Ksh	Sst beds up to 9cm. Carbonaceous inclusions
FD17-02	100		434.47	434.95	0.48			0.48	DGR	LGR		VF-FGR	FGR						7	-	IN		SLT	SST	Ksh	Massive slt
FD17-02	100	434.95	434.95	438.39	3.44			3.42	DGR	LGR		VF-FGR	FGR	ILA		SL	8	5	7	-	IN		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	100	438.00	438.39	438.83	0.44			0.44	DGR	LGR		VF-FGR	FGR						8	-	IN		SLT	SST	Ksh	Massive slt
FD17-02	101		438.83	441.01	2.18			2.16	DGR	LGR		VF-FGR	FGR	TLA			7	10	9	-	SBK		SLT	SST	Ksh	
FD17-02	101	441.05	441.01	443.12	2.11			2.07	DGR	LGR		VF-FGR	FGR	LA			8	15	12	-	IN		SLT	SST	Ksh	
FD17-02	102		443.12	444.05	0.93			0.92	DGR	LGR		VF-FGR	FGR	TLA			5	8	7	-	IN		SLT	SST	Ksh	
FD17-02	102	444.09	444.05	447.14	3.09			3.08	DGR	LGR		VF-FGR	FGR	TLA			3	8	6	-	IN		SLT	SST	Ksh	
FD17-02	102	447.14	447.14	447.31	0.17			0.17	DGR	LGR		VF-FGR	FGR	TLA			8	8	8	-	SO		SLT	SST	Ksh	
FD17-02	103		447.31	450.13	2.82			2.79	DGR	LGR		VF-FGR	FGR	LA			10	8	9	-	IN		SLT	SST	Ksh	
FD17-02	103	450.19	450.13	451.58	1.45			1.43	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-02	104		451.58	453.18	1.60			1.58	DGR	LGR		VF-FGR	FGR	LA			10	8	9	-	IN		SLT	SST	Ksh	Laminations up to 2 cm.
FD17-02	104	453.24	453.18	455.89	2.71			2.66	DGR	LGR		VF-FGR	FGR	MBE	BIO		10	12	11	-	IN		SLT	SST	Ksh	Burrow at the top of the core. Sandy laminations and beds from 0.1 to 4.5 cm. Very few laminations dipping at 12 degrees to core normal. 0.5 cm micro fault at the bottom
FD17-02	105		455.89	456.22	0.33			0.33	DGR	LGR		VF-FGR	FGR	MBE	TLA		7	8	8	-	IN		SLT	SST	Ksh	Thin laminations, thick laminations and small beds
FD17-02	105	456.28	456.22	459.33	3.11			3.08	DGR	LGR		VF-FGR	FGR	ILA	MBE		7	10	9	-	IN		SLT	SST	Ksh	Thin laminations, irregular laminations and small beds.
FD17-02	105	459.33	459.33	460.13	0.80			0.78	DGR	LGR		VF-FGR	FGR	LA			14	10	12	-	IN		SLT	SST	Ksh	Laminations and small beds. Carbonaceous inclusions. A small siderite band of 5 cm present
FD17-02	106		460.13	462.38	2.25			2.23	DGR	LGR		VF-FGR	FGR	TLA	ILA		7	7	7	-	IN		SLT	SST	Ksh	Ccst inclusions
FD17-02	106	462.38	462.38	464.46	2.08			2.06	DGR	LGR		VF-FGR	FGR	LA	MBE		8	7	8	-	IN		SLT	SST	Ksh	2 small burrows are present. Small fractures filled with ccst
FD17-02	107		464.46	465.43	0.97			0.96	DGR	LGR		VF-FGR	FGR	ILA	RCL	SL	8	8	8	-	IN		SLT	SST	Ksh	Carbonaceous inclusions.
FD17-02	107	465.43	465.43	468.48	3.05			3.00	DGR	LGR		VF-FGR	FGR	ILA	TLA		13	8	11	-	IN		SLT	SST	Ksh	Very few thin and irregular laminations. Carbonaceous inclusions. Laminations dip 8 degrees throughout the core except one that dips 13 degrees
FD17-02	107	468.48	468.48	468.69	0.21			0.21	DGR	LGR		VF-FGR	FGR	TLA			5	5	5	-	IN		SLT	SST	Ksh	Carbonaceous inclusions
FD17-02	108		468.69	471.52	2.83			2.80	DGR	LGR		VF-FGR	FGR	LA	RCL		8	8	8	-	IN		SLT	SST	Ksh	Very small and few RCL. Some laminations are weak
FD17-02	108	471.52	471.52	473.03	1.51			1.50	DGR	LGR		VF-FGR	FGR	TLA			7	3	5	-	SO		SLT	SST	Ksh	Carbonaceous inclusions. Laminations start dipping 7 degrees then change to 6 and then to 3 degrees at the bottom

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-02		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1243.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	635419.00	Logged By: Özlem S Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6086618.00	Log Start Date: 06 08 2017
Total Depth (m):	608.38		Projection:	UTM NAD 83 Zone 10	Log End Date: 22 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-02	109		473.03	474.37	1.34			1.32	DGR	LGR		VF-FGR	FGR	LA			10	8	9	-	IN		SLT	SST	Ksh	
FD17-02	109	474.57	474.37	477.35	2.98			2.96	DGR	LGR		VF-FGR	FGR	ILA	MBE	FLT	6	8	7	-	SBK		SLT	SST	Ksh	Carbonaceous inclusions. 2 micro faults (normal) of 0.5 cm found. Both are dipping 25 degrees to core axis
FD17-02	110		477.35	477.53	0.18			0.18	DGR	LGR		VF-FGR	FGR	LA	MBE		5	3	4	-	IN		SLT	SST	Ksh	
FD17-02	110	477.62	477.53	480.65	3.12			3.11	DGR	LGR		VF-FGR	FGR	ILA	MBE		7	2	5	-	IN		SLT	SST	Ksh	
FD17-02	110	480.67	480.65	481.59	0.94			0.94	DGR	LGR		VF-FGR	FGR	ILA	RCL		3	6	5	-	IN		SLT	SST	Ksh	RCL at the bottom half of the core. Carbonaceous inclusions
FD17-02	111		481.59	483.70	2.11			2.09	DGR	LGR		VF-FGR	FGR	ILA	RCL		9	7	8	-	IN		SLT	SST	Ksh	Ccst inclusions. Very small RCL present at the top of the core
FD17-02	111	483.72	483.70	485.94	2.24			2.20	DGR	LGR		VF-FGR	FGR	ILA			13	8	11	-	IN		SLT	SST	Ksh	
FD17-02	112		485.94	486.77	0.83			0.82	DGR	LGR		VF-FGR	FGR	ILA			10	7	9	-	SBK		SLT	SST	Ksh	
FD17-02	112	486.77	486.77	489.81	3.04			3.01	DGR	LGR		VF-FGR	FGR	ILA		SL	10	7	9	-	IN		SLT	SST	Ksh	small beds up to 2 cm present. Up and down movement SL
FD17-02	112	489.81	489.81	489.92	0.11			0.11	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Ksh	small beds up to 2 cm present
FD17-02	113		489.92	492.78	2.86			2.85	DGR	LGR		VF-FGR	FGR	ILA	MBE	SL	6	5	6	-	IN		SLT	SST	Ksh	up to 4 cm of bedding. Up and down movement
FD17-02	113	492.86	492.78	494.29	1.51			1.50	DGR	LGR		VF-FGR	FGR	LA			10	5	8	-	IN		SLT	SST	Ksh	Up to 3 cm of bed
FD17-02	114		494.29	495.91	1.62			1.60	DGR	LGR		VF-FGR	FGR	ILA			10	6	8	-	IN		SLT	SST	Ksh	A few sandy beds present
FD17-02	114	495.91	495.91	498.61	2.70			2.67	DGR	LGR		VF-FGR	FGR	ILA			13	5	9	-	IN		SLT	SST	Ksh	a few sandy beds present. A coaly lamination present
FD17-02	115		498.61	498.96	0.35			0.35	DGR	LGR		VF-FGR	FGR	LA			10	6	8	-	IN		SLT	SST	Ksh	
FD17-02	115	498.96	498.96	501.94	2.98			2.94	DGR	LGR		VF-FGR	FGR	LA	RCL		8	10	9	-	IN		SLT	SST	Ksh	RCL40 cm below the top of the core
FD17-02	115	502.00	501.94	502.86	0.92			0.91	DGR	LGR		VF-FGR	FGR	ILA	BIO		8	9	9	-	IN		SLT	SST	Ksh	Sandy burrows at the top and bottom of the core
FD17-02	116		502.86	505.08	2.22			2.20	DGR	LGR		VF-FGR	FGR	BIO	RCL		10	7	9	-	IN		SLT	SST	Ksh	RCL found 30cm below the top of the core. Formed at high energy environment. Signs of burrowing (15 cm) present. Cst laminations present
FD17-02	116	505.05	505.08	507.20	2.12			2.11	DGR	LGR		VF-FGR	FGR	LA			8	5	7	-	IN		SLT	SST	Ksh	Thin laminations to small beds. Some cst laminations and beds present.
FD17-02	117		507.20	508.14	0.94			0.93	DGR	LGR		VF-FGR	FGR	ILA	BIO		10	7	9	-	IN		SLT	SST	Ksh	Signs of bioturbations (burrows). Some claystone laminations present
FD17-02	117	508.10	508.14	511.28	3.14			3.11	DGR	LGR		VF-FGR	FGR	ILA	MBE		8	8	8	-	IN		SLT	SST	Ksh	Siderite nodule present. 30 - 50 cm of sediment disturbance
FD17-02	117	511.15	511.28	511.57	0.29			0.29	DGR	LGR		VF-FGR	FGR	LA			6	6	6	-	IN		SLT	SST	Ksh	Low energy environment. Laminations and small beds. Clayey siltstone
FD17-02	118		511.57	514.35	2.78			2.74	DGR	LGR		VF-FGR	FGR	LA			9	10	10	-	IN		SLT	SST	Ksh	Carbonaceous clayey siltstone with sandy laminations and beds
FD17-02	118	514.20	514.35	515.81	1.46			1.45	DGR	LGR		VF-FGR	FGR	LA			8	8	8	-	IN		SLT	SST	Ksh	Carbonaceous clayey siltstone with sandy laminations and beds. Very small cross-stratified laminations
FD17-02	119		515.81	517.34	1.53			1.50	DGR	LGR		VF-FGR	F-MGR	LA			10	11	11	-	IN		SLT	SST	Ksh	clayey slt with some clayey and sandy laminations.
FD17-02	119	517.25	517.34	520.23	2.89			2.87	DGR	LGR		VF-FGR	F-MGR	LA			6	9	8	-	SBK		SLT	SST	Ksh	Clayey slt .Up to 3 cm of sandy beds
FD17-02	120		520.23	520.49	0.26			0.26	DGR	LGR		VF-FGR	FGR	LA			6	5	6	-	SO		SLT	SST	Ksh	Silty clay with sandy laminations
FD17-02	120	520.29	520.49	523.59	3.10			3.08	DGR	LGR		VF-FGR	FGR	LA	BIO		2	10	6	-	IN		SLT	SST	Ksh	A burrow is present. Up to 3 cm thick sandy bed. The BCN is flat (2 degrees) and gradually slants to 10 degrees
FD17-02	120	523.34	523.59	524.43	0.84			0.84	DGR	LGR		VF-FGR	FGR	ILA			7	3	5	-	IN		SLT	SST	Ksh	Clayey slt. The BCN starts to flatten gradually from 7 to 3 degrees
FD17-02	121		524.43	526.60	2.17			2.16	MGR	LGR		VF-FGR	FGR	ILA			6	7	7	-	IN		SLT	SST	Ksh	Sandy and clayey laminations. Sandy beds 3 up to 3cm
FD17-02	121	526.39	526.60	528.86	2.26			2.25	MGR	LGR		VF-FGR	FGR	ILA	BIO		6	6	6	-	IN		SLT	SST	Ksh	Few burrows present
FD17-02	122		528.86	529.67	0.81			0.80	DGR	LGR		VF-FGR	FGR	LA			10	6	8	-	SBK		SLT	SST	Ksh	Carbonaceous laminations
FD17-02	122	529.44	529.67	532.59	2.92			2.90	DGR	LGR		VF-FGR	FGR	ILA	BIO		4	11	8	-	IN		SLT	SST	Ksh	A small burrow found. Cross -stratified lamination present. BCN gradually changes from 4 to 11 degrees
FD17-02	122	532.49	532.59	533.18	0.59			0.59	DGR	LGR		VF-FGR	FGR	ILA	TLA		5	5	5	-	IN		SLT	SST	Ksh	Thin laminations and few small beds
FD17-02	123		533.18	535.73	2.55			2.53	DGR	LGR		VF-FGR	FGR	LA			6	10	8	-	IN		SLT	SST	Ksh	Laminations and beds up to 3 cm
FD17-02	123	535.53	535.73	537.51	1.78			1.77	DGR	LGR		VF-FGR	FGR	ILA			5	4	5	-	IN		SLT	SST	Ksh	
FD17-02	124		537.51	538.81	1.30			1.30	DGR	LGR		VF-FGR	FGR	LA			2	2	2	-	IN		SLT	SST	Ksh	Slt with clayey and sandy laminations. Some carbonaceous inclusions present
FD17-02	124	538.58	538.81	541.74	2.93			2.92	DGR	LGR		VF-FGR	FGR	LA			5	5	5	-	IN		CST	SST	Ksh	Silty cst with sandy laminations. coaly lamination present. BCN starts from 5 degrees then goes up to 10 and then back to 5 degrees at the bottom
FD17-02	125		541.74	541.87	0.13			0.13	DGR	LGR		VFGR	FGR	TLA			3	3	3	-	IN		CST	SST	Ksh	Cst with carbonaceous inclusions. Weak laminations
FD17-02	125	541.63	541.87	544.85	2.98			2.96	DGR	LGR		VF-FGR	FGR	LA			4	9	7	-	IN		SLT	SST	Ksh	Slt with clayey and sandy laminations. Some carbonaceous inclusions. BCN starts from 4 degrees increases to 9
FD17-02	125	544.68	544.85	546.05	1.20			1.19	DGR	LGR		VF-FGR	FGR	LA			9	4	7	-	IN		SLT	SST	Ksh	Silty clay with coaly inclusion present. Sandy laminations
FD17-02	126		546.05	547.94	1.89			1.86	DGR	LGR		VF-FGR	FGR	LA			12	8	10	-	SBK		SLT	SST	Ksh	Top part of the core is disturbed probably due to bioturbation or turbulence. Clayey and sandy laminations
FD17-02	126	547.73	547.94	550.30	2.36			2.34	DGR	LGR		VF-FGR	FGR	LA			8	8	8	-	IN		SLT	SST	Ksh	20 cm of core is disturbed due to turbulence or bioturbation. Clayey and sandy laminations
FD17-02	127		550.30	551.02	0.72			0.72	DGR	LGR		VF-FGR	FGR	ILA			8	4	6	-	SBK		SLT	SST	Ksh	Siltstone with clayey and sandy laminations
FD17-02	127	550.77	551.02	554.01	2.99			2.97	DGR	LGR		VF-FGR	FGR	LA			5	7	6	-	SBK		SLT	SST	Ksh	Siltstone with clayey and sandy laminations. Siderite nodules. High energy environment (10 cm long) within run
FD17-02	127	553.82	554.01	554.54	0.53			0.53	DGR	LGR		VF-FGR	FGR	LA	RCL		3	10	7	-	IN		SLT	SST	Ksh	Silt stone with clayey and sandy laminations. Siderite nodules. High energy environment. Sandy RCL close to the bottom of the core
FD17-02	128		554.54	556.03	1.49			1.48	DGR	LGR		VF-FGR	FGR	LA	BIO		8	8	8	-	IN		SLT	SST	Ksh	Clayey laminations and sandy laminations. Siderite nodules at different parts of the core. Trace fossils 30 cm close to the bottom
FD17-02	128		556.03	557.14	1.11			1.11	GR	LGR		VF-FGR	FGR	ILA			5	4	5	-	IN		SLT	SST	Ksh	Most of the core is high energy environment. Very few and weak laminations
FD17-02	128	556.87	557.14	557.86	0.72			0.72	DGR	LGR		VF-FGR	FGR	LA			2	4	3	-	IN		SLT	SST	Ksh	Siderite nodule at the top of the core. High energy environment close to the bottom of the core
FD17-02	128		557.86	558.49	0.63			0.63	GR	LGR		VF-FGR	PEB			SL			4	-	MBK		CGL	SLT	Kb	Fractures with SL parallel to fractures. Occasional siltstone beds.
FD17-02	128		558.49	558.79	0.30			0.30	DGR	LGR		VF-FGR	F-MGR	LA			5	5	5	-	MBK		SLT	SST	Kb	Weak laminations. Fractures parallel to each other SL parallel to fractures. A 2.5 cm band of clast supported conglomerate
FD17-02	129		558.79	560.12	1.33			1.32	DGR	LGR		VF-FGR	F-MGR	LA		SL	5	5	5	-	MBK		SLT	SST	Kb	SL 1 m from top of box. Weakly laminated
FD17-02	129	559.92	560.12	562.96	2.84			2.83	DGR	LGR		VF-FGR	F-MGR	ILA		SL	5	5	5	-	MBK		SLT	SST	Kb	SL due to fractures and some crack infilled with sst at 1.4m from bottom of box. The fractured zone is 15 cm. Another fracture with SL roughly 9cm at the bottom of the core. Weakly laminated
FD17-02	130		562.96	563.23	0.27			0.27	DGR	LGR		VF-FGR	F-MGR	ILA				6	5	-	SO		CST	SST	Kb	Silty clay stone with sandy irregular lamination. High energy environment
FD17-02	130	562.97	563.23	564.14	0.91			0.91	DGR	LGR		VF-FGR	F-MGR	ILA		SL	4	6	5	-	MBK		SLT	SST	Kb	SL parallel to fracture. Small cracks and fractures infilled with sst surround the SL and fractured area. A few pebbles occur close to the bottom
FD17-02	130		564.14	564.64	0.50			0.50	GR	LGR		VF-FGR	PEB			SL			7	-	MBK		CGL	SLT	Kb	Clast supported conglomerate with slt as matrix. Fractured zone with SL at the bottom of the core. Occasional siltstone beds.
FD17-02	130		564.64	566.28	1.64			1.62	LGR			CGR	PEB	LA		SL	7	10	9	-	MBK		CGL	SLT	Kb	2 SLs parallel to fractures dipping 10 degrees to core axis. Occasional siltstone beds.
FD17-02	130	566.01	566.28	567.25	0.97			0.96	LGR			CGR	VF-FGR	LA		SL	6	10	8	-	SBK		SST	CST	Kb	Siderite nodules (one of 4 cm) are close to the top and bottom of the core A 4 cm bed of cst is present. It is slicksided and is parallel to the fracture Med grained sst angular laminations present
FD17-02	131		567.25	568.68	1.43			1.41	LGR			CGR	M-CGR	XBE	LA		4	15	10	-	SBK		SST	SST	Kb	Very thin laminations close to end of the core
FD17-02	131		568.68	569.31	0.63			0.62	LGR	WH		FGR	MGR	ILA					10	-	SBK		SST	SST	Kb	
FD17-02	131	569.06	569.31	570.11	0.80			0.79	LGR	WH		FGR	MGR	ILA		WFR			9	-	SBK		SST	SST	Kb	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-02		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1243.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	635419.00	Logged By: Özlem S Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6086618.00	Log Start Date: 06 08 2017
Total Depth (m):	608.38		Projection:	UTM NAD 83 Zone 10	Log End Date: 22 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-02	131		570.11	571.62	1.51			1.49	LGR			CGR		XBE	LA	WFR	6	12	9	-	IN		SST		Kb	Carbonaceous inclusions
FD17-02	132		571.62	572.26	0.64			0.63	LGR			CGR		MBE	LA	SL	11	11	11	-	IN		SST		Kb	SL at the bottom of the core. Some carbonaceous inclusions in small cracks. Angular sandy laminations
FD17-02	132	572.11	572.26	573.10	0.84			0.82	LGR	DGR		CGR	VF-FGR	LA		SL	8	15	12	-	SBK		SST	SLT	Kb	SL at the top of the core. A few slt laminations are present in some parts of the sst. A massive bed of slt 18.2 cm is present. This slt has some sst laminations. Carbonaceous inclusions in cracks
FD17-02	132		573.10	574.52	1.42			1.42	GR	LGR		FGR	VF-FGR	TLA			3	3	3	-	IN		SST	SLT	Kb	Fine sst with very thin silty laminations
FD17-02	132		574.52	575.32	0.80			0.80	DGR	LGR		VF-FGR	FGR	TLA	MBE		6		3	-	SBK		SLT	SLT	Kb	silty cst with silty thin laminations
FD17-02	132	575.16	575.32	575.91	0.59			0.59	DGR	LGR		VF-FGR	FGR	LA			5	5	5	-	SBK		SLT	SST	Kb	Silty cst with sandy and clayey laminations. BCN is 5 degrees throughout the core
FD17-02	133		575.91	578.41	2.50			2.49	DGR	LGR		VF-FGR	FGR	LA			5	6	6	-	SBK		SLT	SST	Kb	Slt with clayey laminations, sandy laminations and sandy beds. Clayey stringers present. massive bedding
FD17-02	133	578.21	578.41	580.22	1.81			1.80	DGR	LGR		VF-FGR	MGR	MBE	RCL		6	4	5	-	IN		SLT	SST	Kb	Clayey and silty bedsat the top of the core alternating with sst beds. The sst beds have some silty laminations and some silty RCL. RCL is located at different parts of the core. Trace fossils (burrows) present
FD17-02	134		580.22	581.25	1.03			1.02	LGR	DGR		CGR	VF-FGR	LA			6	8	7	-	IN		SST	SLT	Kb	
FD17-02	134	581.25	581.25	583.47	2.22			2.21	LGR	DGR		CGR	VF-FGR	LA	RCL		6	2	4	-	SBK		SST	SLT	Kb	A slt bed of 9 cm is present. RCL at the bottom of the core just above a contact that separates the slt below from sst above indicating the presence of a turbidite
FD17-02	134		583.47	584.36	0.89			0.89	DGR			VF-FGR	FGR	LA			4	2	3	-	MBK		SLT		Kb	A contact between sst and silty cst is present
FD17-02	134	584.30	584.36	584.44	0.08			0.08	DGR			VFGR							4	-	MBK		SLT		Kb	A slightly silty cst
FD17-02	135		584.44	585.79	1.35			1.35	MGR			VFGR							4	-	IN		SST		Kb	Silicification(or metamorphosed) in the top part of the core
FD17-02	135		585.79	587.43	1.64			1.63	DGR	LGR		VFGR	FGR	TLA			5	5	5	-	MBK		CST	SST	Kb	Slightly carbonaceous cst with thin sandy laminations. A sst bed of 14 cm present. Carbonaceous and coaly inclusions close to the contact between sst and cst. Siderite bands present
FD17-02	135	587.35	587.43	588.92	1.49			1.49	GR	LGR		VF-FGR	FGR	TLA	MBE		3	6	5		SBK		SLT	SST	Kb	A siderite concretion present. Carbonaceous and coaly inclusions present
FD17-02	136		588.92	589.58	0.66			0.66	DGR	LGR		VF-FGR	FGR	ILA					7	-	IN		SLT	SST	Kb	Sideritic concretions from 0.2 cm to 0.5 cm present. Turbid environment. Possibility of bioturbation as well. Carbonaceous and coaly inclusions close to the bottom of the core.
FD17-02	136		589.58	590.32	0.74			0.73	LGR			CGR		LA			8	8	8	-	IN		SST		Kb	a contact divides slt and sst
FD17-02	136	590.40	590.32	593.15	2.83			2.77	LGR			CGR		LA	XBE	SL	8	15	12	-	IN		SST		Kb	Carbonaceous inclusions present. SLs are parallel to fractures. A few cracks infilled by cst/ccst inclusions
FD17-02	137	593.45	593.15	596.29	3.14			3.09	LGR			CGR		LA		SL	10	10	10	-	SBK		SST		Kb	Carbonaceous inclusions. Difficult to see the angle of SL. BCN starts from 10 degrees, decreases to 5 and then rises to 10 at the bottom of the core
FD17-02	137	596.49	596.29	597.36	1.07			1.06	LGR			CGR		LA			7	8	8	-	IN		SST		Kb	
FD17-02	138		597.36	599.63	2.27			2.22	LGR			CGR		LA	XBE		15	8	12	-	IN		SST		Kb	BCN starts at 15 and then straightens to 8 degrees
FD17-02	138	599.54	599.63	601.68	2.05			2.02	LGR			CGR		LA		SL	10	10	10	-	SBK		SST		Kb	Carbonaceous inclusions
FD17-02	139		601.68	602.61	0.93			0.92	LGR			M-CGR		LA			10	10	10	-	SBK		SST		Kb	Carbonaceous inclusions in the broken parts of the core. Crossbeds present. Some marcasite present in the carbonaceous inclusions.
FD17-02	139	602.59	602.61	605.64	3.03			3.00	LGR			M-CGR		LA			10	5	8	-	SBK		SST		Kb	Carbonaceous inclusions in the broken parts of the core. Some crossbedding present.
FD17-02	139	605.64	605.64	605.92	0.28			0.28	LGR			CGR		LA			10	10	10	-	SO		SST		Kb	Carbonaceous inclusions within core. Very coarse grained sst with clasts up to 1cm in length
FD17-02	140		605.92	606.12	0.20			0.20	LGR			CGR		LA		PO			9	-	SO		SST	SLT	Kb	Carbonaceous inclusions within core. Very coarse grained sst. Polished surface at end of core, dipping 40degrees. PO at contact between CGR SST and MGR SST, dark in colour.
FD17-02	140		606.12	608.38	2.26			2.24	LGR	MGR		M-CGR		LA	XBE	SL	5	10	8	-	MBK		SST		Kb	Carbonaceous inclusions in the broken parts of the core. SL parallel to fracture. Silty RCL at the bottom of the core and at various depths. Cross-beds present. Cst/ccst infilled in cracks
FD17-02	140	608.38																								End of hole.

Gordon Creek Project

(Flatbed Property)

Lithology Descriptive Logs

FD17-03

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636167.00	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089994.00	Log Start Date: 27 08 2017
Total Depth (m):	297.79		Projection:	UTM NAD 83 Zone 10	Log End Date: 31 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03	1		0.00	5.12		5.12		5.12															OVB	R-LOSS			Box starts at 5.12 m
FD17-03	1		5.12	5.18	0.06			0.06	GR		SWE	MGR								-	SO		OVB	SST			Overburden
FD17-03	1	5.18	5.18	6.84	1.66			1.66	DBR	GR	SWE	VF-FGR	COB							WFI	SBK		OVB	OVB			Loose mud matrix supporting pebbles and cobbles of sst
FD17-03	1		6.84	8.23		1.39		1.39															OVB	R-LOSS			
FD17-03	1	8.23	8.23	10.18	1.95			1.95	DBR	GR	SWE	VF-FGR	COB							SFI	MBK		OVB				Calcic loose mud matrix supporting pebbles and cobbles of sst
FD17-03	1		10.18	11.28		1.10		1.10															OVB	R-LOSS			
FD17-03	1	11.28	11.28	11.81	0.53			0.53	BR	GR	SWE	VF-FGR	COB							SFI	MBK		OVB				Calcic loose mud matrix supporting pebbles and cobbles of sst and slt
FD17-03	2		11.81	12.85	1.04			1.04	BR	GR	SWE	VF-FGR	COB							MFI	MBK		OVB				Loose mud matrix supporting cobbles of sst and slt. 12 cm of slt. 12.5 cm of sst at the bottom
FD17-03	2		12.85	14.33		1.48		1.48															OVB	R-LOSS			
FD17-03	2	14.33	14.33	15.68	1.35			1.35	DBR	GR	SWE	VF-FGR	PEB							SFI	MBK		OVB				Broken calcic sst in the top 22cm. Loose calcicmud matrix supporting sstand sst pebbles
FD17-03	2		15.68	17.37		1.69		1.69															OVB	R-LOSS			
FD17-03	2	17.37	17.37	19.17	1.80			1.80	DBR	GR	SWE	VF-FGR	COB							SFI	SBK		OVB				17 cm of fine sst at the top of the core. Loose calcic mud matrix supporting angular sst and slt cobbles
FD17-03	3		19.17	20.43	1.26			1.26	DBR	GR	SWE	VF-FGR	COB							SFI	MBK		OVB				
FD17-03	3	20.42	20.43	23.33	2.90			2.90	DBR	GR	SWE	VF-FGR	COB							SFI	SBK		OVB				Calcic loose mud matrix supporting cobbles of sst and slt
FD17-03	3		23.33	23.47		0.14		0.14															OVB	R-LOSS			
FD17-03	4	23.47	23.47	26.52	3.05			3.05	DBR	GR	SWE	VF-FGR	COB							SFI	SBK		OVB				Calcic mud matrix supporting cobbles of sst and slt
FD17-03	4	26.52	26.52	27.92	1.40			1.40	DBR	GR	SWE	VF-FGR	COB							SFI	SBK		OVB				Calcic mud matrix supporting cobbles of sst and slt
FD17-03	5		27.92	29.34	1.42			1.42	DBR	GR	SWE	VF-FGR	COB							SFI	SBK		OVB				47 cm from the top of the core a breccia of 20 cm is present. Calcic mud support pebbles and cobbles for the rest of the core
FD17-03	5		29.34	29.57		0.23		0.23															OVB	R-LOSS			
FD17-03	5	29.57	29.57	31.67	2.10			2.10	DBR	GR	SWE	VF-FGR	PEB							SFI	HBK		OVB				The top 53cm is mud with some small pebbles. The rest of the core is broken medium grained sst
FD17-03	5		31.67	32.61		0.94		0.94															OVB	R-LOSS			
FD17-03	5	32.61	32.61	33.41	0.80			0.80	GR			MGR	CGR							SFI	HBK		OVB				Medium grained and coarse grained sst. A 2 cm of piece of breccia close to the bottom of the core
FD17-03	5		33.41	35.66		2.25		2.25															OVB	R-LOSS			
FD17-03	5	35.66	35.66	38.40		2.74		2.74															OVB	R-LOSS			
FD17-03	6		38.40	38.71	0.31			0.31	DBR			VF-FGR								WFI			OVB				Plain wet mud
FD17-03	6	38.71	38.71	40.36	1.65			1.65	DBR	GR		VF-FGR	COB							WFI	MBK		OVB				Calcic mud matrix supporting cobbles of sst and slt
FD17-03	6		40.36	41.25		0.89		0.89															OVB	R-LOSS			
FD17-03	6	41.76	41.25	43.24	1.99			1.99	DBR	GR		VF-FGR	COB							WFI	MBK		OVB				Calcic mud matrix supporting cobbles of sst and slt
FD17-03	7		43.24	44.81	1.57			1.57	DBR	GR		VF-FGR	COB							SFI	MBK		OVB				As above
FD17-03	7	44.81	44.81	47.15	2.34			2.34	DBR	GR		VF-FGR	COB							SFI	MBK		OVB				As above
FD17-03	7		47.15	47.85		0.70		0.70															OVB	R-LOSS			
FD17-03	7	47.85	47.85	48.05	0.20			0.20	DBR	GR		VF-FGR	COB							SFI	MBK		OVB				As above
FD17-03	8		48.05	50.14	2.09			2.09	DBR	GR		VF-FGR	PEB							SFI	MBK		OVB				As above
FD17-03	8		50.14	50.90		0.76		0.76															OVB	R-LOSS			
FD17-03	8	50.90	50.90	52.91	2.01			2.01	DBR	GR		VF-FGR	COB							SFI	MBK		OVB				Calcic mud matrix supporting cobbles of sst and slt. 13 cm long sst close to the bottom of the core
FD17-03	9		52.91	53.95	1.04			1.04	DBR	GR		VF-FGR	COB							SFI	MBK		OVB				Calcic mud matrix supporting pebbles and cobbles of sst and slt.
FD17-03	9	53.95	53.95	55.68	1.73			1.73	DBR	GR		VF-FGR	COB							SFI	MBK		OVB				Calcic mud matrix supporting pebbles and cobbles of sst and slt. A calcic sst of 9 cm present.
FD17-03	9	55.78	55.68	56.92	1.24			1.24	DBR	GR		VF-FGR	COB							-	SBK		OVB				Calcic mud matrix supporting pebbles and cobbles of sst and slt.
FD17-03	10		56.92	57.05	0.13			0.13	DBR	GR		VF-FGR	PEB							MFI	SBK		OVB				As above
FD17-03	10	57.00	57.05	58.20	1.15			1.15	DBR	GR		VF-FGR	COB							MFI	SBK		OVB				
FD17-03	10		58.20	60.05	1.85			1.84	DGR	LGR		VFGR	FGR	TLA					6	-	HBK		SLT	SST	Ksh		The clayey slt is broken and the contact is not noticeable.
FD17-03	10	60.05	60.05	61.25	1.20			1.19	DGR	LGR		VFGR	FGR	TLA		HFR	6	6	6	-	HBK		SLT	SST	Ksh		Very few laminations
FD17-03	11		61.25	63.09	1.84			1.82	DGR	LGR		VFGR	FGR	TLA	ILA		6	10	8	-	HBK		SLT	SST	Ksh		Siderite band present
FD17-03	11	63.09	63.09	65.14	2.05			2.04	DGR	LGR		VFGR	FGR	TLA	ILA		6	5	6	-	HBK		SLT	SST	Ksh		
FD17-03	12		65.14	66.14	1.00			0.99	DGR	LGR		VFGR	FGR	TLA	ILA		10	7	9	-	HBK		SLT	SST	Ksh		
FD17-03	12	66.14	66.14	68.89	2.75			2.72	DGR	LGR		VFGR	FGR	TLA	ILA	FZ	9	9	9	-	HBK		SLT	SST	Ksh		Possibility of a fault zone because not only the slt is highlybroken but they have SL or polished surfaces. FZ is 20 cm long
FD17-03	12		68.89	69.06		0.17		0.17											9				R-LOSS		Ksh		
FD17-03	12	69.19	69.06	69.53	0.47			0.47	DGR	LGR		VFGR	FGR	TLA	ILA		8		8	-	MBK		SLT	SST	Ksh		Fewer laminations
FD17-03	13		69.53	72.11	2.58			2.56	DGR	LGR		VFGR	FGR	TLA	ILA		5	10	8	-	MBK		SLT	SST	Ksh		
FD17-03	13	72.24	72.11	73.72	1.61			1.60	DGR	LGR		VFGR	FGR	TLA	ILA		5	5	5	-	MBK		SLT	SST	Ksh		siderite nodule (2.5 cm)
FD17-03	14		73.72	75.02	1.30			1.30	DGR	LGR		VFGR	FGR	TLA	ILA		3	3	3	-	MBK		SLT	SST	Ksh		
FD17-03	14	75.29	75.02	77.90	2.88			2.87	DGR	LGR		VFGR	FGR	TLA	ILA		2	6	4	-	MBK		SLT	SST	Ksh		
FD17-03	15		77.90	78.16	0.26			0.26	DGR	LGR		VFGR	FGR	TLA	ILA		4	3	4	-	SO		SLT	SST	Ksh		
FD17-03	15	78.33	78.16	81.38	3.22			3.21	DGR	LGR		VFGR	FGR	TLA	ILA		4	5	5	-	MBK		SLT	SST	Ksh		A small siderite nodule present
FD17-03	15	81.38	81.38	81.87	0.49			0.49	DGR	LGR		VFGR	FGR	TLA	ILA		3	5	4	-	SBK		SLT	SST	Ksh		
FD17-03	16		81.87	84.43	2.56			2.55	DGR	LGR		VFGR	F-MGR	TLA	ILA		6	4	5	-	SBK		SLT	SST	Ksh		
FD17-03	16	84.43	84.43	86.22	1.79			1.78	DGR	LGR		VFGR	F-MGR	TLA	ILA		5	6	6	-	SBK		SLT	SST	Ksh		
FD17-03	17		86.22	87.41	1.19			1.18	DGR	LGR		VFGR	F-MGR	TLA			6	6	6	-	IN		SLT	SST	Ksh		
FD17-03	17	87.48	87.41	90.49	3.08			3.05	DGR	LGR		VFGR	F-MGR	TLA			7	8	8	-	MBK		SLT	SST	Ksh		

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636167.00	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089994.00	Log Start Date: 27 08 2017
Total Depth (m):	297.79		Projection:	UTM NAD 83 Zone 10	Log End Date: 31 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-03	18	90.53	90.49	93.53	3.04			3.01	DGR	LGR		VFGR	F-MGR	LA			8	8	8	-	SBK		SLT	SST	Ksh	The sandy laminations are thicker up to 2 cm
FD17-03	18	93.57	93.53	94.90	1.37			1.36	DGR	LGR		VFGR	F-MGR	LA			5	7	6	-	IN		SLT	SST	Ksh	The sandy laminations are thicker up to 2 cm
FD17-03	19		94.90	96.62	1.72			1.71	DGR	LGR		VFGR	F-MGR	LA			5	5	5	-	IN		SLT	SST	Ksh	
FD17-03	19	96.62	96.62	99.22	2.60			2.59	DGR	LGR		VFGR	F-MGR	LA			6	6	6	-	IN		SLT	SST	Ksh	Cross-laminations present
FD17-03	20		99.22	99.68	0.46			0.46	DGR	LGR		VFGR	F-MGR	LA	BIO		7	7	7	-	IN		SLT	SST	Ksh	Slt is coarser. Silty laminations also present with sst laminations
FD17-03	20	99.67	99.68	102.66	2.98			2.96	DGR	LGR		VFGR	F-MGR	LA			7	7	7	-	SBK		SLT	SST	Ksh	Thicker sst laminations. Some beds up to 3.5 cm present. Sand infilled burrow of 9 cm
FD17-03	20	102.72	102.66	103.46	0.80			0.79	DGR	LGR		VFGR	F-MGR	LA			8	5	7	-	IN		SLT	SST	Ksh	Very tiny cracks infilled with sst
FD17-03	21		103.46	105.70	2.24			2.23	DGR	LGR		VFGR	F-MGR	LA	ILA		6	6	6	-	IN		SLT	SST	Ksh	A 2.5 cm thick siderite band present. Sandy laminations upt to 4 cm thick
FD17-03	21	105.77	105.70	107.84	2.14			2.13	DGR	LGR		VFGR	F-MGR	TLA	ILA		6	6	6	-	SBK		SLT	SST	Ksh	Coarser slt
FD17-03	22		107.84	108.74	0.90			0.90	DGR	LGR		VFGR	F-MGR	LA			7	3	5	-	SBK		SLT	SST	Ksh	Silty cst
FD17-03	22	108.81	108.74	111.84	3.10			3.08	DGR	LGR		VFGR	F-MGR	LA			6	7	7	-	SBK		SLT	SST	Ksh	Silty cst. Siderite band present (68 cm above the marker). It is 2cm thick. Siderite nodule present
FD17-03	22	111.86	111.84	112.13	0.29			0.29	DGR	LGR		VFGR	F-MGR	TLA			7		7	-	SBK		SLT	SST	Ksh	Silty cst. Very few thin laminations
FD17-03	23		112.13	114.91	2.78			2.76	DGR	LGR		VFGR	F-MGR	TLA			5	8	7	-	MBK		SLT	SST	Ksh	Silty cst
FD17-03	23	114.91	114.91	116.54	1.63			1.62	DGR	LGR		VFGR	F-MGR	LA		FZ	8	3	6	-	SBK		SLT	SST	Ksh	Cross-laminations and climbing ripples present. Sandy laminations up to 2.5 cm. Broken slt pieces with SL 6 cm long. Possibility of faultzone
FD17-03	24		116.54	117.96	1.42			1.42	DGR	LGR		VFGR	F-MGR	LA	BIO		3	6	5	-	SBK		SLT	SST	Ksh	Up to 3 cm thick sst beds present. Small burrows at the bottomof the core
FD17-03	24	117.96	117.96	120.81	2.85			2.84	DGR	LGR		VFGR	F-MGR	LA	BIO		5	6	6	-	SBK		SLT	SST	Ksh	Burrows present at some sections fo the core. Other areas shows disturbance of sediments from organisms. Cross-laminations present. Siderite nodule.
FD17-03	25		120.81	120.92	0.11			0.11	DGR	LGR		VFGR	F-MGR	LA			6	6	6	-	SBK		SLT	SST	Ksh	Silty cst. Cross-laminations present
FD17-03	25	121.01	120.92	124.09	3.17			3.16	DGR	LGR		VFGR	F-MGR	LA	BIO		2	6	4	-	SBK		SLT	SST	Ksh	Silty cst. Cross-laminations present. Burrows and other signs of bioturbation 96 cm above the drill marker. The bioturbated area is 10 cm thick. Small siderite nodule
FD17-03	25	124.05	124.09	125.07	0.98			0.98	DGR	LGR		VFGR	F-MGR	LA			5	5	5	-	IN		SLT	SST	Ksh	Silty cst. Cross-laminations present . A siderite nodule of 4.5 cm in length. It is 60 cm below the drill marker. Small cracks infilled with sst
FD17-03	26		125.07	127.10	2.03			2.01	DGR	LGR		VFGR	F-MGR	ILA			7	10	9	-	SBK		SLT	SST	Ksh	Silty cst
FD17-03	26	127.10	127.10	129.30	2.20			2.17	DGR	LGR		VFGR	F-MGR	LA	BIO		10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03	27		129.30	130.20	0.90			0.89	DGR	LGR		VFGR	F-MGR	LA	BIO	SL	4	10	7	-	SBK		SLT	SST	Ksh	Burrows and other signs of bioturbation. Cross- laminations present. Beds upto 5 cm
FD17-03	27	130.15	130.20	133.47	3.27			3.23	DGR	LGR		VFGR	F-MGR	LA			10	8	9	-	SBK		SLT	SST	Ksh	Burrows present. Burrows and other seidment disturbances due to bioturbation present (14 cm in length). Beds up to 3 cm
FD17-03	27	133.20	133.47	133.63	0.16			0.16	DGR	LGR		VFGR	F-MGR	LA			7	7	7	-	SO		SLT	SST	Ksh	Slt with some clayey and sandy laminations
FD17-03	28		133.63	136.25	2.62			2.61	DGR	LGR		VF-FGR	F-MGR	LA	ILA	FLT	5	5	5	-	IN		SLT	SST	Ksh	Silty cst. A microfault with 0.5 cm displacement. Laminations upt to 3 cm. Cross-laminations
FD17-03	28	136.25	136.25	138.06	1.81			1.80	DGR	LGR		VF-FGR	F-MGR	LA	TLA		5	8	7	-	IN		SLT	SST	Ksh	Lesser laminations
FD17-03	29		138.06	139.29	1.23			1.22	DGR	LGR		VF-FGR	F-MGR	LA			6	6	6	-	IN		SLT	SST	Ksh	Cross-laminations. Beds up to 5cm . A 9 cm thick siderite band with trace fossils in it
FD17-03	29	139.29	139.29	142.34	3.05			3.03	DGR	LGR		VF-FGR	F-MGR	LA		SL	7	6	7	-	IN		SLT	SST	Ksh	Fractures 23 degrees to axis. SL (parallel to the fracture) close to 142.34 drill marker. A 3 cm thick siderite band with another (siderite nodule?) in it
FD17-03	29	142.34	142.34	142.42	0.08			0.08	DGR	LGR		VF-FGR	F-MGR	ILA		SL			8	-	SO		SLT	SST	Ksh	SL at both ends of the rock piece due to up and down movement. Difficult to measure BCN
FD17-03	30		142.42	145.39	2.97			2.94	DGR	LGR		VF-FGR	F-MGR	ILA		SL	8	8	8	-	MBK		SLT	SST	Ksh	slt with clayey and sandy lamiantions. SL close to the top of the box. A microfault of 0.7 cm displacement
FD17-03	30	145.39	145.39	146.32	0.93			0.92	DGR	LGR		VF-FGR	F-MGR	ILA			8	8	8	-	IN		SLT	SST	Ksh	Silty cst. High energy environment. Disturbed layers but no sign of bioturbation
FD17-03	31		146.32	148.44	2.12			2.10	DGR	LGR		VF-FGR	F-MGR	LA	BIO		7	7	7	-	MBK		SLT	SST	Ksh	Silty cst. Siderite nodule close to the top of the box . Burrows present at different parts of the core. Beds up to 4.5 cm
FD17-03	31	148.44	148.44	150.51	2.07			2.06	DGR	LGR		VF-FGR	F-MGR	LA			6	6	6	-	HBK		SLT	SST	Ksh	Silty cst. Beds up to 4 cm
FD17-03	32		150.51	151.49	0.98			0.97	DGR	LGR		VF-FGR	F-MGR	LA			10	10	10	-	MBK		SLT	SST	Ksh	Silty cst. A siderite band (1.5 cm thick)
FD17-03	32	151.49	151.49	154.44	2.95			2.92	DGR	LGR		VF-FGR	F-MGR	LA		SL	8	8	8	-	HBK		SLT	SST	Ksh	silty cst.Beds up to 3 cm. Cross-laminations. SL. Difficult to say direction
FD17-03	33		154.44	154.59	0.15			0.15	DGR	LGR		VFGR	F-MGR	LA			8	5	7	-	SBK		SLT	SST	Ksh	Sity Cst
FD17-03	33	154.53	154.59	157.58	2.99			2.98	DGR	LGR		VFGR	F-MGR	LA		SL	5		5	-	HBK		SLT	SST	Ksh	Highly broken cst with SL. Difficult to say the direction
FD17-03	33	157.58	157.58	158.03	0.45			0.44	DGR	LGR		VFGR	F-MGR	LA		FZ	10		10	-	HBK		SLT	SST	Ksh	Highly broken cst with SL parallel to fracture. Possibility of a FZ of 21 cm. Difficult to say because of many mechnical fractures
FD17-03	34		158.03	160.73	2.70			2.67	DGR	LGR		VFGR	F-MGR	LA		SL	6	10	8	-	HBK		SLT	SST	Ksh	Fractures present SL parallel to fractures. Fractures are about 25 degress to core axis
FD17-03	34	160.63	160.73	161.56	0.83			0.82	DGR	LGR		VFGR	F-MGR	LA		SL	7	7	7	-	HBK		SLT	SST	Ksh	Broken cst with SL most likely dueto fracture
FD17-03	35		161.56	163.81	2.25			2.23	DGR	LGR		VFGR	F-MGR	LA		SL	6	10	8	-	HBK		SLT	SST	Ksh	Broken cst with S close to 163.68 drill mark
FD17-03	35	163.68	163.81	165.03	1.22			1.21	DGR	LGR		VFGR	F-MGR	LA		SL	7	5	6	-	HBK		SLT	SST	Ksh	SL at vertically broken cst
FD17-03	36		165.03	166.97	1.94			1.92	DGR	LGR		VFGR	F-MGR	LA		SL	8	8	8	-	MBK		SLT	SST	Ksh	SL found
FD17-03	36	166.73	166.97	169.08	2.11			2.10	DGR	LGR		VFGR	F-MGR	LA	BIO		4	6	5	-	IN		SLT	SST	Ksh	Burrows seen close to the bottom of the core
FD17-03	37		169.08	170.01	0.93			0.93	DGR	LGR		VFGR	F-MGR	LA			5	5	5	-	IN		SLT	SST	Ksh	Sidertie nodule present. Laminations up to 2.5 cm .Disturbed sediments
FD17-03	37	169.77	170.01	172.82	2.81			2.79	DGR	LGR		VFGR	F-MGR	ILA	BIO		6	6	6	-	MBK		SLT	SST	Ksh	Very few laminations at the lower part of the core. Smallhorizontal burrows
FD17-03	37	172.82	172.82	173.05	0.23			0.23	DGR	LGR		VFGR	F-MGR	LA				6	6	-	IN		SLT	SST	Ksh	Laminations only at the bottom part
FD17-03	38		173.05	175.87	2.82			2.80	DGR	LGR		VFGR	F-MGR	LA			7	5	6	-	IN		SLT	SST	Ksh	Laminations up to 2 cm
FD17-03	38	175.87	175.87	177.39	1.52			1.51	DGR	LGR		VFGR	F-MGR	LA			5	7	6	-	IN		SLT	SST	Ksh	Carbonaceous inclusions. Disturbed sediments due to turbulence or bioturbation.Aragonite crystal inclusions just above the drill marker (175.87 m)
FD17-03	39		177.39	178.95	1.56			1.54	DGR	LGR		VFGR	F-MGR	ILA	BIO		8		8	-	IN		SLT	SST	Ksh	Burrows in different parts of the core. Sediments are disturbed. Difficult to measure BCN at the bottom
FD17-03	39	178.92	178.95	181.69	2.74			2.73	DGR	LGR		VFGR	F-MGR	ILA	BIO		6	5	6	-	IN		SLT	SST	Ksh	Burrows in different parts of the core. Sediments are disturbed
FD17-03	40		181.69	182.01	0.32			0.32	DGR	LGR		VF-FGR	F-MGR	ILA			5	5	5	-	IN		SLT	SST	Ksh	Silty cst.
FD17-03	40	181.97	182.01	185.01	3.00			2.99	DGR	LGR		VF-FGR	F-MGR	ILA			5	6	6	-	IN		SLT	SST	Ksh	Silty cst. Cst looks coarser due to silty bands. The first top 5 cm is a turbid environment.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636167.00	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089994.00	Log Start Date: 27 08 2017
Total Depth (m):	297.79		Projection:	UTM NAD 83 Zone 10	Log End Date: 31 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03	40	185.01	185.01	185.98	0.97			0.97	DGR	LGR		VF-FGR	F-MGR	ILA			5	6	6	-	IN		SLT	SST	Ksh	Silty cst. Up to 3 cm of sandy and silty lmainations
FD17-03	41		185.98	188.06	2.08			2.07	DGR	LGR		VF-FGR	FGR	ILA			6	7	7	-	IN		SLT	SST	Ksh	
FD17-03	41	188.06	188.06	190.34	2.28			2.26	DGR	LGR		VF-FGR	FGR	ILA	BIO		8	8	8	-	IN		SLT	SST	Ksh	A small burrow (.08 cm) is present close to the top of the core. Small crack infilledd with aragonite
FD17-03	42		190.34	191.11	0.77			0.77	DGR	LGR		VF-FGR	FGR	ILA			4	4	4	-	IN		SLT	SST	Ksh	
FD17-03	42	191.11	191.11	194.16	3.05			3.04	DGR	LGR		VF-FGR	FGR	ILA			5	5	5	-	SBK		SLT	SST	Ksh	Up to 2cm of sandy laminations. BCN measurement start at 5 degrees,goes up to 10 and goes back to 5 degrees
FD17-03	42	194.16	194.16	194.68	0.52			0.52	DGR	LGR		VF-FGR	FGR	ILA	BIO		5	5	5	-	SO		SLT	SST	Ksh	Up to 2cm of sandy laminations. Weakly laminated at the top half of the core. Small burrow at the middle of the core.
FD17-03	43		194.68	197.15	2.47			2.46	DGR	LGR		VF-FGR	FGR	ILA			5	5	5	-	SBK		SLT	SST	Ksh	Sandy andsilty lamiantions. Sandy and silty laminations
FD17-03	43	197.21	197.15	199.06	1.91			1.89	DGR	LGR		VF-FGR	FGR	ILA	BIO		10	8	9	-	IN		SLT	SST	Ksh	Siderite nodule close to the bottom of the core. Burrow found. Wavy lamination forming a small syncline
FD17-03	44		199.06	200.25	1.19			1.19	DGR	LGR		VF-FGR	FGR	ILA	BIO		5	5	5	-	IN		SLT	SST	Ksh	Burrow found 35 cm below the top
FD17-03	44	200.25	200.25	203.26	3.01			2.99	DGR	LGR		VF-FGR	FGR	ILA	BIO		6	7	7	-	SBK		SLT	SST	Ksh	A 4 cm burrow
FD17-03	45	203.30	203.26	206.35	3.09			3.07	DGR	LGR		VF-FGR	FGR	ILA			7	6	7	-	SBK		SLT	SST	Ksh	Calcite inclusions about 4 cm. Most of the core hasdisturbed sediments due to currents or bioturbation. Small sandy RCL close to the bottom
FD17-03	45	206.35	206.35	207.65	1.30			1.30	DGR	LGR		VF-FGR	FGR	ILA	RCL		5	5	5	-	SBK		SLT	SST	Ksh	Most of the core hasdisturbed sediments due to currents or bioturbation
FD17-03	46		207.65	209.31	1.66			1.65	DGR	LGR		VFGR	FGR	ILA			7	7	7	-	SBK		SLT	SST	Ksh	Calcite inclusion (23 cm long)
FD17-03	46	209.40	209.31	211.87	2.56			2.55	DGR	LGR		VFGR	FGR	ILA	BIO		5	5	5	-	SBK		SLT	SST	Ksh	A 4 cm sidertie concretion 26 cm below the drill marker. Very small cracks infilled with aragonite. Cross-laminations and burrows
FD17-03	47		211.87	212.31	0.44			0.44	DGR	LGR		VFGR	FGR	ILA			10	6	8	-	IN		SLT	SST	Ksh	Siderite concretionsat the bottom of the core
FD17-03	47	212.45	212.31	214.59	2.28			2.27	DGR	LGR		VFGR	FGR	ILA			5	8	7	-	SBK		SLT	SST	Ksh	Siderite concretions at different parts of the core . Small cracks infilled with aragonite slt or sst. Sst beds up to 5 cm. Disturbance possibly due ti bioturbation
FD17-03	47		214.59	214.72	0.13			0.13	GR	DGR		PEB	VFGR						8		SBK		CGL	SLT	Kb	Conglomerate supported by some cst
FD17-03	47		214.72	214.98	0.26			0.26	DGR	LGR		VFGR	FGR	LA			10	8	9	-	IN		SLT	SST	Kb	Up to 2 cm of laminations
FD17-03	47		214.98	215.44	0.46			0.46	GR			PEB							8		MBK		CGL		Kb	Clast supported conglomerate
FD17-03	47	215.49	215.44	216.12	0.68			0.67	LGR	WH		VF-FGR	VF-FGR	TLA			7	7	7				SST	SST	Kb	Sst with weak, thin sandy laminations. Very smooth (possibly metamorphosed or argillaceous sst)
FD17-03	48		216.12	217.29	1.17			1.16	DGR	LGR	SWE	VFGR	VF-FGR	MBE			8	8	8	-	IN		SLT	SST	Kb	Silty clay with sandy and silty beds up to 10 cm. Trace fossils of 20 cm at the top of the core. Biological weathering at the top 30 cm of the core
FD17-03	48		217.29	218.54	1.25			1.23	LGR	WH		FGR	VF-FGR	ILA	BIO				9	-	IN		SST	SST	Kb	Sst wilth few irregular silty and sandy laminations. SL close to the top. Smooth texture
FD17-03	48	218.54	218.54	220.42	1.88			1.85	GR	WH		FGR	F-MGR	ILA			10	10	10	-	MBK		SST	SST	Kb	Salt and pper sst wit irregular aragonite sst or slt laminations. Coaly inclusions close to the bottom. Cracks with carbonaceous inclusions. aragonite inclusions. Smooth texture
FD17-03	49		220.42	221.59	1.17			1.15	GR	DGR		MGR	VFGR				10	12	11	-	IN		SST	SLT	Kb	Interbedded sst and slt (sst with slt/cst laminations and beds). Small sidertie nodules at the toop of the core. Smooth texture
FD17-03	49	221.59	221.59	222.96	1.37			1.37	GR	DGR		MGR	VFGR		BIO		4	5	5	-	IN		SST	SLT	Kb	Sidertie nodules and burrows infilled with slt at different parts of the core. Cracks infilled with aragonite . Silty towards the bottom (65 cm). Most cst is evolved to siderite compositions
FD17-03	49		222.96	224.56	1.60			1.59	DGR	BR		VFGR	VF-FGR		BIO				5				SLT	SLT	Kb	Some horizontal and vertical burrows are infilled with siderite. Sandy slt with sandy lamiantions .Sidertic at some parts
FD17-03	49	224.64	224.56	224.63	0.07			0.07	GR			FGR		MBE					5		SO		SLT		Kb	Massive sandy slt (Argillaceous sst)
FD17-03	50		224.63	227.66	3.03			3.02	DGR	LGR		VF-FGR	FGR	LA	BIO		5	5	5	-	IN		SLT	SST	Kb	Silty cst with sandy lmaiantions. Burrows and siderite concretions at different parts of the core. Cst evolvedto siderite in some parts. Calcic inclusions
FD17-03	50	227.69	227.66	229.04	1.38			1.37	DGR	LGR		VF-FGR	FGR	LA	BIO		4	6	5	-	IN		SLT	SST	Kb	Silty cst. Sidertie band close to the top of the core. Signs of bioturbations at different parts of the core.
FD17-03	51		229.04	230.70	1.66			1.65	DGR	LGR		VF-FGR	FGR	LA	BIO		6	6	6	-	SBK		SLT	SLT	Kb	slt with clayey and sandy lamiantions. Burrows close to the top
FD17-03	51	230.73	230.70	231.83	1.13			1.13	GR	DGR		FGR	VF-FGR	TLA			2	2	2	-	IN		SST	CST	Kb	Argillaceous sst (Sandy slt) with cst.
FD17-03	51		231.83	232.74	0.91			0.91	DGR	LGR		VFGR	FGR	ILA			5		5	-	SBK		SLT	SST	Kb	Very few irregular laminations at the bottom. Sidertie concretions close to the bottom
FD17-03	51		232.74	233.37	0.63			0.63	LGR	WH		FGR	FGR	TLA					5	-	SBK		SST	SST	Kb	Very few thin laminations. A contact (disconformity) separating sst and cst . Smooth texture
FD17-03	52		233.37	233.77	0.40			0.40	GR	DGR		VF-FGR	FGR	LA				4	4	-	SO		SST	SLT	Kb	Sandy slt with very few cst laminations
FD17-03	52	233.78	233.77	236.83	3.06			3.04	DGR	LGR		VF-FGR	FGR	LA	BIO	PO	4	10	7	-	SBK		SLT	SST	Kb	Interdedded cst and sst. Siderite concretions at different parts of the core. Coaly/carbonaceous inclusions close to the bottom. A small burrow. Cracks infilled with aragonite.
FD17-03	52	236.83	236.83	237.56	0.73			0.72	LGR	DGR		MGR	VFGR	TLA	BIO		4	11	8	-	SO		SST	SLT	Kb	(Salt and pepper) sst with clayey and silty (shaly) lamiantions. RCL present. Burrows infilled with clays in sst. BCN increases towards the bottom
FD17-03	53		237.56	239.78	2.22			2.20	DGR	LGR		VF-FGR	VF-FGR		BIO		5	9	7	-	IN		SLT	SLT	Kb	Silty cst with silty laminations. Sediments are disturbed due to bioturbation (eg. Burrows)
FD17-03	53	239.88	239.78	241.99	2.21			2.20	DGR	LGR		VF-FGR	VF-FGR		BIO	SL	8	5	7	-	SBK		SLT	SST	Kb	Silty cst with very week sandy laminations. Laminations are weak and difficult to measure. Burrows and trace fossils infilled with cst. SL parallelto fracture at the bottom
FD17-03	54		241.99	242.93	0.94			0.94	DGR	LGR		VF-FGR	F-MGR	RCL	BIO		5	5	5	-	IN		SLT	SST	Kb	Silty cst interbeddedwith sst. Trace fossils present. Siderite concretion at the bottom. Calyey RCL present
FD17-03	54	242.93	242.93	245.97	3.04			3.02	LGR	DGR		MGR	VFGR	RCL	BIO		8	5	7	-	SBK		SST	SLT	Kb	Sst with a few beds of slt . Calyey RCL present. Siderite band present. Possibility of bioturbation. Contacts (discontinuities).Cracks infilled with aragonite . Few weak laminations
FD17-03	54	245.97	245.97	246.36	0.39			0.39	GR	WH		FGR		LA			5	5	5	-	IN		SST	SLT	Kb	Cracks infilled with aragonite sst . Few weak laminations
FD17-03	55		246.36	248.90	2.54			2.53	LGR	DGR		FGR	VFGR	LA			5	5	5	-	SBK		SST	SLT	Kb	sst interbedded with /sltcst. Carbonaceous or clayey inclusions at the otp of the core. Siderite band of 5 cm thickness present
FD17-03	55	249.02	248.90	250.69	1.79			1.78	LGR	DGR		FGR	VFGR	LA	RCL		7	6	7	-	SBK		SST	SLT	Kb	Clayey RCL. Sst coarsening towards the bottom. Few small sidertie concretions present at various depths
FD17-03	56		250.69	251.79	1.10			1.10	GR	DGR		F-MGR	VFGR	LA	BIO		5	5	5	-	IN		SST	SLT	Kb	Cross-lamiantions present. Siderite concretion in a bioturbated area (23 cm below the top of the core). Cracks infilled with aragonite.
FD17-03	56	252.07	251.79	252.68	0.89			0.89	DGR	LGR		VF-FGR	F-MGR	MBE	BIO		5	7	6	-	IN		SLT	SST	Kb	Cst interbedded with sst. Burrows are sideritc
FD17-03	56		252.68	254.91	2.23			2.22	GR	LGR	MWE	VF-FGR	FGR	MBE	BIO		6	4	5	-	SBK		SLT	SST	Kb	Biologically weathered cst with sst laminations. A contact separates the weathered slt above from the fresh (16 m thick) slt below. Fresher cst is dark gray

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636167.00	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089994.00	Log Start Date: 27 08 2017
Total Depth (m):	297.79		Projection:	UTM NAD 83 Zone 10	Log End Date: 31 08 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03	56	255.12	254.91	255.01	0.10			0.10	DGR	LGR		VFGR	VF-FGR	TLA			5	5	5	-	SO		SLT	SST	Kb	
FD17-03	57		255.01	258.06	3.05			3.04	DGR	LGR		VFGR	VF-FGR	TLA	BIO		4	5	5	-	SBK		SLT	SST	Kb	Few burrows and trace fossils and different depths of the core
FD17-03	57	258.17	258.06	259.49	1.43			1.43	DGR	LGR	MWE	VFGR	VF-FGR	TLA			4	4	4	-	SBK		SLT	SST	Kb	Silty Cst is sidertic the last 50 cm of the core. Weakly laminated
FD17-03	58		259.49	261.12	1.63			1.62	DGR	LGR	MWE	VFGR	VF-FGR	TLA			4	7	6	-	SBK		SLT	SST	Kb	aragonite inclusions throughout the core. Biological weathering (53 cm)
FD17-03	58	261.21	261.12	263.83	2.71			2.70	DGR	LGR		VFGR	VF-FGR	LA			5	7	6	-	SBK		SLT	SST	Kb	Cracks infilled with carbonaceous inclusions (carbonaceous stringers) . Calcite inclusions at the bottom of the core.Few burrows at different depths of the core
FD17-03	59		263.83	264.06	0.23			0.23	DGR	LGR		VFGR	F-MGR	TLA	BIO		4	5	5	MFI	IN		SLT	SST	Kb	A few burrows at the top of the core. Sst is calcic
FD17-03	59	264.26	264.06	267.11	3.05			3.03	DGR	LGR	SWE	VFGR	F-MGR	MBE	BIO		5	7	6	MFI	SBK		SLT	SST	Kb	Silty cst with thin calcic sst laminations interbedded with massive sst . Top 84 cm of the slt is sidertic.Burrows present in the sideritc cst andother sections of the core. Siderite nodule present. Calcic inclusions.
FD17-03	59	267.31	267.11	267.93	0.82			0.82	DGR	LGR		VFGR	F-MGR	LA	BIO		5		5	MFI	SBK		SLT	SST	Kb	Silty/clayey burrows at the top of the core. Below the burrows is a siderite band (11 cm thick). Small siderite concretion at the bottom of the core. Calcic inclusions throughout the core
FD17-03	60		267.93	270.16	2.23			2.22	LGR	GR		F-MGR	VFGR	LA	BIO		5	7	6	SFI	IN		SST	SLT	Kb	Calcic sst with clayey laminations. Siderite bands at different depths. Few burrows at different depths
FD17-03	60	270.36	270.16	272.40	2.24			2.23	LGR	GR		MGR	VFGR	LA			7	6	7	SFI	SBK		SST	SLT	Kb	Calcic sst with clayey laminations. Cross-laminations at various depths of the core
FD17-03	61		272.40	273.05	0.65			0.65	LGR	GR		MGR	VFGR	LA			9	2	6	SFI	SBK		SST	SLT	Kb	Calcic sst interbeddd with cst. Siderite bands at different depths. BCN measurements startswith 9 degrees at the top ad goes to2 degrees from the middle to the bottom
FD17-03	61	273.41	273.05	275.18	2.13			2.12	DGR	LGR		VF-FGR	M-CGR	LA	BIO		6	7	7	SFI	MBK		SLT	SST	Kb	Siderite concretion in a bioturbated section.
FD17-03	61		275.18	276.30	1.12			1.10	LGR	LGR		CGR	FGR	LA	RCL		12	8	10	MFI	MBK		SST	SST	Kb	Coarse salt and pepper calcic sst, Fine gray sst towards the bottom. Sideritic RCL towards the bottom. Few laminations. Siderite nodule (2 cm) present . Cracks infilled with calcite towards the bottom
FD17-03	61	276.45	276.30	276.41	0.11			0.11	LGR	WH		FGR	FGR	TLA			2	2	2	-	SO		SST	SST	Kb	Gray fine sst with aragonite sst laminations
FD17-03	62		276.41	279.50	3.09			3.07	LGR	DGR		FGR	VFGR	LA	RCL		7		7	-	MBK		SST	SLT	Kb	A possible sideritic or oxidized nodule. Does not get removed with water. Not sure if it is from drilling or if it is local. Calyey RCL . Calcic inclusions close to RCL. Carbonaceous inclusions
FD17-03	62	279.50	279.50	280.86	1.36			1.35	LGR	DGR		F-MGR	VFGR	LA		SL	8	8	8	-	IN		SST	SLT	Kb	Possible sideritic or oxidized nodules. Does not get removed with water. Not sure if it is from drilling or if it is local. Carbonaceous inclusions
FD17-03	63		280.86	282.59	1.73			1.72	DGR	LGR		VF-FGR	FGR				5	5	5	MFI	IN		SLT	SST	Kb	Silty cst interbedded with calcic sst.
FD17-03	63	282.55	282.59	284.66	2.07			2.06	LGR	DGR		M-CGR	VFGR	MBE	LA		5	5	5	SFI	IN		SST	SLT	Kb	A discontinuity between sst above and silty cst below. Silty cst with sandy laminations at the bottom of the core. A 35 cm long crack filled with aragonite. Small stringers of cst
FD17-03	63		284.66	285.24	0.58			0.58	DGR	LGR		VF-FGR	FGR	LA			5	5	5	SFI	SBK		SLT	SST	Kb	Silty cst with calcic sandy laminations. The BCN increases to 7 degrees and goes back to 5 at the end of the core
FD17-03	64		285.24	285.69	0.45			0.45	DGR	LGR		VFGR	FGR	TLA		SL	2	2	2	-	MBK		SLT	SST	Kb	Fissile,shaly silty cst . Very few weak laminations. SL parallel to fracture that is fissile in nature
FD17-03	64	285.60	285.69	288.58	2.89			2.88	DGR	LGR		VFGR	FGR	TLA			2	5	4	-	MBK		SLT	SST	Kb	Shaly cst with thin sst/silty laminations.Very fewlaminations. Silty towardsthe bottom
FD17-03	64	288.65	288.58	289.59	1.01			1.01	DGR	LGR		VFGR	FGR						5	-	HBK		SLT	SST	Kb	Broken sst rock pieces the top 11.5 cm of the core followed by massive shaly cst for the rest of the core
FD17-03	65		289.59	292.03	2.44			2.43	DGR	LGR		VF-FGR	F-MGR	TLA	MBE		5	5	5	SFI	MBK		SLT	SST	Kb	Fine gray sst at the top 48 cm of the core followed by a calcic sandy bed of 24 cm long,then followed by fissile silty clay stone
FD17-03	65	291.69	292.03	293.87	1.84			1.83	DGR	LGR		VF-FGR	FGR	TLA			6	5	6	SFI	IN		SLT	SST	Kb	Shaly silty cst with sst laminations
FD17-03	66		293.87	294.46	0.59			0.59	DGR			VF-FGR		MBE					6	-	MBK		SLT		Kb	Massive slt
FD17-03	66		294.46	294.57		0.11		0.11															R-LOSS		Kb	
FD17-03	66		294.57	294.97	0.40			0.40	DGR			VF-FGR		MBE					6	-	MBK		SLT		Kb	Massive slt
FD17-03	66	294.74	294.97	297.79	2.82			2.81	DGR	LGR		VF-FGR	FGR	TLA			4	7	6	-	SBK		SLT	SST	Kb	
FD17-03	66	297.79																								End of hole.

Gordon Creek Project

(Flatbed Property)

Lithology Descriptive Logs

FD17-03A

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	1		0.00	6.80		6.80																	OVB	R-LOSS		Measures to 1.47 from the drill marker
FD17-03A	1		6.80	8.23	1.43				DBR	LGR	MWE	VF-FGR	COB							MFI	SBK		OVB			Top 40 cm is sst. The rest is calcic mud matrix supporting cobbles of sst and slt
FD17-03A	1	8.23	8.23	9.87	1.64				DBR	LGR	SWE	VF-FGR	COB							SFI	IN		OVB			Calcic mud matrix supporting cobbles of sst and slt. A 5cm piece of sst
FD17-03A	1		9.87	11.28		1.41																	OVB	R-LOSS		
FD17-03A	1	11.28	11.28	12.50	1.22				DBR	LGR	SWE	VF-FGR	F-MGR							SFI	MBK		OVB			Calcic mud matrix supporting pebbles and beds of calcic sst, and slt
FD17-03A	2		12.50	13.20	0.70				DBR	LGR	SWE	VF-FGR	F-MGR							SFI	HBK		OVB			Mud holding cobbles and broken pieces of sst
FD17-03A	2		13.20	14.32		1.12																	OVB	R-LOSS		
FD17-03A	2	14.32	14.32	17.37	3.05				LGR	DBR	HWE	MGR	VF-FGR							SFI	HBK		OVB			Broken sst pieces because of cave. The last 1 m of the core is intact mud matrix supporting pebbles and cobbles of sst
FD17-03A	3	17.37	17.37	20.08	2.71				BR	GR	MWE	VF-FGR	COB							SFI	IN		OVB			Mud holding cobbles and broken pieces of sst and slt
FD17-03A	3		20.08	20.42	0.34				BR	GR	MWE	VF-FGR	PEB							SFI	SBK		OVB	CGL		The top part is a 20 cm breccia followed by mud holding cobbles. The last 16cm is overburden.
FD17-03A	3	20.42	20.42	21.57	1.15				BR	GR	HWE	VF-FGR	PEB							SFI	IN		OVB			Calcic mud matrix supporting pebbles and cobbles of sst and slt
FD17-03A	4		21.57	23.47	1.90				DBR	GR	MWE	VF-FGR	COB							MFI	IN		OVB			Same as above
FD17-03A	4	23.47	23.47	25.89	2.42				DBR	GR	MWE	VF-FGR	COB							MFI	IN		OVB			Same as above
FD17-03A	5		25.89	26.52	0.63				DBR	GR	MWE	VF-FGR	COB							MFI	IN		OVB			Same as above
FD17-03A	5	26.52	26.52	29.56	3.04				DBR	GR	MWE	VF-FGR	COB							MFI	IN		OVB			14 cm and 25 cm of sst. The rest is same as above
FD17-03A	5	29.56	29.56	30.04	0.48				DBR	GR	MWE	VF-FGR	COB							MFI	IN		OVB			Calcic mud matrix supporting pebbles and cobbles of sst and slt
FD17-03A	6		30.04	32.61	2.57				GR	DBR	HWE	MGR	VF-FGR							MFI	HBK		OVB			Broken sst rocks. 49 cm of wet calcic mud at the end of the core
FD17-03A	6	32.61	32.61	33.15	0.54				DBR		SWE	VF-FGR								MFI			OVB			Plain wet mud. Only .54 m of mud
FD17-03A	6		33.15	35.66		2.51																	OVB	R-LOSS		
FD17-03A	6	35.66	35.66	36.84	1.18				DBR	LGR	SWE	VF-FGR	PEB							MFI	SBK		OVB			Mud matrix supporting pebbles of sst and slt
FD17-03A	7		36.84	38.71	1.87				DBR	LGR	SWE	VF-FGR	PEB							MFI	SBK		OVB			13 cm of breccia
FD17-03A	7	38.71	38.71	39.54	0.83				DBR	LGR	SWE	VF-FGR	PEB							MFI	IN		OVB			Mud matrix supporting pebbles of sst and slt
FD17-03A	7		39.54	41.76		2.22																	OVB	R-LOSS		
FD17-03A	7	41.76	41.76	43.14	1.38				DBR	LGR	SWE	VF-FGR	PEB							MFI	IN		OVB			Mud matrix supporting pebbles of sst and slt
FD17-03A	8		43.14	44.80	1.66				DBR	LGR	SWE	VF-FGR	PEB							MFI	IN		OVB			Same as above
FD17-03A	8	44.80	44.80	47.53	2.73				DBR	LGR	SWE	VF-FGR	PEB							MFI	IN		OVB			Same as above
FD17-03A	9		47.53	47.85	0.32				DBR	LGR	SWE	VF-FGR	PEB							MFI	IN		OVB			Same as above
FD17-03A	9	47.85	47.85	49.66	1.81				DBR	LGR	SWE	VF-FGR	PEB							MFI	SBK		OVB			Same as above
FD17-03A	9		49.66	50.90		1.24																	OVB	R-LOSS		
FD17-03A	9	50.90	50.90	52.84	1.94				DBR	LGR	SWE	VF-FGR	PEB							MFI	SBK		OVB			Same as above
FD17-03A	10		52.84	53.95	1.11				DBR	LGR	SWE	VF-FGR	COB							MFI	SBK		OVB			27 cm of sst in the middle of the core
FD17-03A	10	53.95	53.95	57.00	3.05				DBR	LGR	SWE	VF-FGR	COB							MFI	SBK		OVB			Same as above
FD17-03A	11	57.00	57.00	59.80	2.80				DGR	BR	SWE	VF-FGR	VF-FGR							MFI	MBK		OVB	SLT		Slt pieces supported by mud
FD17-03A	11		59.80	60.04	0.24			0.24	DGR	LGR	MWE	VF-FGR	FGR	TLA		HFR	9	6	8	MFI	MBK		SLT	SST	Ksh	Clayey slt with few sst laminations
FD17-03A	11	60.04	60.04	60.93	0.89			0.88	DGR	LGR	MWE	VF-FGR	FGR	TLA		HFR	9	6	8	MFI	MBK		SLT	SST	Ksh	
FD17-03A	12		60.93	63.09	2.16			2.14	DGR	LGR	MWE	VF-FGR	FGR	TLA		HFR	9	6	8	-	HBK		SLT	SST	Ksh	
FD17-03A	16	63.09	63.09	64.12	1.03			1.02	DGR	LGR	SWE	VF-FGR	FGR	LA		MFR	8	8	8	-	MBK		SLT	SST	Ksh	
FD17-03A	17		64.12	66.14	2.02			1.99	DGR	LGR	SWE	VF-FGR	FGR	LA		HFR	10	10	10	-	HBK		SLT	SST	Ksh	
FD17-03A	17	66.14	66.14	68.19	2.05			2.02	DGR	LGR	SWE	VF-FGR	FGR	LA		HFR	10	10	10	-	HBK		SLT	SST	Ksh	
FD17-03A	18		68.19	69.19	1.00			0.99	DGR	LGR	SWE	VF-FGR	FGR	TLA		MFR	9	9	9	-	HBK		SLT	SST	Ksh	
FD17-03A	18	69.19	69.19	72.24	3.05			3.01	DGR	LGR		VF-FGR	FGR	LA			8	10	9	-	MBK		SLT	SST	Ksh	Fissile clayey slt. Base of weathering is at marker block 69.19 m
FD17-03A	18	72.24	72.24	72.72	0.48			0.47	DGR	LGR		VF-FGR	FGR				10	10	10	-	IN		SLT	SST	Ksh	
FD17-03A	19		72.72	75.29	2.57			2.53	DGR	LGR		VF-FGR	FGR	ILA			10	10	10	-	MBK		SLT	SST	Ksh	Sandy/silty cross-beds
FD17-03A	19	75.29	75.29	78.08	2.79			2.75	DGR	LGR		VF-FGR	FGR				10	10	10	-	MBK		SLT	SST	Ksh	Siderite band present close to the bottom
FD17-03A	20		78.08	78.33	0.25			0.25	DGR	LGR		VF-FGR	FGR					10	10	-	IN		SLT	SST	Ksh	
FD17-03A	20	78.33	78.33	81.38	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA		HFR	7	8	8	-	MBK		SLT	SST	Ksh	
FD17-03A	20	81.38	81.38	84.43	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA			8	7	8	-	MBK		SLT	SST	Ksh	
FD17-03A	21	84.43	84.43	87.48	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA			10	6	8	-	MBK		SLT	SST	Ksh	Sandy beds and cross-laminations
FD17-03A	22	87.48	87.48	90.53	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA			6	10	8	-	MBK		SLT	SST	Ksh	Same as above
FD17-03A	23	90.53	90.53	93.57	3.04			3.02	DGR	LGR		VF-FGR	FGR	LA	XBE	MFR	7	6	7	-	MBK		SLT	SST	Ksh	Siderite bands present
FD17-03A	23	93.57	93.57	96.65	3.08			3.05	DGR	LGR		VF-FGR	FGR	LA	XBE	MFR	7	8	8	-	MBK		SLT	SST	Ksh	
FD17-03A	24	96.62	96.65	99.75	3.10			3.05	DGR	LGR		VF-FGR	FGR	LA	XBE	MFR	10	10	10	-	MBK		SLT	SST	Ksh	
FD17-03A	25	99.67	99.75	102.80	3.05			3.01	DGR	LGR		VF-FGR	FGR	LA			10	8	9	-	SBK		SLT	SST	Ksh	
FD17-03A	26	102.72	102.80	105.93	3.13			3.08	DGR	LGR		VF-FGR	MGR	LA			10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	26	105.77	105.93	108.97	3.04			2.99	DGR	LGR		VF-FGR	FGR	LA	XBE		10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	27	108.81	108.97	112.04	3.07			3.03	DGR	LGR		VF-FGR	FGR	LA			8	10	9	-	SBK		SLT	SST	Ksh	
FD17-03A	28	111.86	112.04	115.16	3.12			3.09	DGR	LGR		VF-FGR	FGR	LA			9	6	8	-	MBK		SLT	SST	Ksh	Siderite band present above (close to) 114.91 marker
FD17-03A	28	114.91	115.16	118.12	2.96			2.94	DGR	LGR		VF-FGR	FGR	LA			6	6	6	-	MBK		SLT	SST	Ksh	BCN increases from 6 to 10 and falls back to 6 degrees
FD17-03A	29	117.96	118.12	121.31	3.19			3.15	DGR	LGR		VF-FGR	FGR	LA			11	6	9	-	MBK		SLT	SST	Ksh	
FD17-03A	30	121.01	121.31	124.46	3.15			3.08	DGR	LGR		VF-FGR	MGR	LA	BIO	MFR		12	12	-	MBK		SLT	SST	Ksh	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	31	124.05	124.46	127.36	2.90			2.80	DGR	LGR		VF-FGR	MGR	LA	XBE	MFR	15	14	15	-	SBK		SLT	SST	Ksh	
FD17-03A	32	127.10	127.36	130.42	3.06			3.00	DGR	LGR		VF-FGR	F-MGR	LA	BIO	MFR	11	11	11	-	SBK		SLT	SST	Ksh	Sideritic bioturbated mudstone in the sandy/silty bed close to the end of the box
FD17-03A	33	130.15	130.42	133.32	2.90			2.87	DGR	LGR		VF-FGR	FGR	LA	XBE	MFR	9	6	8	-	SBK		SLT	SST	Ksh	
FD17-03A	33	133.20	133.32	136.27	2.95			2.92	DGR	LGR		VF-FGR	FGR	ILA	BIO	MFR	9	6	8	-	SBK		SLT	SST	Ksh	
FD17-03A	33	136.25	136.27	139.64	3.37			3.32	DGR	LGR		VF-FGR	FGR	ILA	XBE		10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	34	139.29	139.64	142.71	3.07			3.05	DGR	LGR		VF-FGR	FGR	ILA	XBE		3	10	7	-	SBK		SLT	SST	Ksh	sideritic bands up to 10 cm
FD17-03A	35	142.34	142.71	145.76	3.05			3.02	DGR	LGR		VF-FGR	FGR	TLA	XBE		6	10	8	-	SBK		SLT	SST	Ksh	siderite band
FD17-03A	36	145.39	145.76	148.81	3.05			3.00	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	10	10	10	-	HBK		SLT	SST	Ksh	1 microfault of 2.5 cm displacement
FD17-03A	36	148.44	148.81	151.86	3.05			3.00	DGR	LGR		VF-FGR	FGR	ILA	XBE		10	10	10	-	HBK		SLT	SST	Ksh	
FD17-03A	37	151.49	151.86	154.81	2.95			2.91	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	38	154.53	154.81	157.79	2.98			2.91	DGR	LGR		VF-FGR	FGR	LA	XBE		12	12	12	-	SBK		SLT	SST	Ksh	
FD17-03A	39	157.58	157.79	160.91	3.12			3.06	DGR	LGR		VF-FGR	FGR	ILA			11	10	11	-	SBK		SLT	SST	Ksh	
FD17-03A	39	160.63	160.91	163.84	2.93			2.91	DGR	LGR		VF-FGR	FGR	LA	BIO		3	10	7	-	SBK		SLT	SST	Ksh	
FD17-03A	40	163.68	163.84	166.92	3.08			3.05	DGR	LGR		VF-FGR	FGR	LA	BIO		9	6	8	-	SBK		SLT	SST	Ksh	
FD17-03A	41	166.73	166.92	169.92	3.00			2.97	DGR	LGR		VF-FGR	FGR	LA	BIO		10	6	8	-	SBK		SLT	SST	Ksh	
FD17-03A	41	169.77	169.92	172.94	3.02			3.00	DGR	LGR		VF-FGR	FGR	LA	BIO		10	4	7	-	SBK		SLT	SST	Ksh	
FD17-03A	42	172.82	172.94	175.93	2.99			2.98	DGR	LGR		VF-FGR	FGR	LA	BIO		4	4	4	-	SBK		SLT	SST	Ksh	
FD17-03A	43	175.87	175.93	178.98	3.05			3.00	DGR	LGR		VF-FGR	FGR	LA	BIO		10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	44	178.92	178.98	182.03	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA		MFR	8	8	8	-	SBK		SLT	SST	Ksh	BCN starts at 8 degrees, increases to 10 and then comes back to 8 degrees
FD17-03A	44	181.97	182.03	185.07	3.04			2.98	DGR	LGR		VF-FGR	FGR	LA		WFR	9	12	11	-	SBK		SLT	SST	Ksh	
FD17-03A	45	185.01	185.07	188.09	3.02			2.97	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-03A	46	188.06	188.09	191.32	3.23			3.19	DGR	LGR		VF-FGR	FGR	LA			9	9	9	-	IN		SLT	SST	Ksh	
FD17-03A	46	191.11	191.32	194.37	3.05			3.02	DGR	LGR		VF-FGR	FGR	TLA			9	6	8	-	IN		SLT	SST	Ksh	
FD17-03A	47	194.16	194.37	197.42	3.05			3.00	DGR	LGR		VF-FGR	FGR	LA		MFR	9	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	48	197.21	197.42	200.42	3.00			2.95	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Ksh	
FD17-03A	49	200.25	200.42	203.32	2.90			2.85	DGR	LGR		VF-FGR	FGR	ILA			6	15	11	-	SBK		SLT	SST	Ksh	BCN changes from 6 degrees to 15 at about 1 m from marker block 200.25
FD17-03A	49	203.30	203.32	206.62	3.30			3.25	DGR	LGR		VF-FGR	FGR	LA			9	10	10	-	SBK		SLT	SST	Ksh	BCN starts from 9-10 increases to15 and then goes back to 10
FD17-03A	50	206.35	206.62	209.62	3.00			2.95	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	SBK		SLT	SST	Ksh	
FD17-03A	50	209.40	209.62	212.72	3.10			3.08	DGR	LGR		VF-FGR	FGR	ILA			7	7	7	-	SBK		SLT	SST	Ksh	BCN increases from 7 to 11 and back to 7
FD17-03A	51	212.45	212.72	215.69	2.97			2.92	DGR	LGR		VF-FGR	FGR	LA			9	10	10	-	IN		SLT	SST	Ksh	
FD17-03A	52	215.49	215.69	217.55	1.86			1.83	DGR	LGR		VF-FGR	FGR	ILA			14	8	11	-	IN		SLT	SST	Ksh	BCN is 14 degrees for the top 50 cm and then it becomes 8 degrees for the rest of the core
FD17-03A	53		217.55	218.68	1.13			1.12	DGR	LGR		VF-FGR	FGR	LA	BIO		8	10	9		IN		SLT	SST	Ksh	Clayey slt with sandy laminations. A sideritic band (5 cm thick) at the top 30 cm. Bioturbated area is 30 cm long
FD17-03A	53		218.68	218.88	0.20			0.20	GR	DGR		PEB	VF-FGR			WFR			10	-	SBK		CGL	SLT	Kb	A discontinuity divides the conglomerate and slt. This is he basal section of Ksh. CGL is clast supported with slt as the matrix
FD17-03A	53	218.54	218.88	219.42	0.54			0.53	GR	DGR		PEB	VF-FGR						10		MBK		CGL	SLT	Kb	
FD17-03A	53		219.42	220.59	1.17			1.15	LGR			VF-FGR							10	-	IN		SST	SLT	Kb	Argillaceous sst
FD17-03A	53		220.59	221.18	0.59			0.58	DGR			VF-FGR	FGR					10	10	-	SO		SLT	SST	Kb	Sandy slt. Slightly sandier and the last 13 cm at the bottom
FD17-03A	53		221.18	221.55	0.37			0.36	LGR	DGR		FGR	VF-FGR			WFR	10		10	-	SBK		SST	SLT	Kb	
FD17-03A	54		221.55	222.15	0.60			0.59	LGR			FGR							10	-	SO		SST		Kb	
FD17-03A	54	221.59	222.15	224.97	2.82			2.78	LGR	DGR		F-MGR	VF-FGR	LA	BIO	SL			10	-	MBK		SST	SLT	Kb	Aragonite and coaly inclusions. Few clayey slt laminations. Sideritic bioturbated slt
FD17-03A	54	224.64	224.97	225.48	0.51			0.50	LGR	DGR		F-MGR	VF-FGR	LA		PO			10	-	MBK		SST	SLT	Kb	A9.5 cm slt at the bottom of the core
FD17-03A	55		225.48	227.00	1.52			1.47	LGR	BR		MGR	VF-FGR	BIO			7	20	14	-	MBK		SST	SID	Kb	Salt and pepper sst with bioturbated sideritic slt. Sideritic slt beds are about 5 to 10 cm. the BCN is 7 deg but increases to 20 in the bioturbated sandy areas
FD17-03A	55		227.00	227.98	0.98			0.97	GR	LGR		FGR	FGR	TLA		MFR	8	8	8	-	IN		SLT	SST	Kb	Sandy slt. More clayey at the top and coarsens towards the bottom. Very few and weak sandy laminations
FD17-03A	55	227.69	227.98	229.03	1.05			1.03	DGR	LGR		VF-FGR	F-MGR	LA	MBE		10	10	10	-	IN		SLT	SST	Kb	Sandy bed up to 10 cm
FD17-03A	55		229.03	229.68	0.65			0.64	GR			FGR							10	-	SO		SST		Kb	Massive argillaceous sst. Cracks infilled by aragonite
FD17-03A	56		229.68	230.57	0.89			0.88	GR			FGR							10	-	SBK		SST		Kb	Argillaceous sst
FD17-03A	57		230.57	230.88		0.31		0.31											10				R-LOSS		Kb	
FD17-03A	56	230.73	230.88	233.36	2.48			2.43	LGR	DGR		FGR	VF-FGR	LA			11	10	11	MFI	IN		SST	SLT	Kb	Sst is dolomitic from 1.3m from marker block 230.73 onwards.
FD17-03A	56		233.36	233.93	0.57			0.56	DGR	LGR		FGR	FGR	TLA	ILA	WFR			11	-	IN		SLT	SST	Kb	Sandy slt with thin irregular sandy laminations
FD17-03A	56	233.78	233.93	234.13	0.20			0.20	DGR	LGR		FGR	FGR	TLA	ILA	WFR			11	-	IN		SLT	SST	Kb	
FD17-03A	56		234.13	234.33	0.20			0.20	GR			FGR							11	-	SO		SST		Kb	Argillaceous sst
FD17-03A	57		234.33	235.61	1.28			1.27	GR	LGR		VF-FGR	FGR	LA					8	-	IN		SST	SLT	Kb	silty sst with sandy laminations
FD17-03A	57		235.61	236.13	0.52			0.51	DGR	LGR		VF-FGR	FGR	LA			7	8	8	-	IN		SLT	SST	Kb	
FD17-03A	57		236.13	236.51	0.38			0.38	GR			FGR							8	-	IN		SST		Kb	Argillaceous sst
FD17-03A	57		236.51	236.83	0.32			0.32	GR	WH		FGR	FGR						8	-	IN		SST	SST	Kb	Argillaceous sst with fine grained sst
FD17-03A	57	236.83	236.83	237.83	1.00			0.99	DGR	LGR		FGR	FGR						9	-	IN		SST	SST	Kb	Sandy slt
FD17-03A	57		237.83	238.47	0.64			0.63	DGR	LGR		VF-FGR	FGR	TLA			10	8	9	-	IN		SLT	SST	Kb	Carbonaceous cst at the bottom
FD17-03A	58		238.47	239.24	0.77			0.76	LGR	DGR		FGR	VF-FGR	MBE					9	-	IN		SST	SLT	Kb	Interbedded sst with slt
FD17-03A	58		239.24	239.88	0.64			0.63	DGR	LGR		VF-FGR	FGR	LA			8	10	9	-	IN		SLT	SST	Kb	Sandy slt with sst laminations. Up to 2.5 cm of sandy beds
FD17-03A	58	239.88	239.88	240.18	0.30			0.30	DGR	LGR		VF-FGR	FGR	LA			8	10	9	-	IN		SLT	SST	Kb	Same as above

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	58		240.18	241.50	1.32			1.30	LGR	DGR		F-MGR	VF-FGR	TLA			9	8	9	-	IN		SST	SLT	Kb	Sst with thin silty/clayey laminations at the bottom. Carbonaceous stringers. BCN starts at 9 goes up to 10 and then down to 8
FD17-03A	58		241.50	242.06	0.56			0.55	LGR			FGR							9	-	SO		SST		Kb	Massive sst
FD17-03A	58		242.06	242.85	0.79			0.79	DGR	LGR		VF-FGR	FGR	LA			5	6	6	-	IN		SLT	SST	Kb	Slt interbedded with sst
FD17-03A	59		242.85	242.93	0.08			0.08	DGR	LGR		VF-FGR	FGR	LA			6	6	6	-	SO		SLT	SST	Kb	Slt with sst laminations
FD17-03A	59	242.93	242.93	243.94	1.01			1.00	DGR	LGR		VF-FGR	FGR	LA			7	10	9	-	IN		SLT	SLT	Kb	Sandy slt interbedded with sst. SSt bed up to 9 cm
FD17-03A	59		243.94	244.53	0.59			0.58	LGR	DGR		MGR	VF-FGR						9	-	IN		SST	CST	Kb	Sst with cst laminations
FD17-03A	59		244.53	245.71	1.18			1.17	GR			FGR							9	-	IN		SST		Kb	Massive silty sst with carbonaceous stringers
FD17-03A	59		245.71	245.97	0.26			0.26	LGR	DGR		F-MGR	VF-FGR	ILA				8	8	-	IN		SST	SLT	Kb	Sst with silty irregular laminations
FD17-03A	59	245.97	245.97	246.99	1.02			1.01	LGR	DGR		MGR		ILA			10	6	8	MFI	SBK		SST	SLT	Kb	Calcic/Dolomitic sst with silty laminations. Sideritic concretions can be seen. Some carbonaceous stringers present
FD17-03A	60		246.99	247.26	0.27			0.27	DGR	LGR		VF-FGR	FGR			MFR	7	11	9	-	IN		SLT	SST	Kb	Top part is a sandy bed of 7 cm. The rest is slt
FD17-03A	60		247.26	247.49	0.23			0.23	LGR			FGR							9	-	IN		SST		Kb	
FD17-03A	60		247.49	248.32	0.83			0.82	GR			FGR							9	-	SBK		SST		Kb	Argillaceous sst with some carbonaceous stringers.
FD17-03A	60		248.32	248.55	0.23			0.23	LGR			FGR							9	-	IN		SST		Kb	
FD17-03A	60		248.55	248.85	0.30			0.30	GR			FGR							7	-	SO		SST		Kb	Argillaceous sst. Cracks infilled with dolomite
FD17-03A	60	249.02	248.85	251.05	2.20			2.18	DGR	LGR		FGR	FGR	LA			7		7	-	SBK		SST	SST	Kb	Silty sst interbedded with coarser sst
FD17-03A	61		251.05	251.90	0.85			0.85	DGR	LGR		FGR	FGR	LA			6	6	6	-	IN		SLT	SST	Kb	Sandy silt interbedded with sst. Up to 6cm of sandy beds
FD17-03A	61	252.07	251.90	253.81	1.91			1.89	DGR	LGR		VF-FGR	FGR	LA	MBE				8	-	SBK		SLT	SST	Kb	Slt interbedded with sandy slt and sst. Sst beds up to 12 cm. Difficult to measure the BCN
FD17-03A	61		253.81	254.95	1.14			1.13	LGR	DGR		F-MGR	VF-FGR	LA	RCL		8	8	8	MFI	SBK		SST	SLT	Kb	Dolomitic or calcic sst interbedded with slt and sandy slt. A section of sst is calcic/dolomitic. Silty RCL present 35 cm above the driller marker. Cracks infilled with dolomite/calcite
FD17-03A	61	255.12	254.95	255.30	0.35			0.34	LGR	DGR		F-MGR	VF-FGR	LA	MBE		15	13	14	MFI	IN		SST	SLT	Kb	Sst interbedded with slt. BCN starts from 15 degrees goes up to 25 and then down to 13 degrees. Sandy beds up to 6.5 cm. Silty beds up to 3 cm
FD17-03A	62		255.30	255.50	0.20			0.19	LGR	DGR		F-MGR	VF-FGR	LA	MBE		16	15	16	MFI	IN		SST	SLT	Kb	SSt interbedded with slt. Up to 7.5cm of sandy beds. BCN starts at 16 goes down to 10 and up to 15
FD17-03A	62		255.50	256.97	1.47			1.44	DGR	LGR		VF-FGR	VF-FGR	LA			14	10	12	-	IN		SLT	SST	Kb	Slt weakly interbedded with sst. Sideritic nodules present. BCN starts at 14 degrees and falls to 10. Sandy beds disappear at the bottom
FD17-03A	62		256.97	258.00	1.03			1.01	GR	LGR	MWE	FGR	FGR	TLA		WFR			12	-	SBK		SST	SST	Kb	Weathered silty sst (possibly argillaceous) with weak thin sst laminations. Carbonaceous stringers present
FD17-03A	62	258.17	258.00	259.59	1.59			1.57	GR	LGR	SWE	FGR	FGR	TLA		WFR			10	-	SBK		SST	SST	Kb	Same as above. Calcic inclusions present
FD17-03A	63		259.59	260.02	0.43			0.42	LGR	DGR		FGR	VF-FGR				9	10	10	-	IN		SST	SST	Kb	Silty sst interbedded with sst
FD17-03A	63		260.02	260.21	0.19			0.19	DGR			VF-FGR	FGR	TLA			4	4	4	-	MBK		SLT	SST	Kb	Slt with thin sst laminations
FD17-03A	63		260.21	260.97	0.76			0.75	GR			FGR	FGR	TLA			8	5	7	-	MBK		SST	SST	Kb	Argillaceous sst with thin sandy laminations
FD17-03A	63		260.97	261.19	0.22			0.22	DGR	LGR		VF-FGR	FGR	TLA	LA		5	6	6	-	SO		SLT	SST	Kb	Slt with sandy laminations and beds. Slt is coarser
FD17-03A	63	261.21	261.19	261.93	0.74			0.72	DGR	LGR		VF-FGR	FGR	TLA			15	9	12	-	IN		SLT	SST	Kb	Same as above
FD17-03A	63		261.93	263.73	1.80			1.77	GR		SWE	FGR	FGR	TLA		WFR			11	-	IN		SST	SST	Kb	Argillaceous sst with weak thin sst laminations
FD17-03A	64		263.73	264.29	0.56			0.55	GR	LGR	SWE	VF-FGR	FGR	LA			9	11	10	-	IN		SLT	SST	Kb	Weathered sandy slt with sst laminations
FD17-03A	64	264.26	264.29	265.19	0.90			0.88	GR	LGR		VF-FGR	FGR	LA					12	-	SO		SLT	SST	Kb	Sandy slt with sst laminations
FD17-03A	64		265.19	265.47	0.28			0.27	LGR			MGR		TLA			9	14	12	-	IN		SST	SLT	Kb	Slat and pepper sst with very few slt laminations at the top part. 1.2m from marker block 264.26 a contact separates sst above slt below. The contact dips at 14 degrees
FD17-03A	64		265.47	266.75	1.28			1.25	DGR	LGR	SWE	VF-FGR	FGR	TLA		PO			12	-	MBK		SLT	SST	Kb	Slt with sandy laminations. Sideritic bands are present.
FD17-03A	64		266.75	267.30	0.55			0.54	GR	LGR		FGR	FGR	LA					12	-	IN		SST	SST	Kb	Sst with sandy laminations
FD17-03A	64	267.31	267.30	268.04	0.74			0.71	LGR	DGR		FGR	VF-FGR	LA			8	21	15	-	IN		SST	SLT	Kb	sst interbedded with slt. BCN increase from to 10 and the last bed is 21 degrees
FD17-03A	65		268.04	268.22	0.18			0.18	LGR			F-MGR							12	-	SO		SST		Kb	Sst with carbonaceous stringers
FD17-03A	65		268.22	268.55	0.33			0.33	DGR	LGR		FGR							9	-	SBK		SLT		Kb	Sandy slt. Bkn @ top
FD17-03A	65		268.55	269.44	0.89			0.88	GR	LGR		FGR	FGR	LA			8	9	9	-	IN		SST		Kb	Silty sst with sst laminations
FD17-03A	65		269.44	269.76	0.32			0.32	DGR	LGR		VF-FGR	FGR	LA		SL	8	8	8	-	SBK		SLT	SST	Kb	Slt with sst laminations
FD17-03A	65		269.76	270.35	0.59			0.58	LGR	LGR		FGR	VF-FGR	LA			12	10	11	MFI	IN		SST	SLT	Kb	Sst with silty laminations. BCN increases from 12 to 15 to 20 and then falls back to 10
FD17-03A	65	270.36	270.35	272.31	1.96			1.93	LGR	DGR		FGR	VF-FGR	LA		WFR	11	8	10	MFI	IN		SST	SLT	Kb	Sst interbedded with slt. Calcite inclusions present. BCN falls from 11 to 10 to 9 to 8 degrees
FD17-03A	66		272.31	273.25	0.94			0.93	GR			F-MGR							7	MFI	IN		SST		Kb	Sst with calcic inclusions. Carbonaceous stringers present. bkn @ top.
FD17-03A	66	273.41	273.25	273.97	0.72			0.71	LGR	DGR		F-MGR	VF-FGR	LA	BIO		5	8	7	MFI	IN		SST	SLT	Kb	Sst with very few silty laminations
FD17-03A	66		273.97	274.21	0.24			0.24	LGR	DGR		M-CGR	VF-FGR	LA			8	5	7	MFI	IN		SST	SLT	Kb	A discontinuity divides sst at the top from slt at the at ~1m from marker block 273.41. It dips 5 degrees. Siderite present in the sst
FD17-03A	66		274.21	274.91	0.70			0.68	DGR	LGR		VF-FGR	FGR						13	MFI	IN		SLT	SST	Kb	Sandy slt with calcic sst bands. Thin crack infilled with calcite
FD17-03A	66		274.91	276.49	1.58			1.54	LGR	DGR		F-MGR	VF-FGR	LA	RCL		13	12	13	MFI	IN		SST	SLT	Kb	Interbedded calcic sst and slt. Silty RCL present close to the bottom of the sst.
FD17-03A	67	276.45	276.49	277.02	0.53			0.52	LGR	DGR		F-MGR	VF-FGR	LA	RCL		10	13	12	MFI	IN		SST	SLT	Kb	Interbedded calcic sst and slt. Sandy RCL present and silty RCL present
FD17-03A	67		277.02	278.82	1.80			1.78	DGR	LGR		VF-FGR	FGR	LA			8	10	9	MFI	IN		SLT	SST	Kb	Slt with calcic sst laminations
FD17-03A	67		278.82	279.60	0.78			0.77	LGR	DGR		M-CGR							9	WFI	IN		SST		Kb	Siderite concretions present at different depths. A 6 cm slt found at the bottom of the core.
FD17-03A	67	279.50	279.60	280.79	1.19			1.17	GR	LGR		FGR	FGR	TLA					11		SBK		SST		Kb	Argillaceous sst with thin and weak sst laminations. Carbonaceous stringers present. SBK at top.
FD17-03A	68		280.79	282.65	1.86			1.83	LGR	DGR	MWE	FGR	VF-FGR	LA			11		11		IN		SST	SLT	Kb	Sst with very few silty laminations
FD17-03A	68	282.55	282.65	285.05	2.40			2.36	LGR	DGR		F-MGR	VF-FGR	MBE	BIO		12	10	11	MFI	IN		SST	SLT	Kb	Calcic sst interbedded with slt. Signs of bioturbation at the bottom
FD17-03A	69		285.05	285.69	0.64			0.62	LGR	DGR		FGR	VF-FGR	MBE	XBE		12	15	14	MFI	IN		SST	SLT	Kb	Sst interbedded with slt
FD17-03A	69	285.60	285.69	286.69	1.00			0.97	DGR	LGR		VF-FGR	FGR	MBE		SL	9	18	14	MFI	SBK		SLT	SST	Kb	Slt interbedded with sst. BCN increases from 9 to 15 and then to 18

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-03A	69		286.69	288.74	2.05			1.99	LGR	DGR		MGR	VF-FGR			SL			14	WFI	MBK		SST	SLT	Kb	Massive salt and pepper sst with ccst stringers. A discontinuity separates sst above from slt below (4 cm above the drill marker). The slt is 4 cm
FD17-03A	69	288.65	288.74	289.17	0.43			0.42	DGR			VF-FGR				SL			14	-	IN		SLT		Kb	Massive clayey slt. SL at top of the core
FD17-03A	70		289.17	289.62	0.45			0.45	DGR			VF-FGR							6	-	IN		SLT		Kb	Sandy slt
FD17-03A	70		289.62	290.39	0.77			0.77	DGR	LGR		VF-FGR	FGR				6	6	6	-	IN		SLT	SST	Kb	Slt with weak thin sst laminations
FD17-03A	70		290.39	291.34	0.95			0.93	GR	DGR		FGR	VF-FGR				10	11	11	-	IN		SST	SLT	Kb	Silty sand interbedded with slt
FD17-03A	70		291.34	291.75	0.41			0.40	DGR	LGR		VF-FGR	FGR	TLA					11	-	SO		SLT	SST	Kb	Slt with thin and weak sandy laminations
FD17-03A	70	291.69	291.75	292.83	1.08			1.06	DGR	LGR		VF-FGR	FGR			SL			11	-	IN		SLT		Kb	Massive slt
FD17-03A	70		292.83	293.53	0.70			0.69	GR			FGR							11	-	IN		SST		Kb	Massive sst
FD17-03A	71		293.53	294.80	1.27			1.25	LGR	DGR		F-MGR	VF-FGR	MBE			8	14	11	-	IN		SST	SLT	Kb	Sst interbedded with slt. Sideritic concretions present. A few beds are dipping at 14 degrees
FD17-03A	71	294.74	294.80	294.93	0.13			0.13	GR			FGR							11	-	SO		SLT		Kb	Massive sandy slt
FD17-03A	71		294.93	295.48	0.55			0.54	LGR			F-MGR		RCL					11	-	IN		SST		Kb	Massive sst with sandy silt RCL at the bottom.
FD17-03A	71		295.48	297.85	2.37			2.33	DGR	LGR		VF-FGR	FGR			SL			11	-	IN		SLT	SST	Kb	Sandy slt interbedded with sst
FD17-03A	72	297.79	297.85	297.97	0.12			0.12	DGR			VF-FGR							11	-	IN		CST		Kb	Silty cst
FD17-03A	72		297.97	298.82	0.85			0.83	GR	LGR		VF-FGR	FGR	ILA					11	-	IN		SLT	SST	Kb	Slt interbedded with sst. Weakly laminated. Grading to sst
FD17-03A	72		298.82	299.24	0.42			0.41	LGR	DGR		FGR	VF-FGR	LA			10		10	-	IN		SST	SLT	Kb	Sst with few silty laminations and carbonaceous stringers
FD17-03A	72		299.24	300.13	0.89			0.87	DGR	LGR		VF-FGR	FGR				15	8	12	-	IN		SLT	SST	Kb	Sandy slt with irregular sandy laminations and beds. Coaly bands and sideritic concretions present. BCN starts from 12 goes up to 15 and comes down to 8 degrees
FD17-03A	72		300.13	300.78	0.65			0.64	LGR	DGR		FGR	VF-FGR						12	-	IN		SST	SLT	Kb	Sst. Silty laminations are present at the top. Weakly laminations throughout the core. Carbonaceous stringers present. A disconformity (22 degrees) separates sst from slt
FD17-03A	72		300.78	300.93	0.15			0.15	DGR	LGR		VF-FGR	FGR	TLA					12	-	SBK		SLT		Kb	Sandy slt with weak laminations
FD17-03A	72	300.84	300.93	301.90	0.97			0.96	DGR	LGR		VF-FGR	FGR	TLA					9	-	MBK		SLT		Kb	Sandy slt with weak laminations
FD17-03A	73		301.90	302.50	0.60			0.59	GR		SWE	FGR		TLA			8	8	8	-	IN		SST		Kb	Silty sst with thin laminations. Grading to slt
FD17-03A	73		302.50	302.73	0.23			0.23	DGR	LGR		VF-FGR	FGR	TLA			10	10	10	-	IN		SLT	SST	Kb	
FD17-03A	73		302.73	302.99	0.26			0.26	GR		SWE	FGR		TLA					10	-	IN		SST		Kb	Silty sst with weak thin laminations
FD17-03A	73		302.99	303.52	0.53			0.52	GR	LGR		FGR	FGR				8	7	8	-	IN		SLT	SST	Kb	Interbedded sandy slt and sst
FD17-03A	73		303.52	303.66	0.14			0.14	DGR			VF-FGR							8	-	HBK		CST		Kb	Highly broken silty cst
FD17-03A	73		303.66	303.98	0.32			0.32	GR			FGR		TLA			7	7	7	-	IN		SLT		Kb	Sandy slt grading to sst. Weakly and thinly laminated
FD17-03A	73	303.89	303.98	306.19	2.21			2.18	LGR	DGR		FGR	VF-FGR	LA		SL	8	10	9	MFI	IN		SST	SLT	Kb	Sst interbedded with slt. BCN increases from8 to 15 then goes back to 10. Sst is calcic/dolomitic at the bottom half of the core
FD17-03A	74		306.19	306.75	0.56			0.55	DGR	LGR		VF-FGR	FGR	LA			12		12	-	IN		SLT	SST	Kb	Sandy slt interbedded with sst
FD17-03A	74		306.75	307.02	0.27			0.26	BL			VFGR				SL			12	-	HBK		CCST	COAL	Kb	Ccst with some coal
FD17-03A	74	306.93	307.02	308.65	1.63			1.61	BL							PO			8	-	MBK		CCST	CST	Kb	
FD17-03A	74		308.65	310.07	1.42			1.41	GR	LGR		FGR	FGR	LA		FLT	8	8	8	-	HBK		SST	SST	Kb	Strike-slip fault creating vertical parallel fractures of 20 degrees (core axis)
FD17-03A	74	309.98	310.07	310.26	0.19			0.19	DGR	LGR		VF-FGR	FGR	LA			8	8	8	-	SO		SLT	SST	Kb	Slit interbedded with sst (up to 6 cm sandy bed)
FD17-03A	75		310.26	313.12	2.86			2.82	DGR	LGR		VF-FGR	FGR	LA			10	9	10	-	MBK		SLT	SST	Kb	A small cst band. SST beds up to 6 cm
FD17-03A	75	313.03	313.12	314.48	1.36			1.34	DGR	LGR		VF-FGR	FGR	LA		SL	10	10	10	-	MBK		SLT	SST	Kb	Slt interbedded with sst
FD17-03A	76		314.48	316.29	1.81			1.78	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	IN		SLT	SST	Kb	Same as above
FD17-03A	76	316.08	316.29	317.58	1.29			1.27	DGR	LGR		VF-FGR	FGR	LA			10	10	10	-	SBK		SLT	SST	Kb	Same as above. Grading into sst
FD17-03A	76		317.58	319.01	1.43			1.40	LGR	DGR		MGR	VF-FGR	LA			11	10	11	MFI	IN		SST	SLT	Kb	Salt and pepper sst with few silty laminations, carbonaceous and coaly stringers, and siderite nodules. Sst is calcic
FD17-03A	77		319.01	319.34	0.33			0.32	LGR	DGR		MGR	VF-FGR	LA			10	10	10	MFI	IN		SST	CST	Kb	More clayey towards the bottom
FD17-03A	77	319.13	319.34	322.38	3.04			2.96	LGR	DGR		CGR	VF-FGR	LA		MFR	10	15	13	MFI	MBK		SST	CCST	Kb	Salt and pepper sst with very few silty/clayey laminations. Ccst stringers are present. Some are sideritic. Sst is calcic. Calcite crystal inclusions. Coaly beds at the bottom
FD17-03A	77	322.17	322.38	322.97	0.59			0.57	LGR	DGR		F-MGR	VF-FGR	LA					13		SBK		SST	CST	Kb	Salt and pepper sst with clayey/silty beds at the top. Carbonaceous inclusions present. Difficult to measure BCN
FD17-03A	78		322.97	323.67	0.70			0.68	LGR	DGR		F-MGR	VF-FGR	WBE	RCL	SL	10	20	15	WFI	IN		SST	SLT	Kb	RCL present 45 and 55 cm below the marker. Fining downwards. Siderite band present
FD17-03A	78		323.67	325.53	1.86			1.84	DGR	LGR		VF-FGR	VF-FGR	TLA			8	10	9		HBK		SLT	SST	Kb	Slt with weak thin sst laminations. Coaly inclusions
FD17-03A	78	325.22	325.53	326.26	0.73			0.72	DGR	LGR		VF-FGR	FGR	TLA		SL	10	8	9		SBK		SLT	SST	Kb	
FD17-03A	78		326.26	326.91	0.65			0.64	DGR	BL		VF-FGR	VF-FGR	LA		FZ			9		HBK		SLT	CCST	Kb	Possibility of 25 cm fault zone. Highly broken ccst and slt. They are also highly polished
FD17-03A	79		326.91	328.49	1.58			1.56	DGR	LGR		VF-FGR	FGR	LA		MFR	10	10	10		MBK		SLT	SST	Kb	Slt interbedded with sst . BCN starts at 10 goes down to 5 and up to 10 again
FD17-03A	79	328.27	328.49	330.63	2.14			2.07	LGR	DGR		CGR	VF-FGR	LA		HFR	15		15		HBK		SST	SLT	Kb	The top 2.5 cm a sideritic clayey silt. A contact separates it from sst below. Sst has some carbonaceous stringers
FD17-03A	80		330.63	331.44	0.81			0.78	LGR			GRN				HFR			15		MBK		CGL		Kb	Clay infills
FD17-03A	80	331.32	331.44	332.78	1.34			1.29	LGR			CGR							15		IN		SST		Kb	
FD17-03A	80		332.78	334.43	1.65			1.62	LGR			PEB				HFR			11		HBK		CGL		Kb	Fractures are 10 degrees to core axis. Clay infills
FD17-03A	81	334.37	334.43	334.89	0.46			0.45	GR			PEB							11		SO		CGL		Kb	Clast supported conglomerate
FD17-03A	81		334.89	337.47	2.58			2.53	GR			CGR		LA		HFR	8	13	11		MBK		SST		Kb	Slightly darker sst forming laminations. Cracks filled with carbonaceous inclusions
FD17-03A	81	337.41	337.47	338.63	1.16			1.10	GR			CGR		LA		WFR	15	20	18		SBK		SST		Kb	Cracks filled with carbonaceous inclusions. Slightly darker sst forming laminations
FD17-03A	82		338.63	339.11	0.48			0.47	GR			CGR		LA		WFR	10		10		SBK		SST		Kb	
FD17-03A	82		339.11	340.04	0.93			0.92	GR			PEB				WFR			10		SBK		CGL		Kb	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-03A	82		340.04	340.70	0.66			0.65	GR			CGR	FGR	RCL		SL		8	8		SBK		SST	SST	Kb	. Fine grained sst towards the bottom. Silty RCL at the top and bottom of the core. Cracks infilled with aragonite. Coaly inclusion/lamination at the bottom. Siderite clasts
FD17-03A	82	340.46	340.70	341.21	0.51			0.51	GR			PEB	COB						8		SBK		CGL		Kb	Clast supported conglomerate. Coaly inclusion at the top
FD17-03A	82		341.21	341.45	0.24			0.24	GR			VF-FGR							8		IN		SLT		Kb	Contact separating slt above from cgl below. It dips at 14 degrees
FD17-03A	82		341.45	341.77	0.32			0.31	GR			PEB	FGR						11		SO		CGL	SST	Kb	Cgl supported by fine sst. Clast supported. Disconformity separates cgl from fin sst below
FD17-03A	82		341.77	342.69	0.92			0.90	GR	LGR		FGR	VF-FGR	LA		PO	12	10	11		IN		SST	SLT	Kb	Interbedded sst and slt. BCN starts at 12 drops to 8 and goes up to 10
FD17-03A	83		342.69	342.88	0.19			0.19	GR			FGR							11		SO		SST		Kb	Massive sst
FD17-03A	83		342.88	343.78	0.90			0.88	DGR	GR		VF-FGR	F-MGR	LA			12	10	11		IN		SLT	SST	Kh	Silty cst interbedded with sst. Sideritic band close to the bottom
FD17-03A	83	343.51	343.78	346.79	3.01			2.95	DGR	GR		VF-FGR	F-MGR	LA	MBE		12	10	11		IN		SLT	SST	Kh	Silty cst interbedded with sst. Sideritic bands at various depths
FD17-03A	84		346.79	346.99	0.20			0.20	GR	DGR		F-MGR	VF-FGR	TLA		MFR	10	10	10		IN		SST	SLT	Kh	Fine sst with few cst laminations. Siderite nodules. Cross-laminations
FD17-03A	84	346.56	346.99	349.35	2.36			2.32	GR	DGR		FGR	VF-FGR	LA	MBE	SL	10	10	10		IN		SST	SLT	Kh	Sst interbedded with silty cst. Sideritic band at the top of the core and other depths. Cracks infilled with dolomite
FD17-03A	84		349.35	349.93	0.58			0.57	DGR	GR		VF-FGR	FGR	LA			10	10	10		IN		SLT	SLT	Kh	Silty cst interbedded with sst. Sideritic band close to the bottom. Cracks infilled with dolomite
FD17-03A	84	349.61	349.93	350.94	1.01			0.99	GR	DGR		FGR	VF-FGR	LA			10	10	10		IN		SST	CST	Kh	Sst interbedded with silty cst. Cracks infilled with dolomite
FD17-03A	85		350.94	352.96	2.02			1.99	GR	DGR		FGR	VF-FGR	LA	MBE	SL	10	10	10		IN		SST	SLT	Kh	Sst interbedded with slt and silty cst. Siderite band at the top of the core. BCN increases from 10 to 12 and then falls back to 10
FD17-03A	85	352.65	352.96	354.15	1.19			1.17	DGR	GR		VF-FGR	FGR	LA		WFR	11	9	10		IN		SST	SLT	Kh	Pyrite nodule (4 cm) present at the top of the core.
FD17-03A	85		354.15	355.20	1.05			1.03	GR	DGR		FGR	VF-FGR	LA		WFR	10	10	10		IN		SLT	SST	Kh	Sst interbedded with silty cst. BCN decreases from 10 to 7 degrees and then goes back to 10 degrees
FD17-03A	86		355.20	355.93	0.73			0.72	DGR	LGR		VF-FGR	FGR	LA		MFR	12	9	11		IN		CST	SST	Kh	Silty cst interbedded with sst.
FD17-03A	86	355.70	355.93	359.05	3.12			3.09	DGR	LGR		VF-FGR	FGR	LA		HFR	8	8	8		IN		CST	SST	Kh	Silty cst interbedded with sst. BCN starts at 8,goes down to5 and then back up to 8
FD17-03A	86	358.75	359.05	359.42	0.37			0.37	DGR	LGR		VF-FGR	FGR	LA		WFR	8	8	8		IN		CST	SST	Kh	
FD17-03A	87		359.42	362.10	2.68			2.64	LGR	DGR		FGR	VF-FGR	LA		WFR	10	10	10		IN		SST	SLT	Kh	BCN gradually increases to 13 and drops back to 10 degrees
FD17-03A	87	361.80	362.10	363.55	1.45			1.41	LGR	DGR		FGR	VF-FGR	LA			13	12	13		IN		SST	SLT	Kh	BCN increases from13 to 15 and then goes down to 12 degrees
FD17-03A	88		363.55	365.05	1.50			1.48	LGR	DGR		FGR	VF-FGR	LA			10	9	10		IN		SST	SLT	Kh	
FD17-03A	88	364.85	365.05	367.90	2.85			2.81	LGR	DGR		FGR	VF-FGR	LA			9	9	9		IN		SST	SLT	Kh	Cross-laminations
FD17-03A	89		367.90	368.03	0.13			0.13	LGR	DGR		FGR	VF-FGR	LA			10	10	10		SO		SST	SLT	Kh	
FD17-03A	89	367.89	368.03	371.16	3.13			3.07	LGR	DGR		FGR	VF-FGR	LA			11	10	11		SBK		SST	SLT	Kh	A 3cm thick pyrite band is present
FD17-03A	89	370.94	371.16	371.97	0.81			0.80	LGR	DGR		FGR	VF-FGR	LA			9	10	10		IN		SST	SLT	Kh	
FD17-03A	90		371.97	374.17	2.20			2.15	DGR	LGR		VF-FGR	FGR	TLA			12	10	12		IN		SLT	SST	Kh	
FD17-03A	90	373.99	374.17	376.28	2.11			2.08	LGR	DGR		FGR	VF-FGR	LA			10	10	10		IN		SST	CST	Kh	
FD17-03A	91		376.28	377.18	0.90			0.89	LGR	DGR		FGR	VF-FGR	LA			10	8	9		IN		SLT	CST	Kh	silty cst with silty laminations.
FD17-03A	91	377.04	377.18	380.33	3.15			3.09	DGR	LGR		VF-FGR	VF-FGR	LA			12	10	11		MBK		CST	SLT	Kh	Fissile silty cst with silty laminations. BCN drops from 12 to 11 and then to 10 degrees
FD17-03A	91	380.09	380.33	380.51	0.18			0.18	DGR	LGR		VF-FGR	VF-FGR	LA			7		7		MBK		CST	SLT	Kh	Fissile silty cst with silty laminations
FD17-03A	92		380.51	383.33	2.82			2.80	DGR	LGR		VF-FGR	VF-FGR	LA			5	6	6		HBK		CST	SLT	Kh	Same as above. BCN increases from 5 to 9 to10 to 11 and drops to 6 deg. HBK @ top.
FD17-03A	92	383.13	383.33	384.78	1.45			1.44	DGR	LGR		VF-FGR	VF-FGR	LA			6	7	7		MBK		SLT	CST	Kh	Slt interbedded with silty cst. Calcic inclusions at the bottom
FD17-03A	93		384.78	386.08	1.30			1.28	DGR	LGR		VF-FGR	VF-FGR	LA			7	12	10		IN		SLT	CST	Kh	BCN increases gradually from 7 to 12
FD17-03A	93		386.08	386.18	0.10			0.10	LGR	WH		VF-FGR	VF-FGR	LA			10		10		IN		SLT	CST	Kh	This section is coated with calcite. Calcic slt interbedded with calcic silty cst
FD17-03A	93		386.18	386.51	0.33			0.32	DGR	LGR		VF-FGR	VF-FGR	LA			14	14	14		SO		CST	SLT	Kh	Silty cst interbedded with slt. Silty cross-laminations present
FD17-03A	93	386.18	386.51	389.02	2.51			2.47	DGR	LGR		VF-FGR	VF-FGR	LA		HFR	10	10	10		MBK		CST	SLT	Kh	Calcite inclusions and cracks infilled with calcite. Cross-laminations present
FD17-03A	94		389.02	389.49	0.47			0.47	LGR	DGR		VF-FGR	VF-FGR	LA		WFR	7	7	7		IN		SLT	CST	Kh	Silty cross-laminations present
FD17-03A	94	389.23	389.49	392.58	3.09			3.04	LGR	DGR		VF-FGR	VF-FGR	LA	BIO	HFR	10	10	10		MBK		SLT	CST	Kh	Bioturbation (horizontal and vertical burrows). BCN goes from 10 to 8 and then increases back to 10
FD17-03A	94	392.28	392.58	393.28	0.70			0.69	LGR	DGR		VF-FGR	VF-FGR	LA		WFR	10	10	10	-	IN		SLT	CST	Kh	
FD17-03A	95		393.28	395.63	2.35			2.33	LGR	DGR		VF-FGR	VF-FGR	LA		HFR	8	8	8	-	IN		SLT	CST	Kh	Cross-laminations
FD17-03A	95	395.33	395.63	397.63	2.00			1.97	LGR	DGR		VF-FGR	VF-FGR	LA		HFR	10	10	10	-	MBK		SLT	CST	Kh	
FD17-03A	96		397.63	398.58	0.95			0.94	DGR	LGR		VF-FGR	VF-FGR	LA		WFR	10	8	9	-	SBK		CST	SLT	Kh	
FD17-03A	96	398.37	398.58	399.20	0.62			0.61	DGR	LGR		VF-FGR	VF-FGR	LA		HFR	8	8	8	-	SBK		CST	SLT	Kh	
FD17-03A	96		399.20	399.27	0.07			0.07	BR	DGR		VF-FGR	VF-FGR	TLA		WFR			8	SFI	IN		CST	CST	Kh	8 cm of calcic mudstone with clayey/silty laminations
FD17-03A	96		399.27	401.67	2.40			2.38	DGR	LGR		VF-FGR	VF-FGR	LA			8	8	8		IN		CST	SLT	Kh	
FD17-03A	96	401.42	401.67	402.03	0.36			0.36	DGR	LGR		VF-FGR	VF-FGR	LA		WFR	10	7	9		IN		CST	SLT	Kh	
FD17-03A	97		402.03	404.05	2.02			2.00	DGR	LGR		VF-FGR	VF-FGR	LA	MBE	SL	10	8	9		SBK		CST	SLT	Kh	Silty beds up to 7cm. BCn decrease from 10 to 8 then 7 and then to 5 degrees
FD17-03A	97		404.05	404.74	0.69			0.68	LGR	DGR		VF-FGR	VF-FGR	LA		WFR	10	10	10		SBK		SLT	CST	Kh	Silty beds up to 7 cm.
FD17-03A	97	404.47	404.74	406.16	1.42			1.40	LGR	DGR		VF-FGR	VF-FGR	LA		WFR	10	8	9		IN		SLT	CST	Kh	
FD17-03A	98		406.16	407.56	1.40			1.39	DGR	LGR		VF-FGR	VF-FGR	LA		HFR	8	8	8		MBK		CST	SLT	Kh	Up 5 cm of silty beds
FD17-03A	98		407.56	407.64	0.08			0.08	BR	DGR		VF-FGR	VF-FGR	TLA			10	10	10	SFI	SO		CST	CST	Kh	
FD17-03A	98	407.52	407.64	409.55	1.91			1.87	LGR	DGR		VF-FGR	VF-FGR	LA	XBE	MFR	13	9	11		IN		SLT	CST	Kh	Carbonaceous inclusions in cracks
FD17-03A	98		409.55	409.62	0.07			0.07	BR	DGR		VF-FGR	VF-FGR	TLA					11	SFI	SO		CST	CST	Kh	
FD17-03A	98		409.62	410.37	0.75			0.73	LGR	DGR		VF-FGR	VF-FGR	LA	XBE	WFR	13	10	12		SBK		SLT	CST	Kh	
FD17-03A	99		410.37	410.66	0.29			0.29	LGR	DGR		VF-FGR	VF-FGR	LA			10	7	9		SO		SLT	CST	Kh	BCN increases from10 to 12 and then drops to 7 degrees
FD17-03A	99	410.57	410.66	414.03	3.37			3.33	DGR	LGR		VF-FGR	VF-FGR	LA			7	10	9		SBK		CST	SLT	Kh	BCN goes from 7 to 13 degrees and then goes back to 10.
FD17-03A	99	413.61	414.03	414.56	0.53			0.52	DGR	LGR		VF-FGR	VF-FGR	LA			10	7	9		IN		CST	SLT	Kh	
FD17-03A	100		414.56	417.13	2.57			2.52	DGR	LGR		VF-FGR	VF-FGR	LA	MBE		8	13	11		IN		CST	SLT	Kh	Silty cst interbedded with slt. Up to 7 cm of silty beds. BCn increases from 8 to 10 and then to 13 degrees
FD17-03A	100	416.66	417.13	417.65	0.52			0.51	LGR	DGR		VF-FGR	VF-FGR	LA	TLA		10	10	10		IN		SLT	CST	Kh	Slt interbedded with silty cst. Cracks infilled with calcite

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval From (m)	Interval To (m)	Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚) Roof	BCN (˚) Floor	BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
FD17-03A	100		417.65	417.71	0.06			0.06	BR	DGR		VF-FGR	VF-FGR	BIO					12		SO		CST	CST	Kh	clayey mudstone with bioturbated silty cst
FD17-03A	100		417.71	418.83	1.12			1.09	DGR	LGR		VF-FGR	VF-FGR	LA	XBE		14	14	14		IN		CST	SLT	Kh	
FD17-03A	101		418.83	420.18	1.35			1.32	LGR	DGR		VF-FGR	VF-FGR	LA			14	10	12		IN		SLT	CST	Kh	
FD17-03A	101	419.71	420.18	422.77	2.59			2.55	LGR	DGR		VF-FGR	VF-FGR	LA		MFR	10	10	10		MBK		SLT	CST	Kh	Cross-laminations. Intervals of very bkn core (HBK @ top!)
FD17-03A	101	422.76	422.77	422.98	0.21			0.21	DGR	LGR		VF-FGR	VF-FGR	LA		HFR	10	10	10		SO		CST	SLT	Kh	
FD17-03A	102		422.98	424.80	1.82			1.78	DGR	LGR		VF-FGR	VF-FGR	TLA		HFR	13	10	12		MBK		CST	SLT	Kh	
FD17-03A	102		424.80	424.99	0.19			0.19	LGR	BR		FGR	VF-FGR	BIO		WFR			11	SFI	IN		SST	CST	Kh	Fine massive sst with calcite infilled in bioturbated sections. The bioturbated section is 11 cm. The last 2.5 cm is calcic mudstone (mostly clayey)
FD17-03A	102		424.99	425.83	0.84			0.82	DGR	LGR		VF-FGR	VF-FGR	TLA		MFR	10	11	11		IN		CST	SLT	Kh	Cross-laminations present. Vein filled with aragonite
FD17-03A	102	425.81	425.83	427.17	1.34			1.32	DGR	LGR		VF-FGR	VF-FGR	TLA		MFR	13	8	11		IN		CST	SLT	Kh	BCN drops from 13 to 10degrees, rises to 15 drops again to 8 degrees
FD17-03A	103		427.17	427.30	0.13			0.13	BR	DGR		VF-FGR	VF-FGR				10		10		MBK		CST	CST	Kh	The top 2 cm is silty cst. The rest is clayey mudstone (calcic)
FD17-03A	103		427.30	428.53	1.23			1.22	LGR	DGR		VF-FGR	VF-FGR	LA			8	8	8		MBK		SLT	CST	Kh	Cross-laminations present
FD17-03A	103		428.53	429.09	0.56			0.55	DGR	LGR		VF-FGR	VF-FGR	LA			8	10	9		IN		CST	SLT	Kh	
FD17-03A	103		429.09	429.14	0.05			0.05	BR	DGR		VF-FGR	VF-FGR	TLA			12		12		SO		CST	CST	Kh	Clayey mudstone with a thin silty cst lamination at the top part
FD17-03A	103		429.14	429.26	0.12			0.12	DGR	LGR		VF-FGR	VF-FGR	LA			5	5	5		SO		CST	SLT	Kh	Silty cst interbedded with slt
FD17-03A	103	428.85	429.26	431.20	1.94			1.88	LGR	DGR		VF-FGR	VF-FGR	LA			15	13	14		MBK		SLT	CST	Kh	slt interbedded with silty cst. BCN starts from 15 degrees, goes down to 10, then rises to 13
FD17-03A	104		431.20	432.00	0.80			0.79	LGR	DGR		VF-FGR	VF-FGR	LA	TLA	MFR	10	9	10		SBK		SLT	CST	Kh	
FD17-03A	104	431.90	432.00	434.16	2.16			2.13	LGR	DGR		FGR	VF-FGR	TLA	XBE	SL	10	10	10		SBK		SST	SLT	Kh	Disconformity separating sst (above) and cgl below is angled at 20 degrees
FD17-03A	104		434.16	434.20	0.04			0.04	GR			PEB							10		SO		CGL		Kh	Clast supported cgl at the base of Hulcross
FD17-03A	104		434.20	434.24	0.04			0.04	GR			PEB							10		SO		CGL		Kh	Clast supported cgl at the base of Hulcross
FD17-03A	104		434.24	434.27	0.03			0.03	GR			PEB							10		SO		CGL		Kh	Clast supported cgl at the base of Hulcross
FD17-03A	104		434.27	434.48	0.21			0.20	LGR	DGR		FGR	F-MGR			HFR	13		13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	104		434.48	434.52	0.04			0.04	LGR	DGR		FGR	F-MGR			HFR			13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	104		434.52	434.55	0.03			0.03	LGR	DGR		FGR	F-MGR			HFR			13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	104		434.55	434.74	0.19			0.19	LGR	DGR		FGR	F-MGR			HFR			13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	104		434.74	434.76	0.02			0.02	LGR	DGR		FGR	F-MGR			HFR			13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	104		434.76	434.79	0.03			0.03	LGR	DGR		FGR	F-MGR			HFR			13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	104		434.79	434.96	0.17			0.17	LGR	DGR		FGR	F-MGR			HFR		13	13		SBK		SST	SLT	Kh	Sst interbedded with slt. Carbonaceous inclusions
FD17-03A	105	434.95	434.96	435.01	0.05			0.05	LGR			PEB	COB						13		IN		CGL		Kg	
FD17-03A	105		435.01	435.04	0.03			0.03	LGR			PEB	COB						13		IN		CGL		Kg	
FD17-03A	105		435.04	435.16	0.12			0.12	LGR			PEB	COB						12		IN		CGL		Kg	
FD17-03A	105		435.16	435.32	0.16			0.16	LGR	DGR		FGR	VF-FGR	TLA		SL	10		12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.32	435.36	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA		SL			12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.36	435.39	0.03			0.03	LGR	DGR		FGR	VF-FGR	TLA		SL			12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.39	435.66	0.27			0.26	LGR	DGR		FGR	VF-FGR	TLA		SL			12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.66	435.70	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA		SL			12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.70	435.72	0.02			0.02	LGR	DGR		FGR	VF-FGR	TLA		SL			12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.72	435.87	0.15			0.15	LGR	DGR		FGR	VF-FGR	TLA		SL		14	12		IN		SST	SLT	Kg	Cracks infilled with calcite
FD17-03A	105		435.87	436.03	0.16			0.16	DGR	LGR		VF-FGR	FGR	TLA		SL			12		SBK		SLT		Kg	Cracks infilled with calcite
FD17-03A	105		436.03	436.07	0.04			0.04	LGR	DGR		FGR	VF-FGR	ILA					12		SO		SST	SLT	Kg	
FD17-03A	105		436.07	436.10	0.03			0.03	LGR	DGR		FGR	VF-FGR	ILA					12		SO		SST	SLT	Kg	
FD17-03A	105		436.10	436.16	0.06			0.06	LGR	DGR		FGR	VF-FGR	ILA					19		SO		SST	SLT	Kg	
FD17-03A	105		436.16	436.31	0.15			0.14	DGR	LGR		VF-FGR	FGR	TLA			22	15	19		SO		SLT		Kg	Pyrite inclusion
FD17-03A	105		436.31	436.32	0.01			0.01	LGR	DGR		FGR	VF-FGR	LA		HFR	13		21		SBK		SST	SLT	Kg	
FD17-03A	105		436.32	436.36	0.04			0.04	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		436.36	436.39	0.03			0.03	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		436.39	436.58	0.19			0.18	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		436.58	436.64	0.06			0.06	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		436.64	436.68	0.04			0.04	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		436.68	437.09	0.41			0.38	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.09	437.14	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.14	437.15	0.01			0.01	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.15	437.36	0.21			0.20	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.36	437.40	0.04			0.04	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.40	437.45	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.45	437.62	0.17			0.16	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.62	437.70	0.08			0.07	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.70	437.77	0.07			0.07	LGR	DGR		FGR	VF-FGR	LA		HFR			21		SBK		SST	SLT	Kg	
FD17-03A	105		437.77	437.82	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA		HFR		30	21		SBK		SST	SLT	Kg	
FD17-03A	105		437.82	437.87	0.05			0.05	DGR	LGR		VF-FGR	FGR	TLA		WFR			10		IN		SLT	SST	Kg	
FD17-03A	105		437.87	438.03	0.16			0.16	DGR	LGR		VF-FGR	FGR	TLA		WFR			10		IN		SLT	SST	Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	105	438.00	438.03	438.09	0.06			0.06	DGR	LGR		VF-FGR	FGR	LA	MBE		10		10		SO		SLT	SST	Kg	Carbonaceous stringers present at the top of the core
FD17-03A	105		438.09	438.12	0.03			0.03	DGR	LGR		VF-FGR	FGR	LA	MBE				10		SO		SLT	SST	Kg	Carbonaceous stringers present at the top of the core
FD17-03A	105		438.12	438.14	0.02			0.02	DGR	LGR		VF-FGR	FGR	LA	MBE				10		SO		SLT	SST	Kg	Carbonaceous stringers present at the top of the core
FD17-03A	105		438.14	438.28	0.14			0.14	DGR	LGR		VF-FGR	FGR	LA	MBE			10	10		SO		SLT	SST	Kg	Carbonaceous stringers present at the top of the core
FD17-03A	105		438.28	438.41	0.13			0.13	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR	15		13		IN		SST	SLT	Kg	
FD17-03A	105		438.41	438.44	0.03			0.03	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		438.44	438.48	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		438.48	438.68	0.20			0.19	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		438.68	438.71	0.03			0.03	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		438.71	438.77	0.06			0.06	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		438.77	438.95	0.18			0.18	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		438.95	439.00	0.05			0.05	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		439.00	439.03	0.03			0.03	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		439.03	439.23	0.20			0.19	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		439.23	439.27	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		439.27	439.32	0.05			0.05	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR			13		IN		SST	SLT	Kg	
FD17-03A	105		439.32	439.36	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA	ILA	MFR		10	13		IN		SST	SLT	Kg	
FD17-03A	106		439.36	439.58	0.22			0.22	LGR	DGR		FGR	VF-FGR	TLA	LA	SL	8		8		IN		SST	SLT	Kg	
FD17-03A	106		439.58	439.62	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA	LA	SL			8		IN		SST	SLT	Kg	
FD17-03A	106		439.62	439.66	0.04			0.04	LGR	DGR		FGR	VF-FGR	TLA	LA	SL			8		IN		SST	SLT	Kg	
FD17-03A	106		439.66	439.89	0.23			0.23	LGR	DGR		FGR	VF-FGR	TLA	LA	SL			8		IN		SST	SLT	Kg	
FD17-03A	106		439.89	439.92	0.03			0.03	LGR	DGR		FGR	VF-FGR	TLA	LA	SL			8		IN		SST	SLT	Kg	
FD17-03A	106		439.92	439.95	0.03			0.03	LGR	DGR		FGR	VF-FGR	TLA	LA	SL			8		IN		SST	SLT	Kg	
FD17-03A	106		439.95	440.00	0.05			0.05	LGR	DGR		FGR	VF-FGR	TLA	LA	SL		8	8		IN		SST	SLT	Kg	
FD17-03A	106		440.00	440.18	0.18			0.18	DGR	LGR		VF-FGR	FGR	TLA			8		7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.18	440.25	0.07			0.07	DGR	LGR		VF-FGR	FGR	TLA					7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.25	440.27	0.02			0.02	DGR	LGR		VF-FGR	FGR	TLA					7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.27	440.51	0.24			0.24	DGR	LGR		VF-FGR	FGR	TLA					7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.51	440.54	0.03			0.03	DGR	LGR		VF-FGR	FGR	TLA					7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.54	440.56	0.02			0.02	DGR	LGR		VF-FGR	FGR	TLA					7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.56	440.69	0.13			0.13	DGR	LGR		VF-FGR	FGR	TLA				5	7		IN		SLT	SST	Kg	Last 4.5 cm is hcst. Pyrite nodule and sideritic nodules present. Possibility of 30 cm of lost core
FD17-03A	106		440.69	440.76	0.07			0.07	DGR			VFGR		TLA					5		SO		CST		Kg	Grading into CCST
FD17-03A	106		440.76	440.79	0.03			0.03	DGR			VFGR		TLA				5	5		SO		CST		Kg	Grading into CCST
FD17-03A	106		440.79	440.83	0.04		15879	0.04	DGR	BL		VFGR		MBE	TLA		5		5		IN		CCST		Kg	Moderately carbonaceous; coal stringers/laminae near bottom. ROOF OF Seam B.
FD17-03A	106		440.83	440.89	0.06			0.06	DGR	BL		VFGR		MBE	TLA				5		IN		CCST		Kg	Moderately carbonaceous; coal stringers/laminae near bottom. ROOF OF Seam B.
FD17-03A	106	440.89	440.89	441.05		0.16		0.16											10			B	C-LOSS		Kg	Missing core. Driller also marked that the core is missing
FD17-03A	106	441.05	441.05	441.21		0.16		0.16											10			B	C-LOSS		Kg	
FD17-03A	107		441.21	441.30	0.09			0.09	BL					TLA					10		SBK	B	CDB	COAL	Kg	minor greenish-brown stringers/lams (?marcasite - possibly oxidized?)
FD17-03A	107		441.30	441.33	0.03		15880	0.03	DGR			VFGR		TLA					10		IN	B	CST	CCST	Kg	Slightly carbonaceous. (One solitary/disconnected piece: possible C-LOSS above or below it.)
FD17-03A	107		441.33	441.52	0.19			0.19	BL										10		SBK	B	CD&B	COAL	Kg	same greenish-brown stringers as above. Also, fusain stringers/lams at bottom ~7cm.
FD17-03A	107		441.52	441.63	0.11		15881	0.11	DBR	BL		VFGR		TLA	MBE				10		SBK	B	CCST	HCST	Kg	
FD17-03A	107		441.63	441.81	0.18		15882	0.18	BL										10		MBK	B	COAL	CDB	Kg	
FD17-03A	107	441.81	441.81	441.92		0.11		0.11											10			B	C-LOSS		Kg	
FD17-03A	107		441.92	442.04	0.12		15882	0.12	BL										10			B	COAL		Kg	
FD17-03A	107		442.04	442.21	0.17		15883	0.17	DGR			VFGR		MBE					10		MBK	B	CST		Kg	Silty
FD17-03A	107		442.21	442.32	0.11		15884	0.11	BL										10		MBK	B	CD&B		Kg	
FD17-03A	107		442.32	442.44		0.12		0.12											10			B	C-LOSS		Kg	
FD17-03A	107		442.44	442.57	0.13		15884	0.13	BL										10	MFI	IN	B	CDB	COAL	Kg	Minor thin (up to5 mm) HCST bands/stringers. Occasionally v. fine calcite dissem.
FD17-03A	107	442.57	442.57	442.61	0.04			0.04	BL										10	MFI	MBK	B	CDB	COAL	Kg	V.fine calcite dissem.
FD17-03A	107		442.61	442.77	0.16			0.16	MGR	DGR		VFGR		MBE					10		SBK	B	CST	SLT	Kg	Silty Claystone; minor/thin carb band marking floor ct
FD17-03A	107		442.77	442.81	0.04		15885	0.04	DGR	DBR		VFGR		MBE	TLA				10		IN	B	CCST	HCST	Kg	Mod to strongly carb. Floor ct intact(@ ~10°BCN)
FD17-03A	107		442.81	442.86	0.05			0.05	BL	DBR		VFGR		TLA					10		IN	B	C&B	COAL	Kg	HCST with coal bands : 40/60. Floor ct intact.
FD17-03A	107		442.86	442.94	0.08		15886	0.08	BL										10		IN	B	CDB		Kg	
FD17-03A	107		442.94	443.00	0.06			0.06	BL										10	MFI	HBK	B	CD		Kg	Minor fine calcite dissem.
FD17-03A	107		443.00	443.13		0.13		0.13											10			B	C-LOSS		Kg	
FD17-03A	107	443.26	443.13	443.19	0.06		15886	0.06	BL										10		MBK	B	CD	COAL	Kg	clarain visible
FD17-03A	107		443.19	443.22	0.03			0.03	BL	DBR									10	WFI	IN	B	CDB	HCST	Kg	one thin (3-4 mm) HCST band near floor ct. Minor fine calcite dissem.
FD17-03A	107		443.22	443.30	0.08			0.08	DGR	BL		VFGR		MBE	TLA				10		MBK	B	CCST		Kg	Floor ct coaly and HBK.
FD17-03A	107		443.30	443.37	0.07		15887	0.07	BL	DBR		VFGR		MBE					10		SBK	B	HCST	C&B	Kg	Hcst with coal bands. HBK and coaly @ roof (the rest is IN core). Floor IN.
FD17-03A	107		443.37	443.39	0.02			0.02	BL										10		HBK	B	CD&B	COAL	Kg	good coal
FD17-03A	107		443.39	443.52		0.13		0.13											10			B	C-LOSS		Kg	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	107		443.52	443.56	0.04		15887	0.04	BL										10		IN	B	C&B		Kg	
FD17-03A	107		443.56	443.62	0.06		15888	0.06	BL										10		IN	B	CDB		Kg	Thin bands of fusain ± durain bands; occnly marcasite development. Floor intact.
FD17-03A	107		443.62	443.69	0.07			0.07	BL										10		IN	B	CD		Kg	Floor intact.
FD17-03A	107		443.69	443.75	0.06			0.06	BL										10	WFI	IN	B	CBN	COAL	Kg	has one13 mm thick clarain band; minor calcite.
FD17-03A	107		443.75	444.09	0.34			0.33	BL										10		IN	B	CD	COAL	Kg	Mostly IN core(sbk only at roof). Intervals of hard coal (mostly top half); clarain visible.
FD17-03A	107	444.09	444.09	444.39	0.30		15889	0.30	BL										10		IN	B	COAL	CDB	Kg	Mostly coal with minor thin (2-3 mm)ash bands . Somewhat heavier…
FD17-03A	107		444.39	444.47	0.08		15890	0.08	BL	DBR					TLA				10		MBK	B	C&B	HCST	Kg	HCST with coal bands
FD17-03A	107		444.47	444.49	0.02			0.02	BL										10			B	CD	COAL	Kg	
FD17-03A	107		444.49	444.60	0.11			0.11	BL										10		IN	B	CDB	COAL	Kg	Bkn at top; minor/thin (3-4 mm) ash band near bottom.
FD17-03A	107		444.60	444.62	0.02			0.02	BL										10		MBK	B	CD		Kg	`
FD17-03A	107		444.62	444.65	0.03			0.03	BL										10		MBK	B	CBN	COAL	Kg	Broken pieces of harder coal (look boney.)
FD17-03A	107		444.65	444.70		0.05		0.05											10				R-LOSS		Kg	
FD17-03A	107	444.70	444.70	444.73	0.03		15891	0.03	DBR	BL		VFGR		TLA					10		SBK		HCST		Kg	HCST with coal stringers
FD17-03A	107		444.73	444.80	0.07			0.07	DGR	BL		VFGR		MBE					10		SBK		CCST		Kg	Occnl thin coal stringers.
FD17-03A	107		444.80	444.85	0.05		15892	0.05	DGR	DBR		VFGR		MBE	TLA				10		SO		CCST	CST	Kg	Grading into CST
FD17-03A	107		444.85	444.89	0.04			0.04	DGR	DBR		VFGR		MBE	TLA				10		SO		CCST	CST	Kg	Grading into CST
FD17-03A	107		444.89	444.95	0.06			0.06	DGR	DBR		VFGR		MBE	TLA				10		SO		CCST	CST	Kg	Grading into CST
FD17-03A	107		444.95	445.12	0.17			0.17	DGR			VFGR		MBE	TLA		8		8		SO		CST		Kg	Silty towards bottom
FD17-03A	107		445.12	445.24	0.12			0.12	MGR	DGR		VF-FGR		TLA			10		10		SO		SLT	SST	Kg	interbedded SLT with SST
FD17-03A	107		445.24	445.30	0.06			0.06	MGR	DGR		VF-FGR		TLA			11		11		SO		SLT	SST	Kg	interbedded SLT with SST
FD17-03A	107		445.30	445.38	0.08			0.08	MGR	DGR		VF-FGR		TLA					11		SO		SLT	SST	Kg	interbedded SLT with SST
FD17-03A	107		445.38	445.42	0.04			0.04	MGR	DGR		VF-FGR		TLA					11		SO		SLT	SST	Kg	interbedded SLT with SST
FD17-03A	107		445.42	445.46	0.04			0.04	MGR	DGR		VF-FGR		TLA					11		SO		SLT	SST	Kg	interbedded SLT with SST
FD17-03A	108		445.46	445.66	0.20			0.19	DGR	LGR		VF-FGR	FGR	LA			11		13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		445.66	445.70	0.04			0.04	DGR	LGR		VF-FGR	FGR	LA					13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		445.70	445.72	0.02			0.02	DGR	LGR		VF-FGR	FGR	LA					13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		445.72	446.01	0.29			0.28	DGR	LGR		VF-FGR	FGR	LA					13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		446.01	446.04	0.03			0.03	DGR	LGR		VF-FGR	FGR	LA					13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		446.04	446.08	0.04			0.04	DGR	LGR		VF-FGR	FGR	LA					13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		446.08	446.20	0.12			0.12	DGR	LGR		VF-FGR	FGR	LA				15	13	-	IN		SLT	SST	Kg	BCN varies from 11 to 15 degrees
FD17-03A	108		446.20	446.33	0.13			0.13	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR	10		9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.33	446.38	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.38	446.43	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.43	446.60	0.17			0.17	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.60	446.63	0.03			0.03	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.63	446.67	0.04			0.04	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.67	446.87	0.20			0.20	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.87	446.91	0.04			0.04	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR			9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108		446.91	446.95	0.04			0.04	LGR	DGR		FGR	VF-FGR	LA	MBE	WFR		8	9	MFI	IN		SST	SLT	Kg	Sst is dolomitic last 55 cm of the core. Beds up t0 6.5 cm
FD17-03A	108	447.14	446.95	447.12	0.17			0.17	LGR	DGR		FGR	VF-FGR	LA			15		11		SO		SST	SLT	Kg	Sandy beds up to 4 cm. Sst interbedded with slt. BCN starts at 15 degrees and drops to 7 degrees
FD17-03A	108		447.12	447.17	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA					11		SO		SST	SLT	Kg	Sandy beds up to 4 cm. Sst interbedded with slt. BCN starts at 15 degrees and drops to 7 degrees
FD17-03A	108		447.17	447.22	0.05			0.05	LGR	DGR		FGR	VF-FGR	LA					11		SO		SST	SLT	Kg	Sandy beds up to 4 cm. Sst interbedded with slt. BCN starts at 15 degrees and drops to 7 degrees
FD17-03A	108		447.22	447.33	0.11			0.11	LGR	DGR		FGR	VF-FGR	LA				7	11		SO		SST	SLT	Kg	Sandy beds up to 4 cm. Sst interbedded with slt. BCN starts at 15 degrees and drops to 7 degrees
FD17-03A	108		447.33	447.48	0.15			0.15	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108		447.48	447.52	0.04			0.04	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108		447.52	447.55	0.03			0.03	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108		447.55	447.79	0.24			0.24	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108		447.79	447.81	0.02			0.02	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108		447.81	447.85	0.04			0.04	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108		447.85	447.90	0.05			0.05	DGR	BL		VF-FGR	VF-FGR	LA					8		IN		SLT	CCST	Kg	Interbedded slt with ccst. Ccst has some bright coal bands
FD17-03A	108	447.90	447.90	448.03	0.13			0.13	BL			VF-FGR				WFR			8		IN		CCST	COAL	Kg	Ccst with some coal bands
FD17-03A	108		448.03	448.10	0.07			0.07	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.10	448.14	0.04			0.04	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.14	448.20	0.06			0.06	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.20	448.45	0.25			0.25	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.45	448.47	0.02			0.02	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.47	448.51	0.04			0.04	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.51	448.77	0.26			0.26	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.77	448.81	0.04			0.04	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.81	448.85	0.04			0.04	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present
FD17-03A	108		448.85	449.86	1.01			1.00	DGR	LGR		VF-FGR	VF-FGR	LA		SL			8		IN		SLT	SST	Kg	Slt with very weak thin sandy laminations. Aragonite inclusions present

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	109		449.86	450.10	0.24			0.24	LGR	DGR		FGR	VF-FGR	MBE	LA		8	7	8		SO		SLT	SST	Kg	Sst interbedded with 7 cm of slt
FD17-03A	109	450.19	450.10	450.82	0.72			0.71	LGR	DGR		F-MGR	VF-FGR	LA		MFR	10	10	10	-	IN		SST	SLT	Kg	Sst interbedded with slt. Fracture infilled with quartz
FD17-03A	109		450.82	453.20	2.38			2.37	DGR	LGR		VF-FGR	VF-FGR	TLA		MFR	4	4	4	-	IN		SLT	SST	Kg	Disconformity dipping at 15 degrees. Slt with sst laminations
FD17-03A	109	453.24	453.20	454.14	0.94			0.93	DGR	LGR		VF-FGR	VF-FGR	LA		WFR	9	9	9	-	IN		SLT	SST	Kg	Slt interbedded with sst . Sideritic band s present
FD17-03A	110		454.14	455.00	0.86			0.85	LGR	DGR		F-MGR	VF-FGR	LA	MBE	WFR	7	7	7	-	IN		SST	SLT	Kg	
FD17-03A	110		455.00	456.25	1.25			1.24	DGR	LGR		VF-FGR	FGR	TLA	MBE	WFR	8	8	8	-	SBK		SLT	SST	Kg	Siderite bands (u p to 6 cm) at various depths. Up to 8 cm of sst beds.
FD17-03A	110	456.29	456.25	458.38	2.13			2.12	DGR	LGR		VF-FGR	FGR	TLA		MFR	3	4	4	-	IN		SLT	SST	Kg	Slt with sst laminations. Siderite bands present.
FD17-03A	111		458.38	458.76	0.38			0.38	MGR			VF-FGR		MBE	TLA		4	4	4	-	SBK		SLT	CST	Kg	Silty CST with sandy laminations.
FD17-03A	111		458.76	458.89	0.13			0.13	MGR	DGR		VFGR		MBE					8		IN		CST		Kg	Increasingly carb towards bottom.
FD17-03A	111		458.89	458.94	0.05			0.05	DGR			VFGR		MBE					8		SO		CCST		Kg	Coal stringers @ floor ct. Grades into HCST.
FD17-03A	111		458.94	459.00	0.06			0.06	BL	DBR		VFGR		MBE	TLA				8		IN		HCST		Kg	Some thin coal stringers. Floor ct intact.
FD17-03A	111		459.00	459.05	0.05			0.05	BL						LA				8		IN		C&B		Kg	COAL with bands of HCST (60/40)
FD17-03A	111		459.05	459.07	0.02			0.02	DGR			VFGR		MBE					8		SO		CST		Kg	
FD17-03A	111		459.07	459.10	0.03			0.03	BL										8		IN		C&B		Kg	COAL with bands of HCST (65/35)
FD17-03A	112	459.33	459.10	459.25		0.15		0.15											8				R-LOSS		Kg	
FD17-03A	112		459.25	459.29	0.04			0.04	BL										8	-	HBK		COAL	CBN	Kg	Pieces of somewhat hard coal (CNB?)
FD17-03A	112		459.29	459.35	0.06			0.06	DGR	BL		VFGR		TLA					8	-	SBK		CCST		Kg	with thin coal stringers.
FD17-03A	112		459.35	459.46	0.11			0.11	DGR	MGR		VFGR		TLA	MBE				8	-	IN		CST		Kg	Floor ct intact.
FD17-03A	112		459.46	459.49	0.03			0.03	DGR			VFGR		TLA		GO			8	-	IN		GO	CST	Kg	Crushed/pitted core with fault gouge aspect.
FD17-03A	112		459.49	459.61	0.12			0.12	DGR	MGR		VFGR		MBE	TLA				8	-	SBK		CST		Kg	Floor ct with coal is crushed.
FD17-03A	112		459.61	459.67	0.06			0.06	BL										8	-	HBK	C	COAL		Kg	Pieces of bright and dull coal.
FD17-03A	112		459.67	459.96	0.29			0.29	BL										8		IN	C	CDB		Kg	
FD17-03A	112		459.96	460.00	0.04			0.04	BL										8	-	IN	C	COAL	CBN	Kg	One12cm thick CBN band.
FD17-03A	112		460.00	460.21	0.21			0.21	DGR	MGR		VFGR		MBE	TLA				8	-	IN	C	CST		Kg	At roof and floor: more carb with coal stringers. Floor ct bkn.
FD17-03A	112		460.21	460.25	0.04			0.04	BL										8	-	SBK	C	CD&B		Kg	
FD17-03A	112		460.25	460.33	0.08			0.08	DGR	BL		VFGR		MBE					8	-	IN		CCST		Kg	with thin coal stringers.
FD17-03A	112		460.33	460.36	0.03			0.03	DBR	BL		VFGR							8	-	SBK		HCST	COAL	Kg	HCST with a few bright coal stringers.
FD17-03A	112		460.36	460.60	0.24			0.24	DGR			VFGR		MBE	TLA				8	-	IN		CST		Kg	Cst with a few thin coal stringers. Grades into CCST.
FD17-03A	112		460.60	460.73	0.13			0.13	BL	DGR		VFGR		MBE					8	-	IN		CCST		Kg	Up to 15% coal stringers.
FD17-03A	112		460.73	460.92	0.19			0.19	DGR			VFGR		MBE	TLA				8		IN		CST	CCST	Kg	One 15 mm thick bright coal stringer. Floor ct @ 10 BCN, IN.
FD17-03A	112		460.92	460.98	0.06			0.06	BL	DBR		VFGR		MBE	TLA				8		IN		HCST		Kg	With thin coal stringers. Floor ct intact.
FD17-03A	112		460.98	461.18	0.20			0.20	DGR	DGR		VFGR		TLA	MBE				8	-	IN		CCST	CST	Kg	Floor ct intact, @ ~13 BCN.
FD17-03A	112		461.18	461.74	0.56			0.55	DGR	MGR		VF-FGR		TLA	MBE				8	-	SO		CST	SLT	Kg	Mostly silty CST; coal stringers in bottom half. Grades into CCST.
FD17-03A	112		461.74	461.86	0.12			0.12	DGR			VFGR		TLA					8	-	IN		CCST	CST	Kg	Coal stringers @ roof and floor ct.
FD17-03A	112		461.86	461.92	0.06			0.06	BL										8		HBK		CBB	COAL	Kg	HBK to PULV coal.
FD17-03A	112		461.92	461.98	0.06			0.06	BL	DBR		VFGR		TLA					8		SBK		HCST	COAL	Kg	Mostly IN core(sbk only at roof).
FD17-03A	112		461.98	462.01	0.03			0.03	DGR	BL		VFGR		MBE					8		SO		CCST		Kg	Grading into CST
FD17-03A	112		462.01	462.23	0.22			0.22	DGR	MGR		VFGR		MBE	TLA				8		IN		CST	SLT	Kg	Silty CST grading into SLT.
FD17-03A	112	462.38	462.23	462.49	0.26			0.26	DGR	LGR		VF-FGR	FGR	TLA					8	-	IN		SLT	SST	Kg	same as above
FD17-03A	112		462.49	463.32	0.83			0.81	LGR	DGR		FGR	VF-FGR	MBE	XBE	MFR	8	20	14	-	IN		SST	SLT	Kg	Aragonite inclusions. Massive sst beds.
FD17-03A	113		463.32	465.30	1.98			1.91	LGR	DGR		FGR	VF-FGR				10	20	15	-	IN		SST	SLT	Kg	Sst interbedded with slt. Aragonite inclusions present. BCN increases from 10 to 20
FD17-03A	113	465.43	465.30	465.46	0.16			0.16	DGR	LGR		VF-FGR	FGR	TLA		HFR	8	8	8	-	HBK		SLT	SST	Kg	
FD17-03A	113		465.46	467.50	2.04			2.01	LGR	DGR		MGR	MGR	TLA		MFR	10	8	9	-	IN		SST	SST	Kg	Sst with laminations
FD17-03A	114		467.50	468.37	0.87			0.86	LGR	DGR		MGR	MGR	TLA		WFR	8	8	8	-	IN		SST	SST	Kg	aragonite inclusions
FD17-03A	114	468.48	468.37	471.27	2.90			2.87	LGR	DGR		MGR	MGR	TLA		HFR	8	8	8	-	IN		SST	SLT	Kg	Sst with a few silty laminations. Aragonite inclusions in cracks and veins
FD17-03A	114		471.27	471.57	0.30			0.30	DGR	LGR		VF-FGR	FGR	LA		WFR	10	10	10	-	IN		SLT	SST	Kg	Siderite bands present close to the bottom
FD17-03A	115	471.53	471.57	471.92	0.35			0.35	DGR	LGR		VF-FGR	FGR	LA	BIO	WFR	8	8	8	-	IN		SLT	SST	Kg	
FD17-03A	115		471.92	472.27	0.35			0.35	LGR	DGR		F-MGR	FGR	LA		HFR	8	8	8	-	MBK		SST	SLT	Kg	Aragonite infills
FD17-03A	115		472.27	472.84	0.57			0.56	DGR	LGR		VF-FGR	FGR	LA		HFR	15	10	13	-	MBK		SLT	SST	Kg	
FD17-03A	115		472.84	473.30	0.46			0.46	LGR	DGR		F-MGR	FGR	LA		WFR	5	5	5	-	SBK		SST	SLT	Kg	Sst with few silty laminations
FD17-03A	115		473.30	473.89	0.59			0.54	DGR	LGR		VF-FGR	FGR	LA		SL	25	20	23	-	HBK		SLT	SST	Kg	Slt with some sandy laminations. Siderite nodules present
FD17-03A	115		473.89	474.01	0.12			0.12	LGR	DGR		F-MGR							15	-	SO		SST		Kg	Sst with carbonaceous stringers
FD17-03A	115		474.01	474.16	0.15			0.15	DGR	LGR		VF-FGR	FGR	LA		WFR	5	5	5	-	IN		SLT	SST	Kg	Sandy silt interbedded with sst. Dolomite inclusions and infillings in cracks
FD17-03A	115		474.16	474.57	0.41			0.40	GR			FGR				WFR			15	-	IN		SST		Kg	Sideritic sst with carbonaceous stringers. The colour is yellowish brown throughout
FD17-03A	115	474.57	474.57	475.31	0.74			0.71	GR	DGR		FGR	VF-FGR	TLA		MFR	9	20	15	-	MBK		SST	SLT	Kg	Sst with silty laminations. Aragonite infills in fractures
FD17-03A	115		475.31	475.52	0.21			0.21	DGR	LGR		VF-FGR	FGR	LA		SL	10	10	10	-	IN		SLT	SST	Kg	
FD17-03A	116		475.52	477.34	1.82			1.81	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	8	5	7	-	IN		SLT	SST	Kg	BCN increases from 8 to 15 and drops to 5 degrees. Sideritic bands present. Dolomite infills in cracks
FD17-03A	116		477.34	477.47	0.13			0.13	LGR	DGR		F-MGR	VF-FGR	TLA			8	8	8	-	SO		SST	SLT	Kg	
FD17-03A	116		477.47	477.58	0.11			0.11	DGR	LGR		VF-FGR	FGR	LA			9	10	10	-	SO		SLT	SST	Kg	
FD17-03A	116	477.62	477.58	479.74	2.16			2.13	LGR	DGR		F-MGR	VF-FGR	LA			10		10	-	IN		SST	SLT	Kg	Sst with silty laminations. Some parts are sideritic

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	116		479.74	479.94	0.20			0.20	DGR	LGR		VF-FGR	FGR	LA		SL	8	8	8	-	HBK		SLT	SST	Kg	Slt with sandy laminations
FD17-03A	117		479.94	480.69	0.75			0.74	LGR	DGR		F-MGR	VF-FGR	TLA		SL	10		10	-	HBK		SST	SLT	Kg	Sst with slt laminations. Aragonite infills
FD17-03A	117	480.67	480.69	481.39	0.70			0.69	LGR			F-MGR							8	-	HBK		SST		Kg	Massive sst
FD17-03A	117		481.39	482.10	0.71			0.70	LGR			F-MGR				HFR			8	-	HBK		SST		Kg	Massive sst
FD17-03A	117		482.10	484.08	1.98			1.96	LGR			F-MGR				HFR			8	-	HBK		SST		Kg	
FD17-03A	118		484.08	484.20	0.12			0.12	LGR	DGR		F-MGR	VF-FGR	LA		SL	7		7	-	SO		SST	SLT	Kg	Sst with one slt lamination at the top
FD17-03A	118	483.72	484.20	487.01	2.81			2.79	LGR	DGR		F-MGR	FGR	MBE		WFR	7	7	7	-	IN		SST	SST	Kg	sst interbedded with silty sand
FD17-03A	118	486.77	487.01	487.65	0.64			0.64	LGR	DGR		F-MGR	FGR	MBE		WFR	3	3	3	-	IN		SST	SST	Kg	same as above
FD17-03A	118		487.65	487.82	0.17			0.17	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	3	8	6	-	SO		SLT	SST	Kg	
FD17-03A	118		487.82	488.39	0.57			0.57	LGR	DGR		F-MGR	VF-FGR	LA		SL	3	5	4	-	IN		SST	SLT	Kg	Sst interbedded with cst and slt
FD17-03A	119		488.39	489.09	0.70			0.70	LGR	DGR		F-MGR	VF-FGR	LA	MBE	SL	5	5	5	-	IN		SST	SLT	Kg	Same as above
FD17-03A	119		489.09	489.31	0.22			0.22	DGR	LGR		VF-FGR	FGR	LA		SL	7	11	9	-	IN		SLT	SST	Kg	
FD17-03A	119		489.31	490.45	1.14			1.12	LGR	DGR		F-MGR	VF-FGR	LA	MBE	SL	10	11	11	-	IN		SST	SLT	Kg	Slt laminations up to 8 cm. Cracks infilled with calcite. Siderite bands up to 7 cm
FD17-03A	119	489.81	490.45	491.69	1.24			1.22	LGR			F-MGR							11	-	IN		SST		Kg	Massive sst with siderite bands of 6 cm
FD17-03A	119		491.69	491.84	0.15			0.15	DGR	LGR		VF-FGR	FGR	LA		SL	8	8	8	-	IN		SLT	SST	Kg	
FD17-03A	119		491.84	492.34	0.50			0.50	GR			F-MGR							8	-	SO		SST		Kg	
FD17-03A	120		492.34	493.23	0.89			0.86	GR	DGR		F-MGR	FGR	LA	MBE	SL	8	20	14	-	IN		SST	SLT	Kg	Sst interbedded with slt. BCN increases from 8 to 10 and then shoot s to 20 at the last lamination. Only 1 lamination has a measurement of 20
FD17-03A	120	492.86	493.23	493.86	0.63			0.63	GR	DGR		F-MGR	FGR	LA	MBE	SL	5		5	-	IN		SST	SLT	Kg	Sst interbedded with slt. Carbonaceous stringers and siderite bands present
FD17-03A	120		493.86	494.96	1.10			1.09	DGR	LGR		VF-FGR	FGR	LA		SL	5	10	8	-	IN		SLT	SST	Kg	slt interbedded with sst. BCN increases from5 to 10
FD17-03A	120	495.91	494.96	495.41	0.45			0.44	GR	DGR		F-MGR	FGR	LA		SL	10	7	9	-	IN		SST	SLT	Kg	
FD17-03A	120		495.41	495.60	0.19			0.19	DGR	LGR		VF-FGR	FGR	LA		SL	10	7	9	-	IN		SLT	SST	Kg	
FD17-03A	120		495.60	496.29	0.69			0.69	GR	DGR		F-MGR	FGR	LA		SL	4	4	4	-	IN		SST	SLT	Kg	Sst with very few silty laminations and carbonaceous stringers. Siderite nodules present
FD17-03A	121		496.29	496.40	0.11			0.11	DGR			F-MGR				SL			6	-	SO		CCST		Kg	
FD17-03A	121		496.40	498.08	1.68			1.67	GR	DGR		F-MGR	VF-FGR	LA		SL		6	6	-	MBK		SST		Kg	HF sst with a few silty clay laminations. Talc infillings in fractures
FD17-03A	121		498.08	498.31	0.23			0.23	DGR	GR		VF-FGR	FGR	LA		SL	9	12	11	-	HBK		SLT	SST	Kg	
FD17-03A	121		498.31	499.01	0.70			0.70	GR	DGR		F-MGR	F-MGR	LA		SL	5		5	-	MBK		SST	SST	Kg	Sst with carbonaceous stringers. Talc infillings in fractures
FD17-03A	121	498.96	499.01	499.79	0.78			0.78	GR			F-MGR							5	-	MBK		SST		Kg	
FD17-03A	122		499.79	499.87	0.08			0.08	GR	DGR		F-MGR	MGR	LA		SL	15	15	15	-	MBK		SST	SLT	Kg	F-MGR sst with medium grained sandy laminations. Siderite band present
FD17-03A	122		499.87	500.78	0.91			0.90	GR			F-MGR				HFR			10	-	MBK		SST		Kg	
FD17-03A	122		500.78	501.05	0.27			0.27	DGR	GR		VF-FGR	F-MGR			SL		10	10	-	HBK		CST	SST	Kg	Silty cst interbedded with sst. Siderite nodule present. Carbonaceous bands. Not clear if some were laminations due to fractures. They dipped at 30 degrees a few cms in the top
FD17-03A	122		501.05	501.98	0.93			0.92	GR			FGR				SL			10	-	MBK		SST		Kg	Talc in fractures and cracks. Lots of cracks
FD17-03A	122	502.01	501.98	503.87	1.89			1.86	GR			F-MGR				SL			10	-	MBK		SST		Kg	Massive sst with a few carbonaceous stringers at the top. Talc in fractures and cracks. Lots of cracks
FD17-03A	123		503.87	505.03	1.16			1.16	GR	DGR		FGR	VFGR			SL	5		5	-	HBK		SST	SLT	Kg	Sst with a small silty bed of 6 cm at the top
FD17-03A	123	505.05	505.03	505.48	0.45			0.44	GR	DGR		F-MGR	VF-FGR	XBE		SL		11	11	-	SBK		SST	SLT	Kg	Floor ct sharp & wavey, @~10 BCN.
FD17-03A	123		505.48	505.96	0.48			0.47	GR			PEB							11	-	MBK		CGL		Kg	Clast supported chert pebble CCL. Floor ct sharp + wavey.
FD17-03A	123		505.96	506.01	0.05			0.05	GR			F-MGR				HFR		7	7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		506.01	506.06	0.05			0.05	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		506.06	506.97	0.91			0.90	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		506.97	507.02	0.05			0.05	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		507.02	507.07	0.05			0.05	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		507.07	507.27	0.20			0.20	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		507.27	507.33	0.06			0.06	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		507.33	507.37	0.04			0.04	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	123		507.37	507.63	0.26			0.26	GR			F-MGR				HFR			7	-	MBK		SST		Kg	White talk-like material on fracts/joint surfaces.
FD17-03A	124		507.63	507.90	0.27			0.27	GR	LGR		FGR	MGR			MFR			7		MBK		SST		Kg	as above.
FD17-03A	124		507.90	507.94	0.04			0.04	GR	LGR		FGR	MGR			MFR			7		MBK		SST		Kg	as above.
FD17-03A	124		507.94	507.99	0.05			0.05	GR	LGR		FGR	MGR			MFR			7		MBK		SST		Kg	as above.
FD17-03A	124		507.99	508.08	0.09			0.09	GR	LGR		FGR	MGR			MFR			5		MBK		SST		Kg	as above.
FD17-03A	124	508.10	508.08	508.14	0.06			0.06	GR	LGR		FGR					5		4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.14	508.19	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.19	508.24	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.24	508.50	0.26			0.26	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.50	508.55	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.55	508.60	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.60	508.78	0.18			0.18	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.78	508.84	0.06			0.06	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.84	508.93	0.09			0.09	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		508.93	509.15	0.22			0.22	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.15	509.19	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-03A		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1215	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	636170	Logged By: Özlem Suleyman
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6089997	Log Start Date: 14 09 2017
Total Depth (m):	513.08		Projection:	UTM NAD 83 Zone 10	Log End Date: 14 10 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-03A	124		509.19	509.24	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.24	509.44	0.20			0.20	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.44	509.47	0.03			0.03	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.47	509.51	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.51	509.74	0.23			0.23	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.74	509.78	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.78	509.82	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.82	509.99	0.17			0.17	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		509.99	510.04	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.04	510.08	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.08	510.29	0.21			0.21	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.29	510.38	0.09			0.09	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.38	510.42	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.42	510.53	0.11			0.11	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.53	510.58	0.05			0.05	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.58	510.66	0.08			0.08	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.66	510.85	0.19			0.19	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.85	510.89	0.04			0.04	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.89	510.92	0.03			0.03	GR	LGR		FGR							4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124		510.92	511.15	0.23			0.23	GR	LGR		FGR						3	4		IN		SST		Kg	Fine, hard SST with dark grey (cherty?) laminae.
FD17-03A	124	511.15	511.15	511.34	0.19			0.19	GR	LGR		FGR							5		SO		SST		Kg	as above.
FD17-03A	124		511.34	511.38	0.04			0.04	GR	LGR		FGR							5		SO		SST		Kg	as above.
FD17-03A	124		511.38	511.43	0.05			0.05	GR	LGR		FGR							5		SO		SST		Kg	as above.
FD17-03A	124		511.43	511.63	0.20			0.20	GR	LGR		FGR							5		SO		SST		Kg	as above.
FD17-03A	124		511.63	511.68	0.05			0.05	GR	LGR		FGR							5		SO		SST		Kg	as above.
FD17-03A	124		511.68	511.72	0.04			0.04	GR	LGR		FGR							5		SO		SST		Kg	as above.
FD17-03A	124		511.72	511.75	0.03			0.03	GR	LGR		FGR						5	5		SO		SST		Kg	as above.
FD17-03A	125		511.75	511.89	0.14			0.14	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		511.89	511.94	0.05			0.05	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		511.94	512.00	0.06			0.06	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.00	512.15	0.15			0.15	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.15	512.19	0.04			0.04	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.19	512.24	0.05			0.05	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.24	512.35	0.11			0.11	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.35	512.67	0.32			0.32	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.67	512.70	0.03			0.03	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.70	512.78	0.08			0.08	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.78	512.88	0.10		15621	0.10	GR	LGR		FGR							5		SO		SST		Kg	as above. Floor ct with coal below is sharp /wavey, @ ~30 BCN.
FD17-03A	125		512.88	513.08	0.20		15622	0.20	BL										5		SBK	D	CD&B		Kg	

Gordon Creek Project

(Flatbed Property)

Lithology Descriptive Logs

FD17-04

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-04		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1274.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	637143.00	Logged By: Özlem Suleyman / Josh Taningco
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088562.00	Log Start Date: 14 09 2017
Total Depth (m):	546.20		Projection:	UTM NAD 83 Zone 10	Log End Date: 21 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-04	1		0.00	59.50		59.50		59.50															OVB	R-LOSS		Box starts at 59.50
FD17-04	1		59.50	60.05	0.55			0.55	GR	WH	MWE	VF-FGR	MGR								HBK		OVB	SLT		Broken sst rocks with silty stones
FD17-04	1	60.05	60.05	63.09	3.04			2.99	DGR	LGR	MWE	VF-FGR	FGR	TLA			10	10	10		MBK		SLT	SST	Ksh	
FD17-04	1	63.09	63.09	63.34	0.25			0.25	DGR	LGR	MWE	VF-FGR	FGR	TLA					10		HBK		SLT	SST	Ksh	
FD17-04	2		63.34	66.14	2.80			2.74	DGR	LGR	MWE	VF-FGR	FGR	TLA			10	13	12		HBK		SLT	SST	Ksh	
FD17-04	2	66.14	66.14	66.88	0.74			0.73	DGR	LGR	MWE	VF-FGR	FGR	TLA			11	9	10		MBK		SLT	SST	Ksh	
FD17-04	3		66.88	69.20	2.32			2.25	DGR	LGR	MWE	VF-FGR	FGR	TLA			12	16	14		MBK		SLT	SST	Ksh	
FD17-04	3	69.19	69.20	70.78	1.58			1.53	DGR	LGR	MWE	VF-FGR	FGR	TLA			7	20	14		MBK		SLT	SST	Ksh	base of weathering
FD17-04	4		70.78	72.37	1.59			1.55	DGR	LGR	MWE	VF-FGR	FGR	TLA			10	16	13		SBK		SLT	SST	Ksh	
FD17-04	4	72.24	72.37	75.16	2.79			2.74	DGR	LGR	MWE	VF-FGR	FGR	LA			13	8	11		MBK		SLT	SST	Ksh	Sandy beds and laminations
FD17-04	5		75.16	75.25	0.09			0.09	DGR	LGR		VF-FGR	FGR	ILA				10	10		SO		SLT	SST	Ksh	
FD17-04	5	75.29	75.25	78.30	3.05			3.00	DGR	LGR		VF-FGR	FGR	LA		WFR	10	10	10		SBK		SST	SLT	Ksh	interbedded sst with slt
FD17-04	5	78.33	78.30	79.01	0.71			0.70	DGR	LGR		VF-FGR	FGR	LA		WFR	11	10	11		SBK		SLT	SST	Ksh	
FD17-04	6		79.01	81.25	2.24			2.18	DGR	LGR		VF-FGR	FGR	LA		WFR	15	10	13		SBK		SLT	SST	Ksh	
FD17-04	6	81.38	81.25	83.16	1.91			1.90	DGR	LGR		VF-FGR	FGR	LA			6	8	7		IN		SLT	SST	Ksh	
FD17-04	7		83.16	84.32	1.16			1.14	DGR	LGR		VF-FGR	FGR	LA			8	14	11		IN		SLT	SST	Ksh	
FD17-04	7	84.43	84.32	87.27	2.95			2.91	DGR	LGR		VF-FGR	FGR	LA			7	12	10		IN		SLT	SST	Ksh	
FD17-04	7	87.48	87.27	87.37	0.10			0.10	DGR	LGR		VF-FGR	FGR	LA			10	10	10		IN		SLT	SST	Ksh	
FD17-04	8		87.37	90.34	2.97			2.91	DGR	LGR		VF-FGR	FGR	ILA		WFR	13	10	12		IN		SLT	SST	Ksh	
FD17-04	8	90.53	90.34	91.65	1.31			1.27	DGR	LGR		VF-FGR	FGR	ILA			10	18	14		IN		SLT	SST	Ksh	
FD17-04	9		91.65	93.38	1.73			1.70	DGR	LGR		VF-FGR	FGR	LA		WFR	10	9	10		SBK		CST	SST	Ksh	silty cst with sandy laminations
FD17-04	9	93.57	93.38	96.12	2.74			2.71	DGR	LGR		VF-FGR	FGR	LA		WFR	10	5	8		SBK		CST	SST	Ksh	same as above
FD17-04	10		96.12	96.48	0.36			0.35	DGR	LGR		VF-FGR	FGR	LA			20	12	16		IN		SLT	SST	Ksh	
FD17-04	10	96.62	96.48	97.98	1.50			1.47	DGR	LGR		VF-FGR	FGR	LA		MFR	10	12	11		SBK		SLT	SST	Ksh	
FD17-04	10		97.98	98.03	0.05			0.05	LGR			VFGR							11		SBK		SLT		Ksh	Possible tuff. Shows up on gamma.
FD17-04	10		98.03	99.57	1.54			1.51	DGR	LGR		VF-FGR	FGR	LA		MFR	10	12	11		SBK		SLT	SST	Ksh	
FD17-04	10	99.67	99.57	100.14	0.57			0.56	DGR	LGR		VF-FGR	FGR	LA			8	10	9		IN		SLT	SST	Ksh	
FD17-04	11		100.14	102.62	2.48			2.37	DGR	LGR		VF-FGR	FGR	LA		WFR	15	20	17		IN		SLT	SST	Ksh	
FD17-04	11	102.72	102.62	104.16	1.54			1.49	DGR	LGR		VF-FGR	FGR	LA			20	10	15		IN		SLT	SST	Ksh	
FD17-04	12		104.16	105.67	1.51			1.44	DGR	LGR		VF-FGR	FGR	LA			15	20	17		SBK		SLT	SST	Ksh	
FD17-04	12	105.77	105.67	108.38	2.71			2.66	DGR	LGR		VF-FGR	FGR	LA			10	12	11		IN		SLT	SST	Ksh	
FD17-04	13		108.38	108.71	0.33			0.32	DGR	LGR		VF-FGR	FGR	ILA			10	10	10		IN		SLT	SST	Ksh	
FD17-04	13	108.81	108.71	111.76	3.05			2.99	DGR	LGR		VF-FGR	FGR	LA		WFR	10	12	11		SBK		SLT	SST	Ksh	
FD17-04	13	111.86	111.76	112.68	0.92			0.91	DGR	LGR		VF-FGR	FGR	LA	XBE		9		9		IN		SLT	SST	Ksh	
FD17-04	14		112.68	114.91	2.23			2.20	DGR	LGR		VF-FGR	FGR	LA		WFR	10	10	10		SBK		SLT	SST	Ksh	
FD17-04	14	114.91	114.91	116.72	1.81			1.79	DGR	LGR		VF-FGR	FGR	LA			8	8	8		IN		SLT	SST	Ksh	
FD17-04	15		116.72	118.04	1.32			1.30	DGR	LGR		VF-FGR	FGR	LA			7	10	9		IN		SLT	SST	Ksh	
FD17-04	15	117.96	118.04	121.09	3.05			2.97	DGR	LGR		VF-FGR	FGR	LA		WFR	15	10	13		SBK		SLT	SST	Ksh	
FD17-04	16	121.01	121.09	124.13	3.04			2.94	DGR	LGR		VF-FGR	FGR	LA		MFR	15	15	15		IN		SLT	SST	Ksh	
FD17-04	16	124.05	124.13	127.31	3.18			3.06	DGR	LGR		VF-FGR	FGR	LA		HFR	20	12	16		MBK		SLT	SST	Ksh	
FD17-04	17	127.10	127.31	130.36	3.05			2.97	DGR	LGR		VF-FGR	FGR	LA		MFR	10	15	13		SBK		SLT	SST	Ksh	
FD17-04	18	130.15	130.36	133.46	3.10			3.02	DGR	LGR		VF-FGR	FGR	LA		MFR	15	10	13		SBK		SLT	SST	Ksh	
FD17-04	18	133.20	133.46	136.51	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA		MFR	6	10	8		MBK		SLT	SST	Ksh	
FD17-04	19	136.25	136.51	139.55	3.04			2.95	DGR	LGR		VF-FGR	FGR	LA		MFR	12	15	14		SBK		SLT	SST	Ksh	
FD17-04	20	139.29	139.55	142.60	3.05			2.99	DGR	LGR		VF-FGR	FGR	LA		MFR	15	8	11		IN		SLT	SST	Ksh	
FD17-04	21	142.34	142.60	145.71	3.11			3.05	DGR	LGR		VF-FGR	FGR	LA		MFR	10	11	11		IN		SLT	SST	Ksh	
FD17-04	21	145.39	145.71	148.76	3.05			2.99	DGR	LGR		VF-FGR	FGR	LA		HFR	12	10	11		SBK		SLT	SST	Ksh	BCN goes up from 12 to 19 and then falls to 10
FD17-04	22	148.44	148.76	151.87	3.11			3.06	DGR	LGR		VF-FGR	FGR	LA		HFR	9	10	10		SBK		SLT	SST	Ksh	
FD17-04	23	151.49	151.87	154.91	3.04			2.99	DGR	LGR		VF-FGR	FGR	TLA		MFR	10	10	10		IN		SLT	SST	Ksh	
FD17-04	23	154.53	154.91	157.96	3.05			2.99	DGR	LGR		VF-FGR	FGR	TLA			12	10	11		IN		SLT	SST	Ksh	
FD17-04	24	157.58	157.96	161.01	3.05			3.02	DGR	LGR		VF-FGR	FGR	LA			9	7	8		IN		SLT	SST	Ksh	
FD17-04	25	160.63	161.01	164.06	3.05			2.95	DGR	LGR		VF-FGR	FGR	LA			15	15	15		IN		SLT	SST	Ksh	
FD17-04	26	163.68	164.06	167.01	2.95			2.90	DGR	LGR		VF-FGR	FGR	LA			10	12	11		IN		SLT	SST	Ksh	
FD17-04	26	166.73	167.01	170.05	3.04			2.94	DGR	LGR		VF-FGR	F-MGR			PO	10	20	15		SBK		SLT	SST	Ksh	Siltier

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-04		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1274.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	637143.00	Logged By: Özlem Suleyman / Josh Taningco
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088562.00	Log Start Date: 14 09 2017
Total Depth (m):	546.20		Projection:	UTM NAD 83 Zone 10	Log End Date: 21 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-04	27	169.77	170.05	173.10	3.05			3.00	DGR	LGR		VF-FGR	FGR		ILA		10		10		IN		SLT	SST	Ksh	Siltstone is coarser (mixed with sand in high energy environment). Sandy slt
FD17-04	28	172.82	173.10	176.18	3.08			3.06	DGR	LGR		VF-FGR	FGR		ILA		5	8	7		IN		SLT	SST	Ksh	sandy slt
FD17-04	29	175.87	176.18	179.23	3.05			2.97	DGR	LGR		VF-FGR	FGR						13		IN		SLT	SST	Ksh	sandy slt
FD17-04	29	178.92	179.23	182.19	2.96			2.78	DGR	LGR		VF-FGR	FGR			PO		20	20		MBK		SLT	SST	Ksh	sandy slt
FD17-04	30	181.97	182.19	185.12	2.93			2.80	DGR	LGR		VF-FGR	FGR	LA	XBE		12	22	17		IN		SLT	SST	Ksh	Sandy laminations are back in slt
FD17-04	31	185.01	185.12	188.22	3.10			2.98	DGR	LGR		VF-FGR	FGR	LA		MFR	15	16	16		SBK		SLT	SST	Ksh	
FD17-04	32	188.06	188.22	191.27	3.05			2.76	DGR	LGR		VF-FGR	FGR	LA			30	20	25		IN		SLT	SST	Ksh	
FD17-04	32	191.11	191.27	194.34	3.07			2.90	DGR	LGR		VF-FGR	FGR	LA			17	20	19		IN		SLT	SST	Ksh	thin SST laminations
FD17-04	33	194.16	194.34	197.39	3.05			2.87	DGR	LGR		VF-FGR	FGR	LA	XBE		20	19	20		IN		SLT	SST	Ksh	
FD17-04	34	197.21	197.39	200.43	3.04			2.80	DGR	LGR		VF-FGR	FGR	LA			20	25	23		IN		SLT	SST	Ksh	
FD17-04	34	200.25	200.43	203.58	3.15			2.90	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	23	22	23		IN		SLT	SST	Ksh	SST laminations
FD17-04	35	203.30	203.58	206.51	2.93			-2.21	DGR	LGR		VF-FGR	FGR	LA			22	20	221		IN		SLT	SST	Ksh	
FD17-04	36	206.35	206.51	209.59	3.08			2.93	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	19	17	18		IN		SLT	SST	Ksh	
FD17-04	37	209.40	209.59	212.73	3.14			2.89	DGR	LGR		VF-FGR	FGR	LA			23	23	23		IN		SLT	SST	Ksh	
FD17-04	37	212.45	212.73	215.77	3.04			2.76	DGR	LGR		VF-FGR	FGR	LA			26	24	25	MFI	IN		SLT	SST	Ksh	
FD17-04	38	215.49	215.77	218.87	3.10			2.89	DGR	LGR		VF-FGR	FGR	LA			20	21	21		IN		SLT	SST	Ksh	
FD17-04	39	218.54	218.87	221.94	3.07			2.90	DGR	LGR		VF-FGR	FGR	LA			20	18	19		IN		SLT	SST	Ksh	
FD17-04	39	221.59	221.94	224.80	2.86			2.61	DGR	LGR		VF-FGR	FGR	LA			25	22	24		IN		SLT	SST	Ksh	sandy SLT, 5cm MGR SST bed @ bottom
FD17-04	40		224.80	224.86	0.06			0.06	LGR			M-CGR							22		SBK		SST		Ksh	
FD17-04	40	224.64	224.86	224.88	0.02			0.02	LGR			M-CGR							22		SBK		SST		Ksh	
FD17-04	40		224.88	227.89	3.01			2.79	DGR	LGR		VF-FGR	FGR	ILA					22		IN		SLT	SST	Ksh	sandy SLT , minor laminations
FD17-04	41	227.69	227.89	231.02	3.13			2.90	MGR			VF-FGR	FGR	ILA					22		IN		SLT		Ksh	sandy SLT
FD17-04	42	230.73	231.02	234.07	3.05			2.83	MGR			VF-FGR	FGR	ILA					22		IN		SLT		Ksh	sandy SLT
FD17-04	42	233.78	234.07	237.12	3.05			2.88	DGR	LGR		VF-FGR	FGR	ILA	XBE		20	17	19		IN		SLT	SST	Ksh	sandy SLT, some XBE SST beds
FD17-04	43	236.83	237.12	240.22	3.10			2.83	DGR	LGR		VF-FGR	FGR	LA	XBE			24	24		IN		SLT	SST	Ksh	sandy SLT, some XBE SST beds
FD17-04	44	239.88	240.22	243.27	3.05			2.76	DGR	LGR		VF-FGR	FGR	ILA					25		IN		SLT	SST	Ksh	minor SST laminations, fracture running through core axis with infilling of calcite.
FD17-04	44	242.93	243.27	246.31	3.04			2.71	DGR	LGR		VF-FGR	FGR	ILA				27	27		IN		SLT		Ksh	sandy SLT, minor SST laminations
FD17-04	45	245.97	246.31	249.45	3.14			2.97	DGR	LGR		VF-FGR	FGR	ILA				19	19		IN		SLT	SST	Ksh	sandy SLT, minor SST laminations
FD17-04	46	249.02	249.45	252.53	3.08			2.96	DGR	LGR		VF-FGR	FGR	LA		SL	15	17	16		IN		SLT	SST	Ksh	4cm sideritic band 47cm down from marker block, sandy SLT
FD17-04	47	252.07	252.53	255.58	3.05			2.88	DGR	LGR		VF-FGR	FGR	ILA			21	15	19		IN		SLT	SST	Ksh	
FD17-04	47	255.12	255.58	258.63	3.05			2.88	DGR	LGR		VF-FGR	FGR	ILA			15	22	19		IN		SLT	SST	Ksh	6cm sideritic band 85cm down from marker block
FD17-04	48	258.17	258.63	261.67	3.04			2.89	DGR	LGR		VF-FGR	FGR	ILA			20	15	18		IN		SLT	SST	Ksh	
FD17-04	49	261.21	261.67	264.72	3.05			2.92	DGR	LGR		VF-FGR	FGR	ILA			15	18	17		IN		SLT	SST	Ksh	
FD17-04	49	264.26	264.72	265.95	1.23			1.16	DGR	LGR		VF-FGR	FGR	ILA			20	17	19		SBK		SLT	SST	Ksh	
FD17-04	50		265.95	266.04	0.09			0.09	MBR										19				SID		Ksh	
FD17-04	50		266.04	267.77	1.73			1.64	DGR	LGR		VF-FGR	FGR	ILA			20	17	19		SBK		SLT	SST	Ksh	
FD17-04	50	267.31	267.77	270.82	3.05			2.88	DGR	LGR		VF-FGR	FGR	ILA			21	16	19		MBK		SLT	SST	Ksh	minor SST laminations, fractured area 53cm below marker block, 55cm thick with angular pieces up to 4cm long and larger pieces up to 10cm long. No evidence of polished surfaces, slickensides or gouge. Does not seem to be a fault zone
FD17-04	51	270.36	270.82	273.96	3.14			2.97	DGR			VF-FGR	FGR	ILA		SL			19		SBK		SLT		Ksh	
FD17-04	52	273.41	273.96	277.04	3.08			2.89	DGR	LGR		VF-FGR	FGR	ILA			22	18	20		IN		SLT	SST	Ksh	
FD17-04	52	276.45	277.04	280.13	3.09			2.90	DGR	LGR		VF-FGR	FGR	ILA			22	18	20		IN		SLT	SST	Ksh	minor SST laminations
FD17-04	53	279.50	280.13	283.18	3.05			2.87	DGR	LGR		VF-FGR	FGR	LA			17	22	20		IN		SLT	SST	Ksh	
FD17-04	54	282.55	283.18	286.31	3.13			2.98	DGR	LGR		VF-FGR	FGR	LA			18	17	18		IN		SLT	SST	Ksh	6cm sideritic band 118cm down from marker block
FD17-04	55	285.60	286.31	289.36	3.05			2.88	DGR	LGR		VF-FGR	FGR	LA			21	17	19		IN		SLT	SST	Ksh	few pyrite nodules
FD17-04	55	288.65	289.36	292.48	3.12			2.97	DGR	LGR		VF-FGR	FGR	LA			17	18	18		IN		SLT	SST	Ksh	
FD17-04	56	291.69	292.48	295.53	3.05			2.93	DGR	LGR		VF-FGR	FGR	LA			18	13	16		IN		SLT	SST	Ksh	some small sideritic bands
FD17-04	57	294.74	295.53	298.51	2.98			2.78	DGR	LGR		VF-FGR	FGR	LA			16	25	21		IN		SLT	SST	Ksh	
FD17-04	57	297.79	298.51	301.60	3.09			2.88	DGR	LGR		VF-FGR	FGR	LA		PO	24	17	21		IN		SLT	SST	Ksh	
FD17-04	58	300.84	301.60	304.66	3.06			2.86	DGR	LGR		VF-FGR	FGR	LA			20	21	21		SBK		SLT	SST	Ksh	
FD17-04	59	303.89	304.66	307.59	2.93			2.79	DGR	LGR		VF-FGR	FGR	LA		PO	15	21	18		IN		SLT	SST	Ksh	
FD17-04	60	306.93	307.59	310.71	3.12			2.89	DGR	LGR		VF-FGR	FGR	ILA		SL	22	22	22		IN		SLT	SST	Ksh	
FD17-04	60	309.98	310.71	313.82	3.11			2.90	DGR	LGR		VF-FGR	FGR	ILA		SL	22	19	21		IN		SLT	SST	Ksh	
FD17-04	61	313.03	313.82	316.99	3.17			3.00	DGR	LGR		VF-FGR	FGR	LA		PO	18	20	19		IN		SLT	SST	Ksh	SST laminations

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-04		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1274.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	637143.00	Logged By: Özlem Suleyman / Josh Taningco
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088562.00	Log Start Date: 14 09 2017
Total Depth (m):	546.20		Projection:	UTM NAD 83 Zone 10	Log End Date: 21 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-04	62	316.08	316.99	319.81	2.82			2.67	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	16	21	19		SBK		SLT	SST	Ksh	
FD17-04	62	319.13	319.81	320.05	0.24			0.23	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	12	26	19		IN		SLT	SST	Ksh	slickensided planes at 35deg from horizontal
FD17-04	63		320.05	320.11	0.06			0.06	LGR			MGR							19		IN		SST		Ksh	
FD17-04	63		320.11	322.83	2.72			2.57	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	12	26	19		IN		SLT	SST	Ksh	slickensided planes at 35deg from horizontal
FD17-04	63	322.17	322.83	325.79	2.96			2.76	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	28	13	21		IN		SLT	SST	Ksh	
FD17-04	64	325.22	325.79	328.87	3.08			3.03	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	9	11	10		SBK		SLT	SST	Ksh	
FD17-04	65	328.27	328.87	331.94	3.07			2.74	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	10	43	27		IN		SLT	SST	Ksh	beds start to dip ~40 degrees near bottom. Slickensides areas common
FD17-04	65	331.32	331.94	335.00	3.06			1.93	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	44	57	51		MBK		SLT	SST	Ksh	Slickensides planes prevalent, Bedding in lower half is folded, some beds bend to almost vertical. Moderately Fractured
FD17-04	66	334.37	335.00	338.06	3.06			1.44	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	58	66	62		HBK		SLT	SST	Ksh	Highly Fractured, some beds are folded, some parts of bedding almost vertical, lots of slickensided planes that seem to follow bedding, (possible overturned bed 76cm above MB 334.37)
FD17-04	67	337.41	338.06	341.07	3.01			2.85	DGR	LGR		VF-FGR	FGR	ILA		SL	16	22	19		IN		SLT	SST	Ksh	first 12cm highly broken, overturned bed? (top dipping at 50 while bottom dipping at 45) 31cm above MB337.41)
FD17-04	68	340.46	341.07	344.12	3.05			2.88	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	18	19	19		IN		SLT	SST	Ksh	
FD17-04	68	343.51	344.12	347.23	3.11			2.72	DGR	LGR		VF-FGR	FGR	LA		SL	26	31	29		MBK		SLT	SST	Ksh	approx. 240cm down from marker block, there seems to be an area of cemented gouge (somewhat porous area with very coarse grains roughly 10cm thick).
FD17-04	69	346.56	347.23	350.28	3.05			2.67	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	27	30	29		IN		SLT	SST	Ksh	
FD17-04	70	349.61	350.28	353.33	3.05			2.79	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	26	21	24		IN		SLT	SST	Ksh	
FD17-04	71	352.65	353.33	356.41	3.08			2.46	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	43	30	37		IN		SLT	SST	Ksh	
FD17-04	71	355.70	356.41	359.46	3.05			2.56	DGR	LGR		VF-FGR	FGR	LA		SL	42	24	33		IN		SLT	SST	Ksh	
FD17-04	72	358.75	359.46	362.51	3.05			2.23	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	58	28	43		IN		SLT	SST	Ksh	
FD17-04	73	361.80	362.51	365.55	3.04			2.36	DGR	LGR		VF-FGR	FGR	LA		SL	46	32	39		IN		SLT	SST	Ksh	
FD17-04	73	364.85	365.55	368.65	3.10			2.63	DGR	LGR		VF-FGR	FGR	LA		SL	32	31	32		IN		SLT	SST	Ksh	
FD17-04	74	367.89	368.65	371.68	3.03			2.22	DGR	LGR		VF-FGR	FGR	LA		SL	41	45	43		IN		SLT	SST	Ksh	
FD17-04	75	370.94	371.68	374.78	3.10			1.64	DGR	LGR		VF-FGR	FGR	LA		SL	44	72	58		IN		SLT	SST	Ksh	Beds are folded (dipping two different directions), small scale faulting
FD17-04	76	373.99	374.78	377.81	3.03			1.65	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	65	48	57		IN		SLT	SST	Ksh	123cm down from top marker block is an overturned bed. Top dip is 75 while bottom dip is 70
FD17-04	76	377.04	377.81	380.88	3.07			2.48	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	43	28	36		IN		SLT	SST	Ksh	149cm down from top is an overturned bed, top dip is 69 the bottom is 57. (seems like overturned bed is localized, bed above this section dip in the same direction as the beds below the overturned section, there is also a slickensided plane right above the overturned area.
FD17-04	77	380.09	380.88	383.94	3.06			1.97	DGR	LGR		VF-FGR	FGR	LA		SL	24	75	50		IN		SLT	SST	Ksh	Highly fractured. BCNs steepen to around 80 near the middle of the run (beds vertical ~20cm further) sideritic band 5cm thick 55cm above lower marker block
FD17-04	78	383.13	383.94	386.99	3.05			2.53	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	34	34	34		IN		SLT	SST	Ksh	folded area (top 30cm, seems like normal faulting movement with beds folding accordingly. Crossbeds lower down seem to indicate that the beds are not overturned. Slickensides planes present throughout, Highly fractured,
FD17-04	79	386.18	386.99	390.02	3.03			2.70	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	31	23	27		IN		SLT	SST	Ksh	some micro-faulting present,, SST beds and SST laminations throughout
FD17-04	79	389.23	390.02	393.07	3.05			2.47	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	27	44	36		IN		SLT	SST	Ksh	small scale faulting present
FD17-04	80	392.28	393.07	396.12	3.05			2.87	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	28	11	20		IN		SLT	SST	Ksh	small scale faulting present
FD17-04	81	395.33	396.12	399.16	3.04			2.97	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	10	14	12		IN		SLT	SST	Ksh	7cm thick area of small scale folding and faulting in the middle of the run.
FD17-04	82	398.37	399.16	402.19	3.03			2.86	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	15	22	19		IN		SLT	SST	Ksh	
FD17-04	82	401.42	402.19	402.30	0.11			0.10	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	15	22	19		IN		SLT	SST	Ksh	
FD17-04	82		402.30	403.13	0.83			0.76	LGR	DGR		MGR	FGR	LA	XBE	PO	25	20	23		IN		SST	SLT	Ksh	
FD17-04	83		403.13	405.26	2.13			2.07	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	20	8	14		IN		SLT	SST	Ksh	3cm band of weak, MGR, mudstone (silty clay) 119cm down
FD17-04	84	404.47	405.26	408.31	3.05			2.98	DGR	LGR		VF-FGR	FGR	LA		SL	11	13	12		IN		SLT	SST	Ksh	3cm band of weak, MGR, mudstone (silty clay) 55cm down
FD17-04	84	407.52	408.31	411.36	3.05			2.93	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	19	13	16		IN		SLT	SST	Ksh	
FD17-04	84	410.57	411.36	414.42	3.06			2.96	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	13	17	15		IN		SLT	SST	Ksh	
FD17-04	85	413.61	414.42	417.47	3.05			2.59	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	47	16	32		IN		SLT	SST	Ksh	possible overturned bed at the start of run, top dip is 14, bottom dip is 47, might just be due to a fault since there is a polished surface just above the folded area.
FD17-04	86	416.66	417.47	420.52	3.05			2.97	DGR	LGR		VF-FGR	FGR	LA		SL	15	10	13		IN		SLT	SST	Ksh	
FD17-04	87	419.71	420.52	421.06	0.54			0.53	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	11		11		IN		SLT	SST	Ksh	
FD17-04	87		421.06	421.18	0.12			0.12	MBR										11				SID		Ksh	
FD17-04	87		421.18	423.53	2.35			1.35	DGR	LGR		VF-FGR	FGR	LA	XBE	SL		55	55		IN		SLT	SST	Ksh	
FD17-04	87	422.76	423.53	426.43	2.90			1.94	DGR	LGR		VF-FGR	FGR	ILA		SL	53	42	48		HBK		SLT	SST	Ksh	highly fractured
FD17-04	88	425.81	426.43	429.47	3.04			2.15	DGR	LGR		VF-FGR	FGR	ILA	XBE	SL	44	45	45		IN		SLT	SST	Ksh	moderately fractured
FD17-04	89	428.85	429.47	432.62	3.15			1.98	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	50	52	51		IN		SLT	SST	Ksh	might be able to check crossbeds for overturning
FD17-04	90	431.90	432.62	435.72	3.10			1.82	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	51	57	54		IN		SLT	SST	Ksh	
FD17-04	90	434.95	435.72	438.74	3.02			2.14	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	45	44	45		IN		SLT	SST	Ksh	

Lithology Descriptive Log

TSX-V: CAD

Hole No:	FD17-04		Project:	Flatbed	
Collar Bearing (˚):	-	*Handheld GPS*	Collar Elev. (m):	1274.00	
Hole Angle (˚):	90˚	*Handheld GPS*	Easting:	637143.00	Logged By: Özlem Suleyman / Josh Taningco
Core Diameter:	HQ3	*Handheld GPS*	Northing:	6088562.00	Log Start Date: 14 09 2017
Total Depth (m):	546.20		Projection:	UTM NAD 83 Zone 10	Log End Date: 21 09 2017

Hole ID	Box Number	Driller's Marker (m)	Interval		Recovered Length (m)	Loss Length (m)	Coal Quality Sample #	True Thickness	Colour 1	Colour 2	Weathering	Grain Size 1	Grain Size 2	Bedding Sedimentary Structure 1	Bedding Sedimentary Structure 2	Structure	BCN (˚)		BCN True Thickness Calculations (˚)	HCL Reaction	Core Quality	Seam	Coal/Rock Type 1	Coal/Rock Type 2	Formation	Additional Descriptions/Comments
			From (m)	To (m)													Roof	Floor									
FD17-04	91	438.00	438.74	441.71	2.97			2.10	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	42	47	45		IN		SLT	SST	Ksh	
FD17-04	92	441.05	441.71	444.69	2.98			2.07	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	47	44	46		IN		SLT	SST	Ksh	12cm sideritic band 178cm down
FD17-04	93	444.09	444.69	447.76	3.07			1.63	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	58	57	58		IN		SLT	SST	Ksh	small scale faulting, run does not seem to be overturned
FD17-04	93	447.14	447.76	450.71	2.95			1.48	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	56	63	60		IN		SLT	SST	Ksh	
FD17-04	94	450.19	450.71	453.78	3.07			1.85	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	52	54	53		IN		SLT	SST	Ksh	highly fractured, based on cross beds does not seem to be overturned
FD17-04	95	453.24	453.78	456.78	3.00			1.76	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	55	53	54		IN		SLT	SST	Ksh	
FD17-04	95	456.29	456.78	459.80	3.02			1.86	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	46	58	52		IN		SLT	SST	Ksh	
FD17-04	96	459.33	459.80	462.85	3.05			2.00	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	50	47	49		IN		SLT	SST	Ksh	
FD17-04	97	462.38	462.85	465.96	3.11			2.04	DGR	LGR		VF-FGR	FGR	LA		SL	47	50	49		IN		SLT	SST	Ksh	
FD17-04	98	465.43	465.96	468.99	3.03			1.61	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	54	62	58		IN		SLT	SST	Ksh	
FD17-04	98	468.48	468.99	472.04	3.05			1.84	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	48	58	53		IN		SLT	SST	Ksh	
FD17-04	99	471.53	472.04	475.12	3.08			1.49	DGR	LGR		VF-FGR	FGR	LA		SL	58	64	61		IN		SLT	SST	Ksh	
FD17-04	100	474.57	475.12	477.96	2.84			1.46	DGR	LGR		VF-FGR	FGR	LA		SL	61	57	59		SBK		SLT	SST	Ksh	
FD17-04	101	477.62	477.96	481.11	3.15			1.38	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	66	62	64		MBK		SLT	SST	Ksh	moderately fractured
FD17-04	101	480.67	481.11	484.03	2.92			1.23	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	65	65	65		MBK		SLT	SST	Ksh	moderately fractured
FD17-04	103	483.72	484.03	487.11	3.08			1.68	LGR	DGR		FGR	VF-FGR	LA	XBE	PO	59	54	57		IN		SST	SLT	Ksh	mainly SST beds with thinner SLT beds
FD17-04	103	486.77	487.11	490.28	3.17			1.63	LGR	DGR		FGR	VF-FGR	LA	XBE	SL	59	58	59		SBK		SST	SLT	Ksh	
FD17-04	104	489.81	490.28	493.41	3.13			1.80	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	57	52	55		IN		SLT	SST	Ksh	
FD17-04	105	492.86	493.41	496.42	3.01			1.73	LGR	DGR		FGR	VF-FGR	LA	XBE	SL	54	56	55		IN		SST	SLT	Ksh	
FD17-04	106	495.91	496.42	499.39	2.97			1.53	LGR	DGR		FGR	VF-FGR	LA	XBE	SL	60	58	59		IN		SST	SLT	Ksh	
FD17-04	106	498.96	499.39	502.31	2.92			1.76	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	52	53	53		SBK		SLT	SST	Ksh	possible overturning in this run, beds are near vertical in the middle of the run, dip above is 84, dip below is 63
FD17-04	107	502.01	502.31	505.51	3.20			0.99	DGR	LGR		VF-FGR	FGR	LA		PO	69	75	72		SBK		SLT	SST	Ksh	vertical beds in certain sections of the run
FD17-04	108	505.05	505.51	508.62	3.11			1.46	DGR	LGR		VF-FGR	FGR	LA	XBE	PO		62	62		HBK		SLT	SST	Ksh	possible overturning in area, run is highly broken and highly fractured with vertical beds throughout. (there are sections with non-vertical beds which are recorded in the BCN columns
FD17-04	109	508.10	508.62	511.67	3.05			0.58	DGR	LGR		VF-FGR	FGR	LA	XBE	PO			79		MBK		SLT	SST	Ksh	beds essentially vertical, with the broken sections difficult to determine if beds are overturned. Highly fractured with polished and slickensided planes throughout run
FD17-04	110	511.15	511.67	514.72	3.05			0.53	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	80	80	80		MBK		SLT	SST	Ksh	moderately fractured, beds are nearly vertical throughout, possible overturning in area.
FD17-04	110	514.20	514.72	517.61	2.89			0.65	DGR	LGR		VF-FGR	FGR	ILA	XBE	PO	80	74	77		HBK		SLT	SST	Ksh	highly fractured , possible overturning, difficult to determine due to fractured areas. Beds nearly vertical in run
FD17-04	111	517.25	517.61	520.73	3.12			1.37	DGR	LGR		VF-FGR	FGR	ILA	XBE	PO	76	51	64		HBK		SLT	SST	Ksh	possible overturning, beds nearly vertical but fractured areas make it difficult to determine relative attitudes of beds, fractured areas generally follow dip with very steep dips
FD17-04	112	520.29	520.73	523.45	2.72			0.93	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	71	69	70		MBK		SLT	SST	Ksh	there is a faulted area ~206cm from top marker block, the beds near the fault are at an angle of 50 degrees, faults are generally reverse/thrust. possible overturning
FD17-04	113	523.34	523.45	526.50	3.05			0.89	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	74	71	73		HBK		SLT	SST	Ksh	dips variable within run due to small scale faulting (reverse/thrust) , faults attitude is variable (three distinct ones between 30 and 60 degrees), possible overturning, some beds near vertical but this could be due to the small scale faulting.
FD17-04	114	526.39	526.50	529.59	3.09			1.77	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	54	56	55		MBK		SLT	SST	Ksh	small scale faulting present , Normal faulting? Run overturned?
FD17-04	114	529.44	529.59	532.64	3.05			1.62	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	56	60	58		SBK		SLT	SST	Ksh	slickenside generally follow bedding
FD17-04	115	532.49	532.64	535.82	3.18			2.21	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	43	49	46		SBK		SLT	SST	Ksh	slickenside generally follow bedding
FD17-04	116	535.53	535.82	538.82	3.00			2.46	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	58	12	35		IN		SLT	SST	Ksh	slickenside generally follow bedding
FD17-04	117	538.58	538.82	541.94	3.12			2.93	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	9	30	20		SBK		SLT	SST	Ksh	folding roughly 100cm from top marker block suggest normal faulting?
FD17-04	117	541.63	541.94	544.89	2.95			2.63	DGR	LGR		VF-FGR	FGR	LA	XBE	SL	32	21	27		IN		SLT	SST	Ksh	slickenside generally follow bedding
FD17-04	118	544.68	544.89	546.20	1.31			1.19	DGR	LGR		VF-FGR	FGR	LA	XBE	PO	22	28	25		IN		SLT	SST	Ksh	slickenside generally follow bedding
FD17-04	118	546.20																									

Gordon Creek Project (Flatbed Property)
Lookup Fields

COLOUR		
BL	Black	
WH	White	
GR	Gray	
DGR	Dark gray	
MGR	Medium gray	
LGR	Light gray	
BR	Brown	
DBR	Dark brown	
MBR	Medium brown	
LBR	Light brown	
RBR	Reddish brown	
OBR	Orange brown	

WEATHERING		
SWE	Slightly weathered	<20% of rock fragments oxidized
MWE	Moderately weathered	20% - 50% of rock fragments oxidized
HWE	Highly weathered	>50% of rock fragments oxidized

GRAIN SIZE		
VFGR	Very fine grained	
VF-FGR	Very fine grained to fine grained	
FGR	Fine grained	Grain size: 1/16mm - 1.00mm
F-MGR	Fine grained to medium grained	
MGR	Medium grained	Grain size: 1mm - 1.50mm
M-CGR	Medium grained to coarse grained	
CGR	Coarse grained	Grain size: 1.50mm - 2.00mm
GRN	Granular	Grain size: 2.00mm - 4.00mm
PEB	Pebble	Grain size: 4.00mm - 64.00mm
COB	Cobble	Grain size: 64.00mm - 256.00mm

BEDDING / SEDIM. STRUCTURE		
LA	Laminated	
TLA	Thinly laminated	Individual layers <5mm thick
ILA	Irregularly laminated	Wavy or non-planar layers
MBE	Massive bedding	No apparent thin individual beds
XBE	Cross-bedding	Laminations oblique to the bed containing them
WBE	Wavy bedding	
RMA	Ripple marks	
RCL	Rip-up clasts	
WBU	Worm burrows	
SLS	Slump structures (soft sedim. deformation)	
FOS	Fossils (specify type)	
BIO	Bioturbation	

CORE QUALITY		
SO	Solid	No break in the entire core or if present, is an induced one
IN	Intact	Although broken, the pieces can be put or made to fit together with no indication of core loss
SBK	Slightly broken	Core is broken into at least 3 pieces and cannot be made to fit together
MBK	Moderately broken	Core is broken into 4-8 pieces and cannot be put or made to fit together
HBK	Highly broken	Core is broken into more than 8 pieces and cannot be put or made to fit together
PUL	Pulverized	

Gordon Creek Project (Flatbed Property)
Lookup Fields

COAL/ROCK TYPE		
CBR	Bright	>80% bright coal
CBB	Bright banded	60% - 80% bright coal
CD&B	Dull and Bright	40% - 60% bright coal
CDB	Dull banded	20% - 40% bright coal
CD	Dull	<20% bright coal
CBN	Boney Coal	
ST	Stoney Coal	Highly carbonaceous claystone with black streak
COAL	Coal (unidentified)	
C&B	Coal and Bands	Coal with less than 50% rock bands/laminae.
GO	Gouge	
CGL	Conglomerate	Grain Size: >2mm
SST	Sandstone	Grain Size: 1/16 - 2mm
SLT	Siltstone	Grain Size: 1.25mm - 1.16mm (gritty)
CST	Claystone	Grain Size: <1/25mm (smooth)
LST	Limestone	
CSST	Carbonaceous sandstone	
CCST	Carbonaceous claystone	Dark gray, less carbonaceous than HCST
HCST	Highly carbonaceous claystone	Dark gray to black, less carbonaceous than stoney coal
SID	Siderite	
SAND	Sand	
LM	Loose Mud	
OVB	Overburden	
C-LOSS	Coal Loss	
R-LOSS	Rock Loss	

STRUCTURE		
FO	Fold	Indicate additional features in Additional Description column
UPD	Upside-down	Indicate additional features in Additional Description column
FLT	Fault	Indicate thickness of fault in Additional Description column
GO	Gouge	
BX	Breccia	Indicate thickness of breccia zone in Additional Description column
FZ	Fault zone	Indicate thickness of fault zone in Additional Description column
SL	Slickensided	Indicate nature, attitude in Additional Description column
PO	Polished surfaces	Indicate nature, attitude in Additional Description column
WFR	Slightly fractured	With 1 - 3 structural breaks (fracture, joint)
MFR	Moderately fractured	With 4 - 8 structural breaks (fracture, joint)
HFR	Highly fractured	With >8 structural breaks (fracture, joint)
SSH	Slightly sheared	With 1 - 3 sheared planes
MSH	Moderately sheared	With 4 - 8 sheared planes
HSH	Highly sheared	With > 8 sheared planes

REACTION TO HCL		
-	None	
WFI	Weak fizz	
MFI	Moderate fizz	
SFI	Strong fizz	

FORMATION		
Ksh	Shaftebury	
Kb	Boulder Creek	
Kh	Hulcross	
Kg	Gates	
Kmb	Moosebar	
Kgt	Gething	

TSX-V: CAD

APPENDIX III

Gordon Creek Project

(Flatbed Property)

2017 Geophysical Logs

Gordon Creek Project

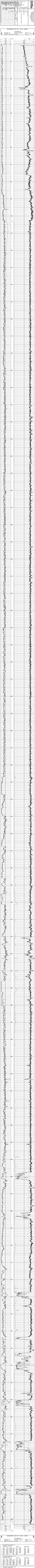
(Flatbed Property)

Geophysical Logs

FD17-01

Magnetometer Data

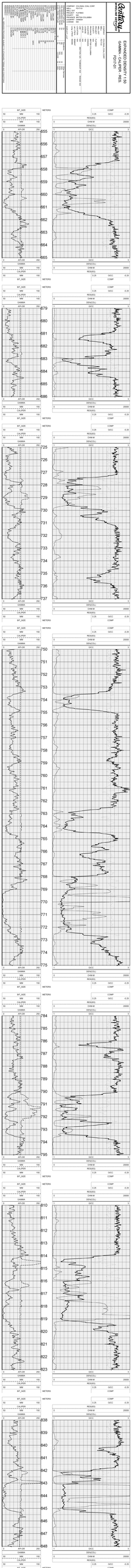
Station	Ottawa
Year	2010
Month	Jan
Day	1
Hours	24
Minutes	1440
Seconds	86400
Sample Rate	1
Data Type	Variation
Data Source	Ottawa
Data Quality	Preliminary
Data Version	1
Data Interval	Minute
Data Type	Variation
Data Source	Ottawa
Data Quality	Preliminary
Data Version	1
Data Interval	Minute



COMPANY: COLTON COAL CORP
WELL: 97-1
FIELD: EXT
COUNTY: ELK CLIFFS
STATE: BC
PROVINCE: BRITISH COLUMBIA
COUNTRY: CANADA
SERVICE: MR

LOCATION: 1 - 1 - 1 - 1
SEC: 1
TWP: 1
RGE: 1
W1: 1
W2: 1
W3: 1
W4: 1
LSD: 1
PERMANENT DATUM: GROUND
LOG MEASURED FROM: 0.0 M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM: KB
ELEVATION: PERMANENT DATUM 0.0 M
KB: 0.0 M
DF: 0.0 M
GL: 0.0 M
DATE: 1-1-1
RUN NUMBER: 1
TD DRILLER: 0.0 M
TD LOGGER: 0.0 M
BOTTOM LOG INTERVAL: 0.0 M
TOP LOG INTERVAL: 0.0 M
CASING: 0.0 M @ 0.0 M
BIT SIZE: 0.0 M
TYPE FLUID IN HOLE: UNKNOWN
DENSITY: 0.0
VISCOSITY: 0.0
PH: 0.0
FLUID LOSS: 0.0
SOURCE OF SAMPLE: FLOWING
RM @ MEASURED TEMP: 0.0 @ 0.0 C
RMF @ MEASURED TEMP: 0.0 @ 0.0 C
RMC @ MEASURED TEMP: 0.0 @ 0.0 C
RM @ BHT: 0.0 @ 0.0 C
MATRIX: SANDSTONE
TOOL TYPE: DENSITY
TOOL NO: 1
DIAMETER: 0.0 M
MAX RECORDED TEMP: 0.0 C
LOGGING DISTANCE: 0.0 M
RECORDED BY: 1
WITNESSED BY: 1

EXPANDED DENSITY 1:50
GAMMA RAY
F37-07-01 - 1-1-1-1

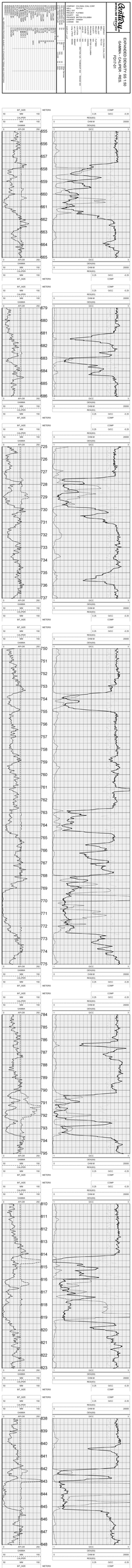


COMPANY: COLONIAL COAL CORP.
WELL: 1-ROBERTS
FIELD: EST.
COUNTY: BRITISH COLUMBIA
STATE: BRITISH COLUMBIA
COUNTRY: CAN

DATE	03-Jun-1980
RUN NO.	ONE
DEPTH DRILLER	1000.00
DEPTH LOGGER	1000.00
BTM LOG INTERVAL	1000.00
TOP LOG INTERVAL	0.00
CASING DRILLER	0.00
CASING LOGGER	0.00
BIT SIZE	0.00
TYPE FLUID IN HOLE	
DENSITY	
VISCOSITY	
PH	
FLUID LOSS	
SOURCE OF SAMPLE	
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE RMF/RMC	
RM @ BHT	
TIME CIRC. STOPPED	
TIME LOGGER ON BOTTOM	
LOGGING UNIT NO.	1
LOGGER	
WITNESS	

Gearhart
INDUSTRIES, INC.
BRITISH COLUMBIA

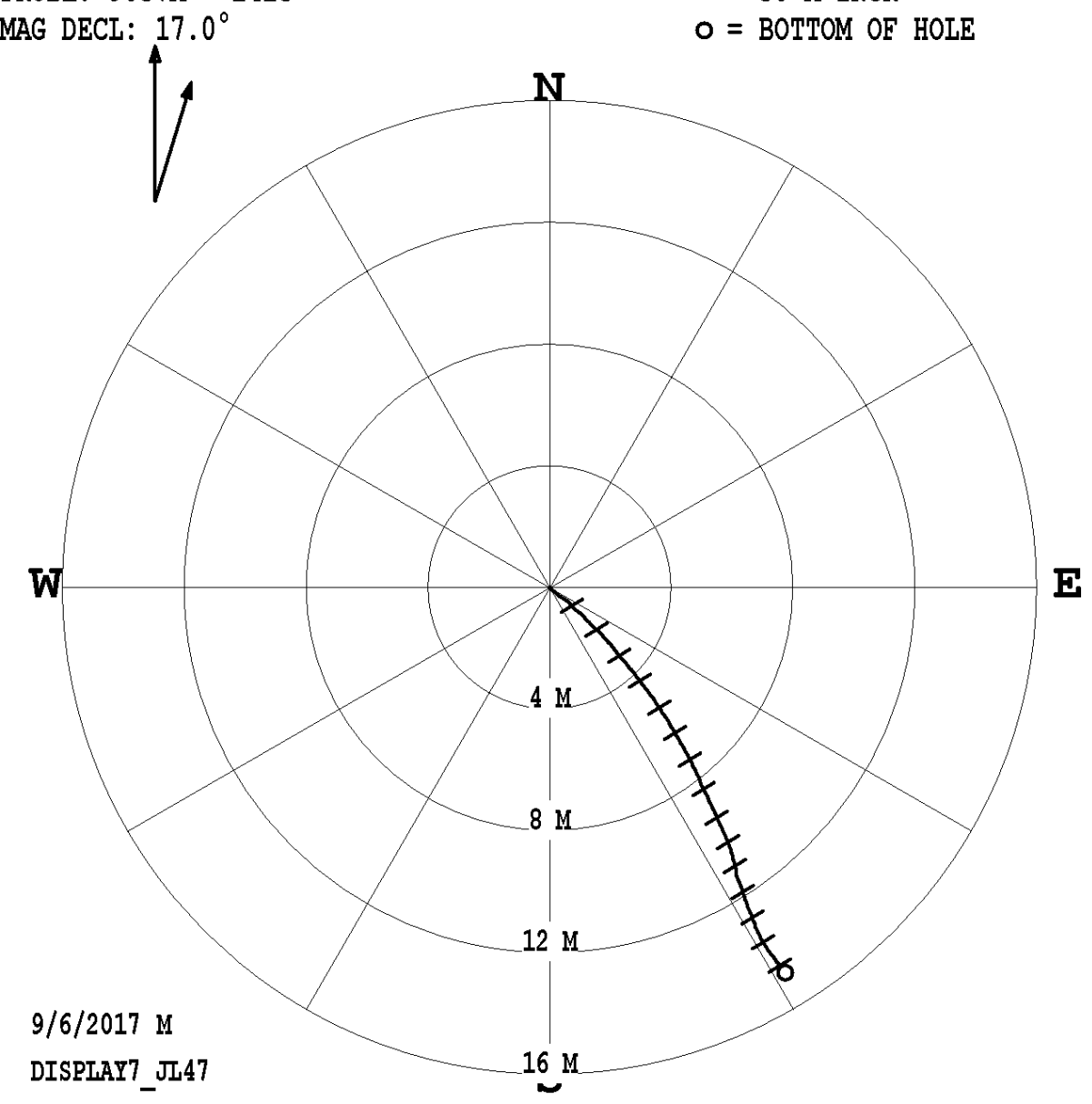
EXPANDED DENSITY-GR 5.50
COLONIAL COAL CORP.
1-ROBERTS
F31/12-R - 1-RBS

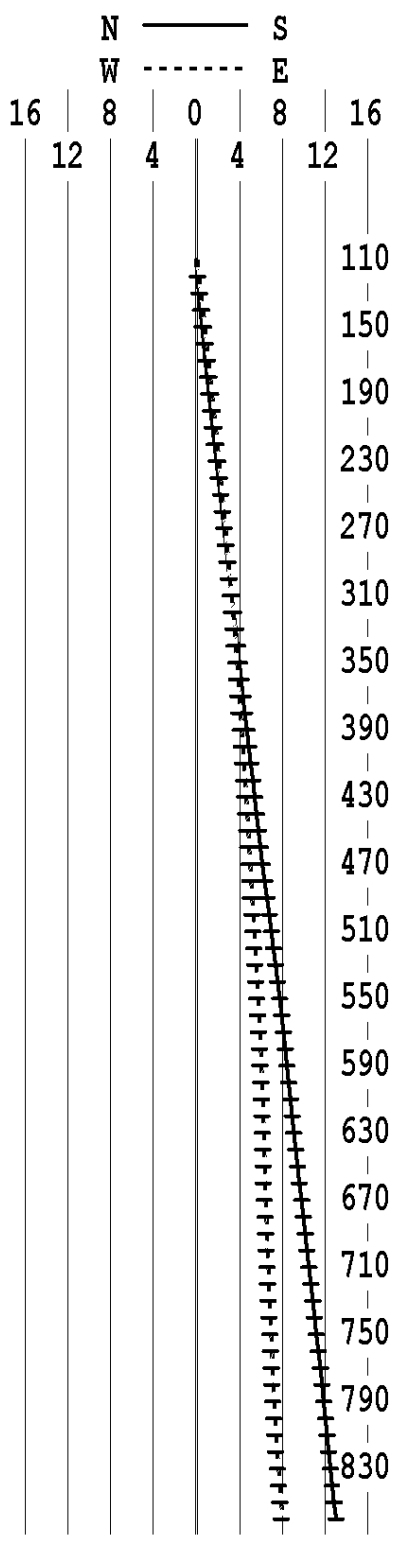


PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: COLONIAL COAL CORP.
LOCATION:
HOLE ID: FD17-01
DATE OF LOG: 08/30/17
PROBE: 9057A 2425
MAG DECL: 17.0°

DISTANCE: 14.83 M
AZIMUTH: 148.53
TRUE DEPTH: 862.94 M
SCALE: 2 M/Division
+ = 50 M INCR
o = BOTTOM OF HOLE





FD17-01_08-30-17_10-45_9057A_.02_106.00_863.10_DEV

* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : COLONIAL COAL CORP. HOLE ID. : FD17-01
FIELD OFFICE : CENTURY DATE OF LOG : 08/30/17
DATA FROM : N/A PROBE : 9057A , 2425
MAG. DECL. : 17.000 DEPTH UNITS : METERS
LOG: FD17-01_08-30-17_10-45_9057A_.02_106.00_863.10_DEV.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
106.00	106.00	-0.00	-0.00	0.0	197.4	1.1	134.5
111.00	111.00	-0.06	0.06	0.1	134.2	1.1	131.4
116.00	116.00	-0.12	0.14	0.2	132.1	1.1	128.5
121.00	121.00	-0.18	0.21	0.3	131.8	1.1	131.8
126.00	126.00	-0.25	0.28	0.4	132.1	1.4	129.8
131.00	130.99	-0.32	0.39	0.5	129.7	1.4	121.5
136.00	135.99	-0.39	0.50	0.6	128.1	1.5	121.2
141.00	140.99	-0.46	0.60	0.8	127.6	1.4	124.1
146.00	145.99	-0.53	0.68	0.9	127.9	1.1	140.6
151.00	150.99	-0.60	0.74	1.0	129.4	1.1	142.4
156.00	155.99	-0.68	0.80	1.0	130.7	1.4	143.6
161.00	160.99	-0.76	0.89	1.2	130.5	1.4	125.1
166.00	165.99	-0.83	0.99	1.3	129.9	1.3	125.1
171.00	170.98	-0.89	1.06	1.4	129.9	1.1	138.4
176.00	175.98	-0.98	1.13	1.5	130.7	1.4	141.5
181.00	180.98	-1.08	1.22	1.6	131.4	1.6	132.5
186.00	185.98	-1.15	1.30	1.7	131.4	1.1	137.5
191.00	190.98	-1.22	1.36	1.8	131.8	1.1	137.4
196.00	195.98	-1.31	1.44	1.9	132.2	1.5	132.9
201.00	200.98	-1.39	1.54	2.1	132.0	1.6	128.1
206.00	205.97	-1.47	1.64	2.2	131.8	1.1	131.7
211.00	210.97	-1.54	1.70	2.3	132.2	1.2	140.8
216.00	215.97	-1.63	1.77	2.4	132.6	1.4	141.7
221.00	220.97	-1.73	1.86	2.5	132.9	1.6	138.0
226.00	225.97	-1.83	1.95	2.7	133.1	1.5	129.9
231.00	230.97	-1.89	2.02	2.8	133.1	1.1	143.5
236.00	235.97	-1.97	2.08	2.9	133.5	1.2	142.6
241.00	240.97	-2.05	2.14	3.0	133.8	1.4	148.8
246.00	245.96	-2.15	2.21	3.1	134.2	1.4	143.0
251.00	250.96	-2.25	2.29	3.2	134.5	1.5	142.5
256.00	255.96	-2.33	2.37	3.3	134.6	1.1	135.5
261.00	260.96	-2.40	2.43	3.4	134.6	1.0	137.3
266.00	265.96	-2.48	2.50	3.5	134.8	1.3	142.6
271.00	270.96	-2.57	2.57	3.6	135.1	1.3	145.3
276.00	275.96	-2.67	2.65	3.8	135.2	1.2	130.5
281.00	280.96	-2.73	2.71	3.8	135.2	1.0	139.4
286.00	285.96	-2.81	2.76	3.9	135.5	1.3	147.2
291.00	290.95	-2.91	2.83	4.1	135.8	1.5	144.2
296.00	295.95	-2.99	2.91	4.2	135.9	1.0	140.6
301.00	300.95	-3.07	2.96	4.3	136.0	1.0	143.5
306.00	305.95	-3.16	3.02	4.4	136.3	1.6	149.7
311.00	310.95	-3.26	3.11	4.5	136.4	1.6	137.8
316.00	315.95	-3.35	3.18	4.6	136.5	1.1	144.0
321.00	320.95	-3.43	3.24	4.7	136.6	1.1	147.3
326.00	325.94	-3.53	3.30	4.8	136.9	1.6	141.1
331.00	330.94	-3.63	3.39	5.0	136.9	1.1	140.9
336.00	335.94	-3.71	3.44	5.1	137.1	1.1	151.4
341.00	340.94	-3.79	3.49	5.2	137.4	1.2	154.0
346.00	345.94	-3.88	3.55	5.3	137.5	1.1	141.9
351.00	350.94	-3.95	3.60	5.3	137.6	1.0	142.6
356.00	355.94	-4.03	3.65	5.4	137.8	1.1	154.2
361.00	360.94	-4.12	3.70	5.5	138.1	1.0	139.9
366.00	365.94	-4.19	3.75	5.6	138.1	1.0	142.5
371.00	370.94	-4.26	3.81	5.7	138.2	1.0	142.7
376.00	375.93	-4.33	3.86	5.8	138.3	1.0	146.1
381.00	380.93	-4.42	3.91	5.9	138.5	1.4	153.8
386.00	385.93	-4.53	3.96	6.0	138.8	1.4	155.9
391.00	390.93	-4.62	4.02	6.1	139.0	1.0	144.7
396.00	395.93	-4.70	4.07	6.2	139.1	1.0	147.6
401.00	400.93	-4.79	4.12	6.3	139.3	1.3	155.9
406.00	405.93	-4.89	4.17	6.4	139.5	1.1	144.0
411.00	410.93	-4.96	4.23	6.5	139.6	1.0	147.6
416.00	415.93	-5.06	4.27	6.6	139.9	1.4	155.7
421.00	420.92	-5.16	4.33	6.7	140.0	1.1	143.7
426.00	425.92	-5.24	4.38	6.8	140.1	1.1	155.1
431.00	430.92	-5.32	4.42	6.9	140.3	1.1	156.4
436.00	435.92	-5.41	4.47	7.0	140.4	1.0	143.8
441.00	440.92	-5.48	4.52	7.1	140.5	1.1	157.3
446.00	445.92	-5.57	4.55	7.2	140.7	1.1	159.3
451.00	450.92	-5.65	4.60	7.3	140.8	1.0	146.0
456.00	455.92	-5.73	4.65	7.4	140.9	1.3	170.8
461.00	460.92	-5.84	4.69	7.5	141.3	1.3	164.7
466.00	465.92	-5.93	4.74	7.6	141.4	1.0	148.8
471.00	470.91	-6.00	4.78	7.7	141.5	1.3	162.8
476.00	475.91	-6.12	4.82	7.8	141.8	1.7	151.6
481.00	480.91	-6.20	4.88	7.9	141.8	1.0	148.2
486.00	485.91	-6.30	4.91	8.0	142.1	1.4	163.5
491.00	490.91	-6.42	4.95	8.1	142.4	1.6	160.3
496.00	495.91	-6.54	5.01	8.2	142.5	1.0	142.8
501.00	500.91	-6.62	5.05	8.3	142.7	1.1	159.8
506.00	505.91	-6.73	5.09	8.4	142.9	1.4	121.1
511.00	510.90	-6.81	5.15	8.5	142.9	1.1	148.3
516.00	515.90	-6.90	5.19	8.6	143.0	1.2	161.1
521.00	520.90	-7.00	5.22	8.7	143.3	1.5	147.9
526.00	525.90	-7.10	5.28	8.8	143.4	1.1	153.1
531.00	530.90	-7.19	5.32	8.9	143.5	1.2	162.3
536.00	535.90	-7.29	5.37	9.1	143.6	1.2	151.5
541.00	540.90	-7.38	5.41	9.2	143.7	1.1	153.2
546.00	545.90	-7.47	5.45	9.2	143.9	1.1	162.6
551.00	550.89	-7.57	5.48	9.3	144.1	1.4	147.9
556.00	555.89	-7.66	5.53	9.4	144.2	1.1	154.4
561.00	560.89	-7.74	5.56	9.5	144.3	1.1	159.8
566.00	565.89	-7.82	5.61	9.6	144.4	1.0	149.5
571.00	570.89	-7.89	5.65	9.7	144.4	0.9	151.4
576.00	575.89	-7.97	5.67	9.8	144.6	1.0	175.1
581.00	580.89	-8.06	5.71	9.9	144.6	0.9	150.5
586.00	585.89	-8.13	5.75	10.0	144.7	0.9	156.3
591.00	590.89	-8.21	5.78	10.0	144.8	1.3	179.5
596.00	595.89	-8.29	5.82	10.1	144.9	0.9	154.0
601.00	600.89	-8.36	5.85	10.2	145.0	0.9	155.8
606.00	605.89	-8.44	5.87	10.3	145.2	0.9	167.9
611.00	610.89	-8.53	5.91	10.4	145.3	0.9	155.8
616.00	615.88	-8.60	5.94	10.4	145.4	0.9	159.1
621.00	620.88	-8.67	5.95	10.5	145.6	1.0	164.7
626.00	625.88	-8.76	5.98	10.6	145.7	0.8	158.0
631.00	630.88	-8.82	6.01	10.7	145.8	0.8	171.0
636.00	635.88	-8.91	6.01	10.7	146.0	1.5	186.5
641.00	640.88	-8.99	6.04	10.8	146.1	0.8	161.3
646.00	645.88	-9.06	6.06	10.9	146.2	0.9	178.9
651.00	650.88	-9.15	6.08	11.0	146.4	0.8	156.9
656.00	655.88	-9.22	6.10	11.1	146.5	0.8	162.2
661.00	660.88	-9.32	6.10	11.1	146.8	1.3	179.2
666.00	665.88	-9.44	6.12	11.3	147.1	1.5	136.9
671.00	670.88	-9.52	6.15	11.3	147.1	0.9	159.9
676.00	675.87	-9.60	6.18	11.4	147.2	0.9	152.4
681.00	680.87	-9.67	6.22	11.5	147.3	0.9	154.9
686.00	685.87	-9.75	6.25	11.6	147.3	0.9	158.5
691.00	690.87	-9.84	6.28	11.7	147.4	1.0	155.7
696.00	695.87	-9.92	6.32	11.8	147.5	1.0	157.1
701.00	700.87	-10.00	6.33	11.8	147.7	1.3	176.7
706.00	705.87	-10.10	6.37	11.9	147.8	1.0	154.4
711.00	710.87	-10.17	6.40	12.0	147.8	1.0	169.9
716.00	715.87	-10.27	6.42	12.1	148.0	1.0	154.5
721.00	720.87	-10.35	6.46	12.2	148.0	1.0	157.4
726.00	725.87	-10.44	6.48	12.3	148.2	1.0	175.2
731.00	730.87	-10.53	6.51	12.4	148.3	0.9	154.2
736.00	735.86	-10.60	6.55	12.5	148.3	0.9	153.6
741.00	740.86	-10.68	6.59	12.5	148.3	0.9	146.8
746.00	745.86	-10.75	6.63	12.6	148.4	0.9	152.8
751.00	750.86	-10.84	6.65	12.7	148.5	1.3	171.2
756.00	755.86	-10.95	6.68	12.8	148.6	0.9	146.2
761.00	760.86	-11.02	6.72	12.9	148.6	0.8	154.0
766.00	765.86	-11.12	6.74	13.0	148.8	1.3	169.9
771.00	770.86	-11.20	6.78	13.1	148.8	0.9	151.0
776.00	775.86	-11.27	6.81	13.2	148.9	0.9	155.9
781.00	780.86	-11.35	6.85	13.3	148.9	0.9	151.2
786.00	785.86	-11.42	6.89	13.3	148.9	0.9	153.9
791.00	790.86	-11.49	6.92	13.4	149.0	0.9	162.7
796.00	795.85	-11.58	6.96	13.5	149.0	0.9	148.2
801.00	800.85	-11.65	7.00	13.6	149.0	1.2	143.7
806.00	805.85	-11.72	7.05	13.7	149.0	0.9	145.8
811.00	810.85	-11.79	7.10	13.8	149.0	0.9	148.9
816.00	815.85	-11.86	7.14	13.8	149.0	1.2	171.3
821.00	820.85	-11.95	7.20	13.9	148.9	1.0	143.2
826.00	825.85	-12.03	7.26	14.1	148.9	1.1	137.8
831.00	830.85	-12.10	7.32	14.1	148.8	1.0	141.0
836.00	835.85	-12.17	7.37	14.2	148.8	1.0	145.3
841.00	840.85	-12.25	7.42	14.3	148.8	1.0	149.5
846.00	845.85	-12.34	7.49	14.4	148.7	1.2	140.5
851.00	850.84	-12.42	7.56	14.5	148.7	1.2	145.4
856.00	855.84	-12.52	7.63	14.7	148.6	1.3	160.1
861.00	860.84	-12.61	7.71	14.8	148.6	1.2	139.0
863.10	862.94	-12.65	7.74	14.8	148.5	1.5	168.3

GAMMA - NEUTRON

FD17-01

Century Wireline Services

COMPANY	COLONIAL COAL CORP.
WELL	FD17-01
WELL EXT	
PROJECT	FLATBED
COUNTY	N/A
PROVINCE	BRITISH COLUMBIA
COUNTRY	CANADA
LICENSE	N/A

COMPANY : COLONIAL COAL CORP.
WELL : FD17-01
WELL EXT :
PROJECT : FLATBED
COUNTY : N/A
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. UTM-N : 6088447
Long. UTM-E : 635350

DISPLAY7_JL47

			Elevations:			Other Services:
PERMANENT DATUM	GL		KB	N/A	M	DEN
DRL MEASURED FROM	GL		DF	N/A	M	SON
LOG MEASURED FROM	GL		GL	1215.00	M	DEV
ELEV. PERM. DATUM		M				

DATE	08/29/17 21:34
DEPTH – DRILLER	864.72 M
DEPTH – LOGGER	863.17 M
LOG TOP	0.00 M
LOG BOTTOM	863.10 M
BIT SIZE	96.00 MM
CASING – DRILLER	100.28 M
CASING – LOGGER	102.72 M
CASING O.D.	114.30 MM
CASING TYPE	STEEL
FLUID TYPE	WATER
FLUID DENSITY	1.00 G/CC
FLUID VISCOSITY	N/A
FLUID PH	N/A
MUD SOURCE	DRILLER
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	RIG1
FLUID LEVEL	0.00
RECORDED BY	R.KOBES
WITNESSED BY	N.ARCHER
REMARKS 1	LOGGED THROUGH CORE PIPE
REMARKS 2	
REMARKS 3	

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

MAIN NEUTRON (IN RODS) LOG 1:100 FD17-01 08/29/17

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 17.00 ELECT. CUTOFF : 75000 BIT SIZE : 96.00 MM
PRESENTATION : 9057A_Colonial-2017-new.0 -- 09/06/2017 DISPLAY7_JL47

MAIN NEUTRON (IN RODS) LOG 1:100 FD17-01 08/29/17

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 17.00 ELECT. CUTOFF : 75000 BIT SIZE : 96.00 MM
PRESENTATION : 9057A_Colonial-2017-new.0 -- 09/06/2017 DISPLAY7_JL47

TOOL CALIBRATION FD17-01 08/29/17 21:34
TOOL 9057A TM VERSION 2005
SERIAL NUMBER 2425

	DATE	TIME	SENSOR		STANDARD Point1	STANDARD Point2	RESPONSE [CPS] Point1	RESPONSE [CPS] Point2
1	May10,17	10:32:38	GAMMA	[API-GR]	0.100	545.000	0.000	602
2	Aug01,17	14:49:42	NEUTRON	[API-N]	0.000	271.000	1.000	74.000
3	Oct27,16	11:33:45	SP	[MV]	0.000	348.000	320183	150710
4	Oct27,16	11:33:48	RES(16N)	[OHM-M]	0.000	1950.970	3899	429975
5	Oct27,16	11:33:51	RES(64N)	[OHM-M]	0.000	1993.870	3335	437551
6	Oct27,16	11:33:54	TEMP	[DEG-F]	1.000	53.800	329224	398654
7	Oct27,16	11:33:58	RES	[OHM]	0.000	942.000	4628	164153
8	Oct27,16	11:34:01	POR(NEU)	[PERCEN	100.000		35.900	

TOOL CALIBRATION FD17-01 Oct27,16 11:34:01
TOOL 9239C TM VERSION 2005
SERIAL NUMBER 2778

	DATE	TIME	SENSOR		STANDARD Point1	STANDARD Point2	RESPONSE [CPS] Point1	RESPONSE [CPS] Point2
1	Jul27,17	13:47:38	GAMMA	[API-GR]	0.010	545.000	0.000	652
2	Jul27,17	13:48:31	VOLTAGE	[MV]	27.400	237.300	15978	43722
3	Jul27,17	10:16:52	CALIPER	[MM]	101.600	150.000	190767	302346
4	Jul31,17	15:23:33	DEN(LS)	[G/CC]	1.620	2.612	14488	2083
5	Jul31,17	15:23:47	DEN(SS)	[G/CC]	1.590	2.580	41505	16093
6	Jun14,17	08:16:00	CALIPERL	[CPS]	Default	Default	Default	Default
7	Jul27,17	13:48:44	CURRENT	[UA]	27.400	237.300	5856	22480
8	Jul27,17	12:25:14	F	[CPS]	Default		Default	
9	Jul27,17	12:25:18	X	[CPS]	Default		Default	

TOOL CALIBRATION FD17-01 Jul27,17 12:25:18
TOOL 9321A2 TM VERSION 2005
SERIAL NUMBER 704

	DATE	TIME	SENSOR		STANDARD Point1	STANDARD Point2	RESPONSE [CPS] Point1	RESPONSE [CPS] Point2
1	Aug30,17	23:19:03	GAMMA	[API-GR]	0.100	545.000	0.000	732

中国地质调查局	地质调查项目	1:200	附图
成都地质矿产研究所	地下水监测		

地下水位动态曲线	1:200	附图	
地下水位动态曲线			

Gordon Creek Project

(Flatbed Property)

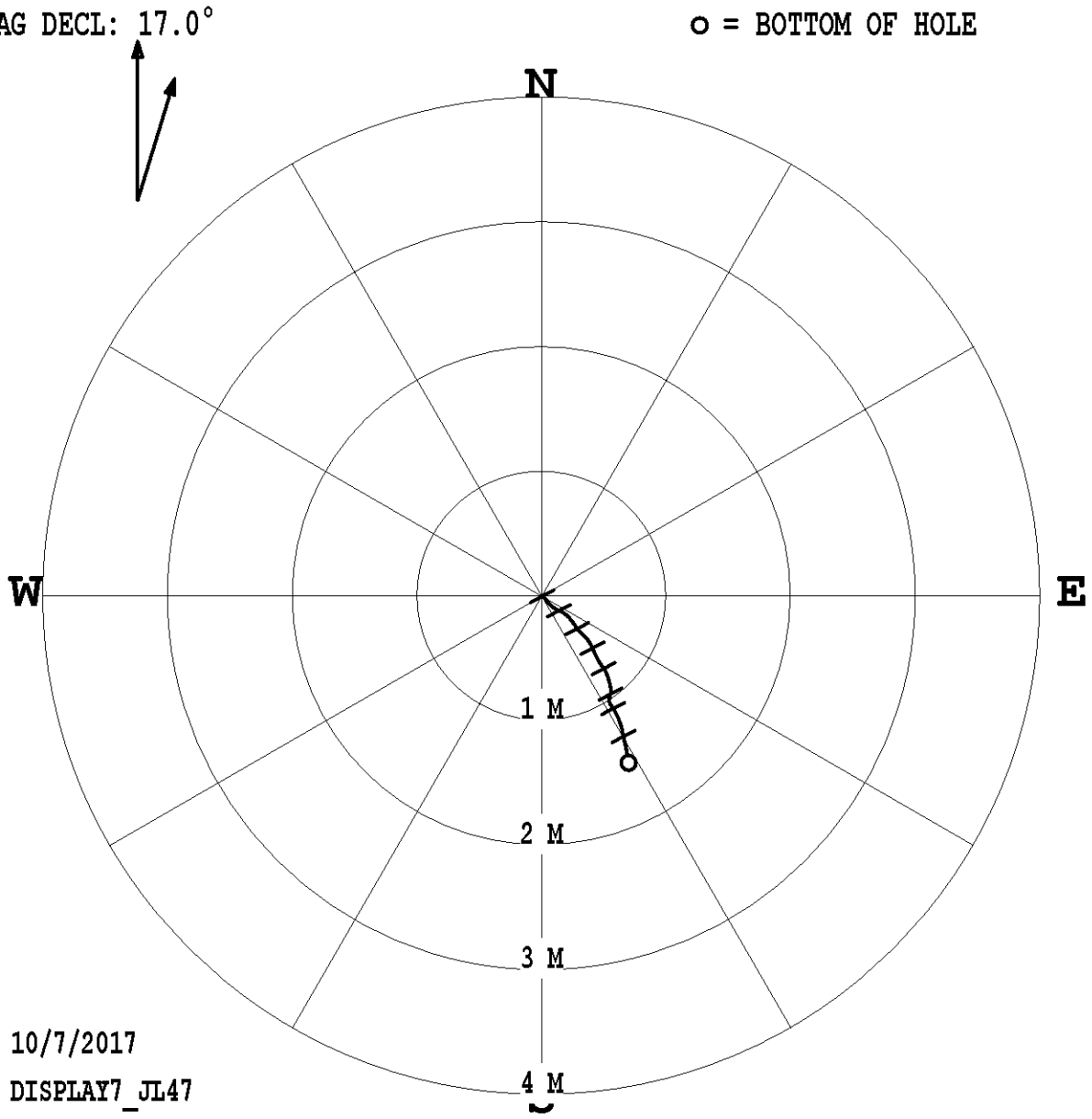
Geophysical Logs

FD17-03A

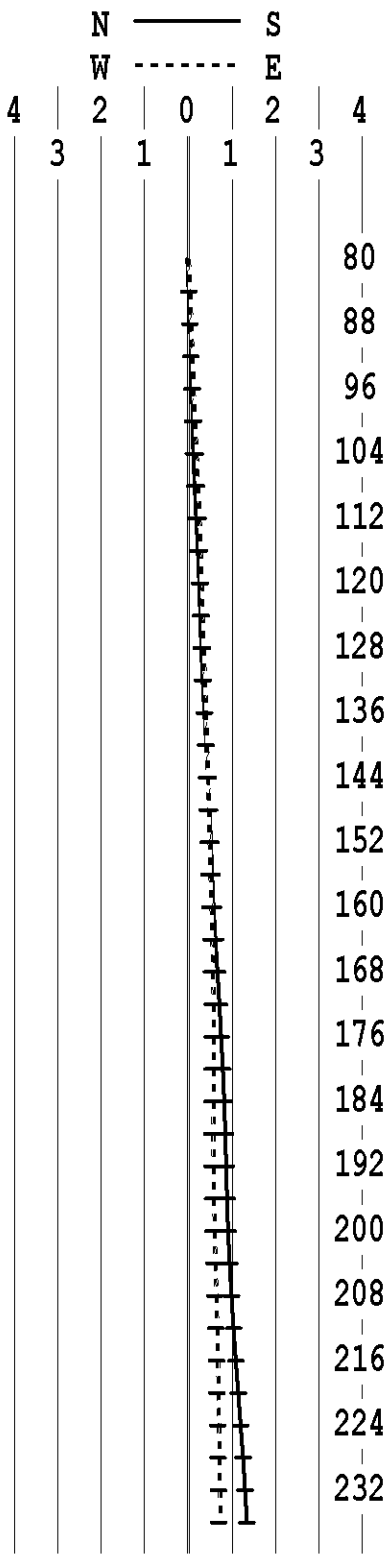
PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: COLONIAL COAL CORP.
LOCATION: FLATBED
HOLE ID: FD17-03A
DATE OF LOG: 10/07/17
PROBE: 9411A 2371
MAG DECL: 17.0°

DISTANCE: 1.51 M
AZIMUTH: 152.46
TRUE DEPTH: 240.00 M
SCALE: 1 M/Division
+ = 20 M INCR
o = BOTTOM OF HOLE



10/7/2017
DISPLAY7_JL47



FD17-03A_10-07-17_09-43_9411A_005_80.000_240.000_DEVI

* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : COLONIAL COAL CORP. HOLE ID. : FD17-03A
FIELD OFFICE : CENTURY DATE OF LOG : 10/07/17
DATA FROM : N/A PROBE : 9411A , 2371
MAG. DECL. : 17.00 DEPTH UNITS : METERS
LOG: FD17-03A_10-07-17_09-43_9411A_005_80.000_240.000_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
80.00	80.01	-0.00	0.00	0.0	107.3	0.6	135.0
85.00	85.00	-0.04	0.04	0.1	131.9	0.5	134.6
90.00	90.00	-0.07	0.07	0.1	134.8	0.4	147.8
95.00	95.00	-0.10	0.10	0.1	133.4	0.5	119.0
100.00	100.00	-0.12	0.14	0.2	129.9	0.5	111.3
105.00	105.00	-0.14	0.18	0.2	127.5	0.5	128.6
110.00	110.00	-0.18	0.23	0.3	128.5	0.6	141.4
115.00	115.00	-0.22	0.26	0.3	130.7	0.6	147.1
120.00	120.00	-0.26	0.28	0.4	132.5	0.5	150.6
125.00	125.00	-0.29	0.31	0.4	133.2	0.5	125.2
130.00	130.00	-0.32	0.34	0.5	133.0	0.7	136.6
135.00	135.00	-0.37	0.38	0.5	134.0	0.7	149.2
140.00	140.00	-0.42	0.41	0.6	135.7	0.6	156.5
145.00	145.00	-0.47	0.43	0.6	137.3	0.6	153.7
150.00	150.00	-0.51	0.45	0.7	138.4	0.4	191.5
155.00	155.00	-0.54	0.47	0.7	139.0	0.6	144.1
160.00	160.00	-0.58	0.50	0.8	139.4	0.6	143.5
165.00	165.00	-0.63	0.52	0.8	140.3	0.7	164.0
170.00	170.00	-0.69	0.54	0.9	141.8	0.7	161.9
175.00	175.00	-0.74	0.55	0.9	143.1	0.6	172.1
180.00	180.00	-0.79	0.55	1.0	145.0	0.5	192.3
185.00	185.00	-0.82	0.54	1.0	146.5	0.4	184.4
190.00	190.00	-0.85	0.54	1.0	147.3	0.3	178.7
195.00	195.00	-0.87	0.55	1.0	147.6	0.4	148.3
200.00	200.00	-0.90	0.57	1.1	147.6	0.5	157.5
205.00	205.00	-0.94	0.60	1.1	147.6	0.7	152.3
210.00	210.00	-1.00	0.62	1.2	148.0	0.7	154.8
215.00	215.00	-1.06	0.64	1.2	148.8	0.8	164.2
220.00	220.00	-1.12	0.66	1.3	149.8	0.7	175.6
225.00	225.00	-1.19	0.67	1.4	150.6	0.7	196.2
230.00	230.00	-1.25	0.68	1.4	151.4	0.6	168.0
235.00	235.00	-1.30	0.70	1.5	151.9	0.6	169.7
239.90	239.90	-1.34	0.70	1.5	152.4	0.4	197.9

DIPMETER ANALYSIS
FD17-03A

Century WIRELINE SERVICES

COMPANY	COLONIAL COAL CORP.
WELL	FD17-03A
WELL EXT	
PROJECT	FLATBED
COUNTY	N/A
PROVINCE	BRITISH COLUMBIA
COUNTRY	CANADA
LICENSE	N/A

COMPANY : COLONIAL COAL CORP.
WELL : FD17-03A
WELL EXT :
PROJECT : FLATBED
COUNTY : N/A
PROVINCE : BRITISH COLUMBIA
COUNTRY : CANADA
LICENSE : N/A
UNIQ ID : N/A
LSD : N/A SECTION: N/A TOWNSHIP: N/A RANGE: N/A
LOCATION : N/A
Lat, UTM-N : 0636170
Long, UTM-E : 6089997
DISPLAY7_JL47

PERMANENT DATUM	GL	Elevations:	Other Services:
DRL MEASURED FROM	GL	KB N/A M	DEV
LOG MEASURED FROM	GL	DF N/A M	
ELEV. PERM. DATUM	N/A M	GL 1215.00 M	

DATE	10/07/17 09:43
DEPTH -- DRILLER	N/A M
DEPTH -- LOGGER	240.00 M
LOG TOP	0.00 M
LOG BOTTOM	240.00 M
BIT SIZE	96.00 MM
CASING -- DRILLER	75.00 M
CASING -- LOGGER	75.00 M
CASING O.D.	114.30 MM
CASING TYPE	STEEL
FLUID TYPE	WATER
FLUID DENSITY	1.00 G/CC
FLUID VISCOSITY	N/A
FLUID PH	N/A
MUD SOURCE	DRILLER
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	RIG1
FLUID LEVEL	0.00
RECORDED BY	R.KOBES
WITNESSED BY	N.ARCHER
REMARKS 1	
REMARKS 2	
REMARKS 3	

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

MAIN DIPMETER LOG 1:100 FD17-03A 10/07/17

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 17.00 ELECT. CUTOFF : 75000 BIT SIZE : 96.00 MM
PRESENTATION : COLONIAL DIPMETER 2017.0 -- 10/07/2017 DISPLAY7_JL47

MAIN DIPMETER LOG 1:100 FD17-03A 10/07/17

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 17.00 ELECT. CUTOFF : 75000 BIT SIZE : 96.00 MM
PRESENTATION : COLONIAL DIPMETER 2017.0 -- 10/07/2017 DISPLAY7_JL47

TOOL CALIBRATION FD17-03A 10/07/17 09:43
TOOL 9411A TM VERSION 7
SERIAL NUMBER 2371

	DATE	TIME	SENSOR		STANDARD Point1	STANDARD Point2	RESPONSE [CPS] Point1	RESPONSE [CPS] Point2
1	May09,17	15:01:49	GAMMA	[API-GR]	0.100	545.000	0.000	616
2	Nov04,16	08:15:13	VOLTAGE	[MV]	25.200	91.000	668	2105
3	Apr20,17	08:26:35	CUR1	[UA]	2.520	9.100	6804	22790
4	Apr20,17	08:26:54	CUR2	[UA]	2.520	9.100	6734	22649
5	Apr20,17	08:27:06	CUR3	[UA]	2.520	9.100	6808	22786
6	Apr20,17	08:27:18	CUR4	[UA]	2.520	9.100	7544	24503
7	May09,17	15:02:02	CALIPER1	[CM]	100.000	200.000	3407	7488
8	May09,17	15:02:13	CALIPER2	[CM]	100.000	200.000	5865	9461

Gordon Creek Project

(Flatbed Property)

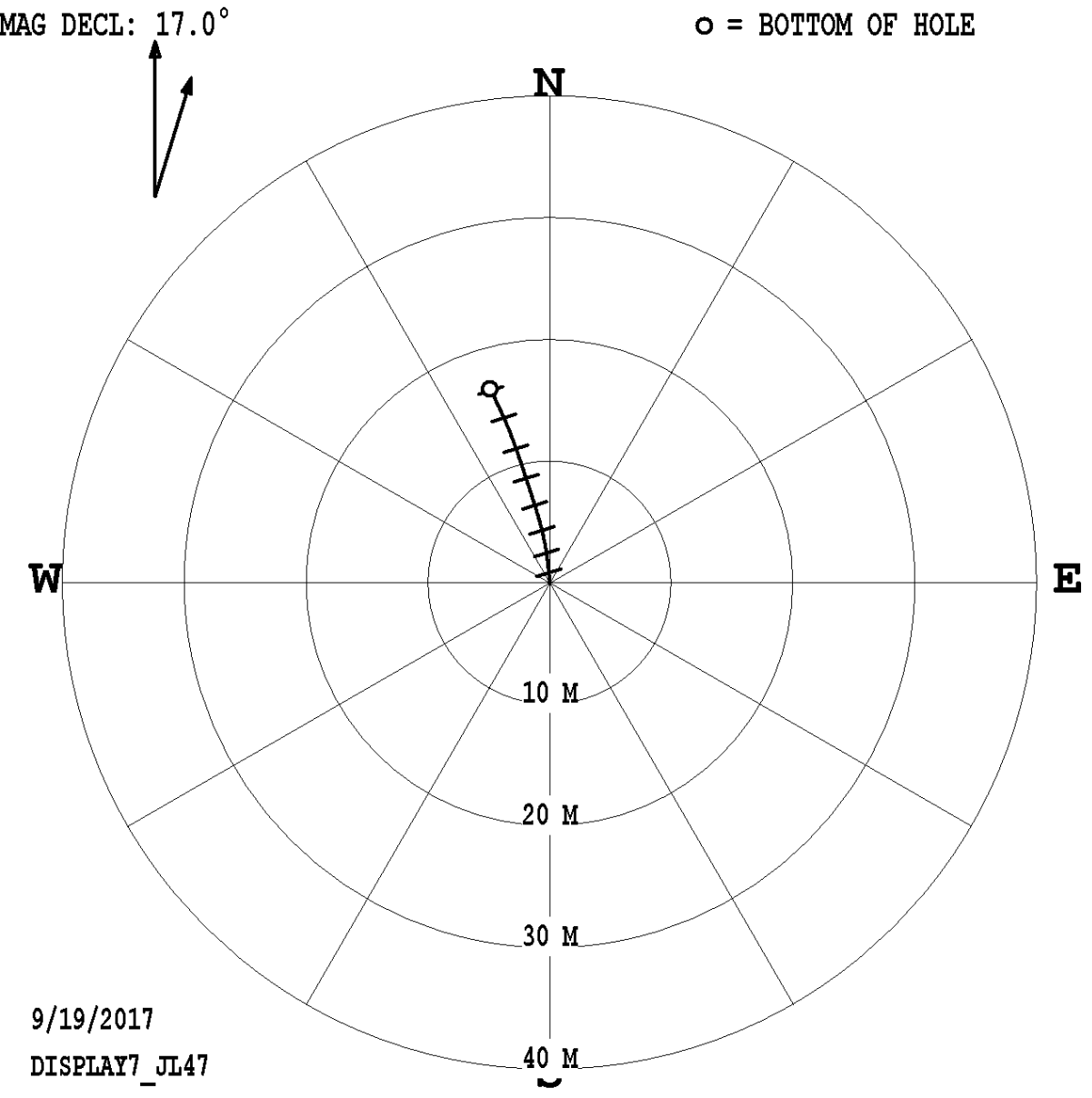
Geophysical Logs

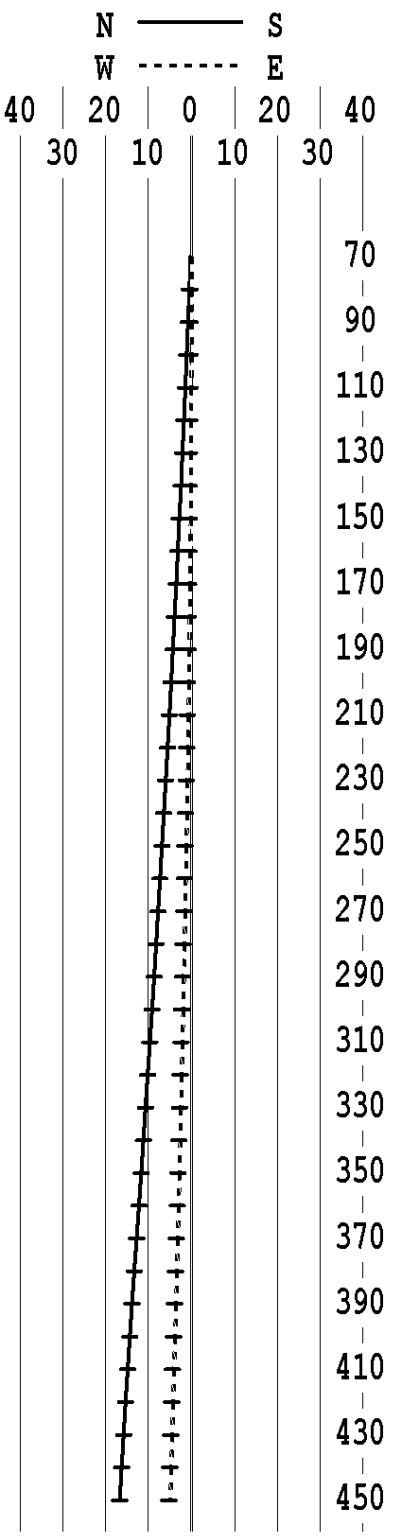
FD17-04

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: COLONIAL COAL CORP.
LOCATION: FLATBED
HOLE ID: FD17-04
DATE OF LOG: 09/17/17
PROBE: 9411A 2371
MAG DECL: 17.0°

DISTANCE: 16.65 M
AZIMUTH: 342.90
TRUE DEPTH: 452.56 M
SCALE: 5 M/Division
+ = 50 M INCR
o = BOTTOM OF HOLE





FD17-04_09-17-17_15-28_9411A_005_70.000_452.940_DEVI

* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : COLONIAL COAL CORP. HOLE ID. : FD17-04
FIELD OFFICE : CENTURY DATE OF LOG : 09/17/17
DATA FROM : N/A PROBE : 9411A , 2371
MAG. DECL. : 17.00 DEPTH UNITS : METERS
LOG: FD17-04_09-17-17_15-28_9411A_005_70.000_452.940_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
70.00	70.00	0.00	0.00	0.0	0.6	1.7	345.8
75.00	75.00	0.13	-0.03	0.1	348.3	1.4	355.1
80.00	80.00	0.25	-0.03	0.3	353.4	1.5	0.1
85.00	84.99	0.39	-0.03	0.4	355.3	1.7	356.7
90.00	89.99	0.55	-0.05	0.5	355.2	1.9	352.2
95.00	94.99	0.70	-0.08	0.7	353.8	1.7	348.1
100.00	99.99	0.84	-0.09	0.8	353.9	1.6	0.1
105.00	104.99	0.99	-0.09	1.0	354.5	1.7	356.2
110.00	109.98	1.15	-0.11	1.2	354.6	1.9	351.9
115.00	114.98	1.31	-0.14	1.3	353.8	1.8	347.7
120.00	119.98	1.46	-0.16	1.5	353.8	1.7	358.1
125.00	124.98	1.62	-0.17	1.6	354.2	1.9	356.8
130.00	129.97	1.79	-0.18	1.8	354.2	2.0	350.8
135.00	134.97	1.96	-0.22	2.0	353.6	1.9	347.2
140.00	139.97	2.11	-0.24	2.1	353.5	1.8	358.2
145.00	144.96	2.28	-0.25	2.3	353.7	2.0	353.7
150.00	149.96	2.46	-0.28	2.5	353.4	2.1	345.5
155.00	154.96	2.63	-0.32	2.6	353.1	2.0	355.6
160.00	159.95	2.81	-0.33	2.8	353.2	2.2	352.9
165.00	164.95	3.00	-0.37	3.0	352.9	2.2	344.6
170.00	169.95	3.17	-0.41	3.2	352.6	2.1	354.8
175.00	174.94	3.36	-0.43	3.4	352.7	2.3	350.5
180.00	179.94	3.56	-0.48	3.6	352.3	2.3	342.4
185.00	184.94	3.74	-0.52	3.8	352.1	2.2	352.3
190.00	189.93	3.93	-0.56	4.0	352.0	2.3	345.9
195.00	194.93	4.12	-0.61	4.2	351.6	2.1	346.6
200.00	199.93	4.31	-0.65	4.4	351.5	2.3	348.6
205.00	204.92	4.51	-0.69	4.6	351.2	2.4	341.4
210.00	209.92	4.71	-0.75	4.8	350.9	2.3	349.5
215.00	214.91	4.91	-0.79	5.0	350.8	2.4	346.6
220.00	219.91	5.11	-0.86	5.2	350.5	2.5	339.6
225.00	224.90	5.31	-0.92	5.4	350.2	2.4	347.9
230.00	229.90	5.52	-0.97	5.6	350.1	2.5	344.3
235.00	234.89	5.73	-1.04	5.8	349.7	2.5	338.5
240.00	239.89	5.93	-1.10	6.0	349.5	2.5	347.0
245.00	244.88	6.15	-1.16	6.3	349.3	2.6	342.4
250.00	249.88	6.36	-1.24	6.5	349.0	2.6	338.8
255.00	254.87	6.58	-1.30	6.7	348.8	2.6	345.3
260.00	259.87	6.80	-1.37	6.9	348.6	2.7	340.9
265.00	264.86	7.01	-1.45	7.2	348.3	2.6	342.1
270.00	269.86	7.23	-1.50	7.4	348.2	2.7	343.8
275.00	274.85	7.46	-1.58	7.6	348.0	2.7	338.5
280.00	279.85	7.67	-1.65	7.8	347.9	2.6	346.5
285.00	284.84	7.90	-1.72	8.1	347.7	2.8	341.6
290.00	289.84	8.13	-1.80	8.3	347.5	2.8	337.7
295.00	294.83	8.35	-1.87	8.6	347.4	2.8	345.1
300.00	299.82	8.59	-1.94	8.8	347.2	2.9	341.6
305.00	304.82	8.82	-2.03	9.1	347.0	2.8	339.1
310.00	309.81	9.06	-2.10	9.3	346.9	2.9	343.9
315.00	314.81	9.30	-2.18	9.6	346.8	3.0	339.6
320.00	319.80	9.54	-2.28	9.8	346.6	2.9	340.1
325.00	324.79	9.79	-2.35	10.1	346.5	3.0	344.4
330.00	329.79	10.04	-2.43	10.3	346.4	3.0	339.5
335.00	334.78	10.28	-2.52	10.6	346.2	2.9	338.7
340.00	339.77	10.52	-2.60	10.8	346.1	3.0	343.7
345.00	344.77	10.77	-2.68	11.1	346.0	3.0	340.7
350.00	349.76	11.02	-2.78	11.4	345.8	3.0	336.3
355.00	354.75	11.26	-2.87	11.6	345.7	2.9	342.4
360.00	359.74	11.51	-2.95	11.9	345.6	3.1	341.0
365.00	364.74	11.77	-3.04	12.2	345.5	3.2	338.1
370.00	369.73	12.02	-3.15	12.4	345.3	3.1	337.7
375.00	374.72	12.28	-3.24	12.7	345.2	3.2	343.4
380.00	379.71	12.54	-3.33	13.0	345.1	3.3	338.0
385.00	384.71	12.80	-3.45	13.3	344.9	3.2	333.7
390.00	389.70	13.05	-3.56	13.5	344.7	3.0	340.2
395.00	394.69	13.30	-3.65	13.8	344.7	3.1	338.0
400.00	399.68	13.54	-3.76	14.1	344.5	3.1	334.3
405.00	404.68	13.78	-3.88	14.3	344.3	2.9	333.4
410.00	409.67	14.01	-3.98	14.6	344.1	2.9	339.3
415.00	414.66	14.25	-4.08	14.8	344.0	3.0	335.6
420.00	419.66	14.49	-4.20	15.1	343.8	3.0	331.4
425.00	424.65	14.71	-4.32	15.3	343.6	2.9	332.4
430.00	429.64	14.94	-4.42	15.6	343.5	2.8	338.4
435.00	434.64	15.16	-4.51	15.8	343.4	2.8	335.7
440.00	439.63	15.38	-4.62	16.1	343.3	2.8	333.2
445.00	444.63	15.59	-4.72	16.3	343.1	2.7	332.6
450.00	449.62	15.80	-4.83	16.5	343.0	2.6	331.0
452.94	452.56	15.91	-4.90	16.6	342.9	2.5	328.9

Century WIRELINE SERVICES

DIPMETER ANALYSIS
FD17-04

COMPANY	COLONIAL COAL CORP.
WELL	FD17-04
WELL EXT	
PROJECT	FLATBED
COUNTY	N/A
PROVINCE	BRITISH COLUMBIA
COUNTRY	CANADA
LICENSE	N/A

COMPANY : COLONIAL COAL CORP.
WELL : FD17-04
WELL EXT :
PROJECT : FLATBED
COUNTY : N/A
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, UTM-N : 637143
Long, UTM-E : 6088562

DISPLAY7_JL47

PERMANENT DATUM	GL	Elevations:	
DRL MEASURED FROM	GL	KB	N/A M
LOG MEASURED FROM	GL	DF	N/A
ELEV. PERM. DATUM	GL M	GL	1274.00 M

Other Services:

DATE	09/17/17 15:28	
DEPTH -- DRILLER	579.68	M
DEPTH -- LOGGER	453.30	M
LOG TOP	0.00	M
LOG BOTTOM	452.94	M
BIT SIZE	96.00	MM
CASING -- DRILLER	66.45	M
CASING -- LOGGER	66.00	M
CASING O.D.	114.30	MM
CASING TYPE	STEEL	
FLUID TYPE	WATER	
FLUID DENSITY	1.00	G/CC
FLUID VISCOSITY	N/A	
FLUID PH	N/A	
MUD SOURCE	DRILLER	
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	RIG1	
FLUID LEVEL	N/A	
RECORDED BY	R.KOBES	
WITNESSED BY	N.ARCHER	
REMARKS 1		
REMARKS 2		
REMARKS 3		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

MAIN DIPMETER LOG 1:100 FD17-04 09/17/17

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 17.00 ELECT. CUTOFF : 75000 BIT SIZE : 96.00 MM
PRESENTATION : \COLONIAL DIPMETER 2017.0 -- 09/19/2017 DISPLAY7_JL47

MAIN DIPMETER LOG 1:100 FD17-04 09/17/17

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 17.00 ELECT. CUTOFF : 75000 BIT SIZE : 96.00 MM
PRESENTATION : \COLONIAL DIPMETER 2017.0 -- 09/19/2017 DISPLAY7_JL47

TOOL CALIBRATION FD17-04 09/17/17 15:28
TOOL 9411A TM VERSION 7
SERIAL NUMBER 2371

	DATE	TIME	SENSOR		STANDARD Point1	STANDARD Point2	RESPONSE [CPS] Point1	RESPONSE [CPS] Point2
1	May09,17	15:01:49	GAMMA	[API-GR]	0.100	545.000	0.000	616
2	Nov04,16	08:15:13	VOLTAGE	[MV]	25.200	91.000	668	2105
3	Apr20,17	08:26:35	CUR1	[UA]	2.520	9.100	6804	22790
4	Apr20,17	08:26:54	CUR2	[UA]	2.520	9.100	6734	22649
5	Apr20,17	08:27:06	CUR3	[UA]	2.520	9.100	6808	22786
6	Apr20,17	08:27:18	CUR4	[UA]	2.520	9.100	7544	24503
7	May09,17	15:02:02	CALIPER1	[CM]	100.000	200.000	3407	7488
8	May09,17	15:02:13	CALIPER2	[CM]	100.000	200.000	5865	9461