BC Geological Survey Coal Assessment Report 1073

Fording River Operations

2020 Exploration Annual Assessment Report

Teck



COAL ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Fording River Operations 2020 Exploration Annual Assessment Report

TOTAL COST: \$9,227,710

AUTHOR: Barry F. Musil SIGNATURE: Originals Signed and Sealed by Author

NOTICE OF WORK PERMIT NUMBER/DATE: Castle Mountain CX-5-022 / Aug 24, 2018 - Aug. 24, 2023

YEAR OF WORK: 2020

PROPERTY NAME: Castle Mountain (FRO), Mount Tuxford (FRO)

COAL LICENSE(S) AND/OR LEASES ON WHICH PHYSICAL WORK WAS DONE: COAL LEASES: 389310, Lot 1 DL 4588 Greenhills, 389311

MINERAL INVENTORY MINFILE NUMBER: File: 14675-20/1630586

 MINING DIVISION: Fort Steele

 NTS / BCGS:
 082J0262

 LATITUDE:
 50° 13' 01"

 LONGITUDE:
 -114° 50' 28" (at centre of work)

 UTM Zone:
 11
 EASTING:
 654000

NORTHING: 5565000

OWNER: Teck Coal Limited

MAILING ADDRESS: PO BOX 100, Elkford, BC, V0B 1H0

OPERATOR: Teck Coal Limited

MAILING ADDRESS: PO BOX 100, Elkford, BC, V0B 1H0

REPORT KEYWORDS:

Interbedded Elk Formation, Mist Mountain Formation, Morrissey Formation, Fernie Formation, Alexander Creek Syncline, Ewin Pass Thrust, Erickson Fault, Coal, Sampling, Proven/Probable Reserves, Measured/Indicated Resources, Teck Resources Ltd., Coal, Castle Mountain.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: Annual FRO Exploration Assessment Reports Since 1970

SUMMARY OF TYPES OF WORK IN THIS REPORT		EXTENT OF WORK (in metric units)	ON WHICH TENURES
C	EOLOGICAL (scale, area)		
	Ground, mapping	10 km²	Coal Lease: 389311
	Photo interpretation		
GE	OPHYSICAL (line-kilometres)		
	Ground		
	Ground Penetrating Radar(GPR)	6,300 meters	Coal Lease: 389310
	Airborne		
	(Specify types)		
	Borehole		
	Gamma, Neutron	21,095.68 meters	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Density	20,425.70 meters	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Caliper	20,425.70 meters	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Deviation	21,095.68 meters	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Dip	20,127.66 meters	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Others (specify): Optial/Acoustic Televiewer	10,671.05 meters optical/acoustic	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Core	6,921.60 meters	Coal Lease: 389310
	Non-core	14,173.84 meters	Coal Lease: 389310, Lot 1 DL 4588 Greenhills
S	AMPLING AND ANALYSES		
Total # of Samples			
6022	Raw Ash		Coal Lease: 389310, Lot 1 DL 4588 Greenhills
430	Proximate		Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Ultimate		
334	Petrographic		Coal Lease: 389310, Lot 1 DL 4588 Greenhills
	Vitrinite reflectance		
5	Carbonization and Coke Testing		Coal Lease: 389310, Lot 1 DL 4588 Greenhills
340	Mineral Ash Analysis		Coal Lease: 389310, Lot 1 DL 4588 Greenhills
334	Single Gravity Wash		Coal Lease: 389310, Lot 1 DL 4588 Greenhills

Parts of Appendix 3, and Table 8 remain confidential under the terms of the Coal Act Regulation and have been removed from the public version.

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/251 2004

Contents

Fording River Assessment Report	6
1. INTRODUCTION	6
i. Property Description and Access	6
ii. Property History	6
2. GEOLOGY	8
i. Stratigraphy	8
ii. Structure	9
3. 2020 SUMMARY OF EXPLORATION WORK	11
i. 2020 Castle Mountain Exploration Project Objectives	11
ii. Castle Mountain Summary of Completed Work	
iii. Mount Tuxford Summary of Completed Work	17
4. RESULTS	17
i. Castle Mountain	17
ii Mount Tuxford	
5. CONCLUSION	
6. Author's Qualifications	20
Appendix 1	
Appendix 2	
Appendix 3	
Appendix 4	

Appendix 5

Appendix 6

Appendix 7

Fording River Operations Assessment Report

INTRODUCTION

This report presents results of coal exploration activities conducted during the summer and fall of 2020. Work was completed on the Castle Mountain Exploration project and field mapping was undertaken on Mount Tuxford. Properties are located in the Elk Valley Coalfield, Teck Coal Limited, Fording River Operation, in southeastern British Columbia. The exploration work was completed by Fording River site personnel.

Property Description and Access

The Castle Mountain and Mount Tuxford Exploration properties are close to the Fording River Property in the Upper Fording River Valley, approximately 26 kilometers north, and east of Elkford, BC. Access to the Fording River property is by paved road northeast from Elkford along the Fording River Valley, or north along the Elk River Valley via the Forestry Service gravel road or the Kan-Elk Powerline road. Refer to Figure 1 for property location.

Property History

The Elk River portion of the property was actively explored by the Canadian Pacific Railway Company in the period between 1902 and 1908. Until 1947, the property was comprised of 10,276 hectares in 40 Crown Granted Lots. In that year, the holdings were reduced to 2,979 hectares in 15 Crown Granted Lots. In 1967 and 1968, Canadian Pacific Oil and Gas reacquired part of the coal lands which had been abandoned in 1947. An additional nine Coal Licenses located at the south end of the property were acquired in 2001. At the present time, the Fording River Property consists of 22,128 hectares, held on seven coal leases and 21 coal licenses. The tenure number, name, owner, grant, and area are summarized in Table 1. All licenses are in British Columbia in the Fort Steel Mining Division. Refer to Figure 2 for coal lease and license location.

Mining operations, which commenced in 1971, have produced more than 299 million tonnes of clean metallurgical and thermal coal for markets in North and South America, Africa, Europe, and Asia.

Table	1:	FRO	Coal	Licenses
		-		

Code	Name	Parties	Status	Grant Date	Area (Ha)	Project
389275	COAL LEASE No. 01	TECK COAL LIMITED (100%)	Active	1/1/1974	1,009	Fording River Operations, BC
389282	COAL LEASE No. 02	TECK COAL LIMITED (100%)	Active	5/19/1977	2,250	Fording River Operations, BC
389285	COAL LEASE No. 05	TECK COAL LIMITED (100%)	Active	3/17/1982	644	Fording River Operations, BC
389290	COAL LEASE No. 09	TECK COAL LIMITED (100%)	Active	10/1/1991	1,096	Fording River Operations, BC
389310	COAL LEASE No. 16	TECK COAL LIMITED (100%)	Active	5/9/1998	2,859	Fording River Operations, BC
389311	COAL LEASE No. 17	TECK COAL LIMITED (100%)	Active	5/9/1999	8,180	Fording River Operations, BC
389312	COAL LEASE No. 18	TECK COAL LIMITED (100%)	Active	1/30/2000	1,298	Fording River Operations, BC
402047	CLIC-402047	TECK COAL LIMITED (100%)	Active	5/8/2003	259	Fording River Operations, BC
402048	CLIC-402048	TECK COAL LIMITED (100%)	Active	5/8/2003	129	Fording River Operations, BC
402049	CLIC-402049	TECK COAL LIMITED (100%)	Active	5/8/2003	258	Fording River Operations, BC
402050	CLIC-402050	TECK COAL LIMITED (100%)	Active	5/8/2003	259	Fording River Operations, BC
402051	CLIC-402051	TECK COAL LIMITED (100%)	Active	5/8/2003	261	Fording River Operations, BC
402052	CLIC-402052	TECK COAL LIMITED (100%)	Active	5/8/2003	258	Fording River Operations, BC
402053	CLIC-402053	TECK COAL LIMITED (100%)	Active	5/8/2003	129	Fording River Operations, BC
402054	CLIC-402054	TECK COAL LIMITED (100%)	Active	5/8/2003	129	Fording River Operations, BC
402055	CLIC-402055	TECK COAL LIMITED (100%)	Active	5/8/2003	259	Fording River Operations, BC
402056	CLIC-402056	TECK COAL LIMITED (100%)	Active	5/8/2003	259	Fording River Operations, BC
402057	CLIC-402057	TECK COAL LIMITED (100%)	Active	5/8/2003	130	Fording River Operations, BC
402058	CLIC-402058	TECK COAL LIMITED (100%)	Active	5/8/2003	240	Fording River Operations, BC
402105	CLIC-402105	TECK COAL LIMITED (100%)	Active	5/8/2003	259	Fording River Operations, BC
402106	CLIC-402106	TECK COAL LIMITED (100%)	Active	5/8/2003	325	Fording River Operations, BC
402110	CLIC-402110	TECK COAL LIMITED (100%)	Active	5/8/2003	258	Fording River Operations, BC
402111	CLIC-402111	TECK COAL LIMITED (100%)	Active	5/8/2003	255	Fording River Operations, BC
402112	CLIC-402112	TECK COAL LIMITED (100%)	Active	5/8/2003	228	Fording River Operations, BC

402113	CLIC-402113	TECK COAL LIMITED (100%)	Active	5/8/2003	95	Fording River Operations, BC
402115	CLIC-402115	TECK COAL LIMITED (100%)	Active	5/8/2003	284	Fording River Operations, BC
417067	CLIC-417067	TECK COAL LIMITED (100%)	Active	10/14/2005	259	Fording River Operations, BC
417068	CLIC-417068	TECK COAL LIMITED (100%)	Active	10/14/2005	259	Fording River Operations, BC

2. GEOLOGY

i. <u>Stratigraphy</u>

The general stratigraphic succession on the Fording River Property is summarized in Table 2.

Table 2: Fording River Stratigraphy

Period	Litho	-Stratigrap	hic Units	Principle Rock Types
Recent				Colluvium
Quaternary				Clay, silt, sand, gravel, cobbles
Lower Cretaceous	В	lairmore G	iroup	Massive bedded sandstones and conglomerates
		Elk F	ormation	Sandstone, siltstone, shale, mudstones, chert pebble conglomerate, minor coal
		Mist I	Mountain	Sandstone, siltstone, shale, mudstones, thick coal
Lower		For	mation	seams
Cretaceous to Upper	OTENAY GROUP	FORMATION	Moose Mountain Member	Medium to coarse-grained quartz - chert sandstone
Jurassic	KO	MORRISSEY	Weary Ridge Member	Fine to coarse-grained, slight ferruginous quartz- chert sandstone
Jurassic	Fe	ernie Form	ation	Shale, siltstone, fine-grained sandstone
Triassic	Spra	iy River Fo	rmation	Sandy shale, shale quartzite
	Rocky	Mountain	Formation	Quartzite
Mississippian		Rundle Gr	oup	Limestone

The oldest rocks present on the Fording River property are the Rundle Group limestone, located on the west bank of the Fording River, near the southern property boundary.

These rocks are in faulted contact with the Kootenay Group to the west, and unconformable contact with Rocky Mountain Formation quartzites to the north. The latter are best exposed on the eastern slope of the Brownie Creek valley.

The Fernie Formation shales occur throughout the area, generally along the sides of the valleys on the lower flanks of the mountains. The shales are recessive and, generally poorly exposed. However, there are some good exposures of Fernie Formation strata on the lower western slopes of Eagle Mountain in some creek drainages. The Fernie Formation is in conformable contact with the Morrissey through the "Passage Beds," which are a transitional zone from marine to non-marine sedimentation.

The Morrissey Formation, which is the "basal sandstone" of the Kootenay Group, is a prominent cliffforming marker horizon in most locations. On the Fording River property, the top of the Moose Mountain member (Morrissey Formation) is in sharp contact with 010 seam, the lowermost bed of the Mist Mountain Formation.

The Mist Mountain Formation contains all the economic coal seams and is the most widely occurring formation on the Fording River property. This economically important formation is an interbedded sequence of sandstones, siltstones, silty shales, mudstones, and medium to high volatile bituminous coal seams. The volatile content of the coal increases up section, with decreasing rank. Lenticular sandstones comprise about 1/3 of the Mist Mountain sediments at Fording River, but very few laterally extensive sandstone beds exist.

The sandstone immediately above and below seams 040 and above 090, are the most persistent units, and are often cliff-forming marker horizons, as well.

The Mist Mountain Formation is generally overlain conformably by strata of the Elk Formation. On the Fording property, this formation is commonly a succession of sandstones, siltstones, shales, mudstones, chert pebble conglomerates, and sporadic, thin, high volatile bituminous coal seams. The coal seams are characterized by high alginate content and referred to as "Needle" coal. The Elk Formation is observed near the tops of the mountains, mainly on the east side of the Elk Valley on the Greenhills Range, and northward to the Mount Tuxford areas.

The top of the Elk Formation marks the upper boundary of the Kootenay Group, which is unconformably overlain by the basal member of the Blairmore Group. This thick bedded, cliff-forming sandstone and conglomerate unit is observed on the upper slopes of Mount Tuxford.

i. <u>Structure</u>

After deposition, the sediments were involved in the mountain building movements of the late Cretaceous to early Tertiary Laramide Orogeny. The major structural features of the Fording River property are the North-South trending synclines with near horizontal to steep westerly dipping thrust faults, and a few high angle normal faults. Some of the thrust faults were likely folded late in the tectonic cycle.

The formation of the major fold structures began early in the tectonic cycle. In the current mining area, two asymmetric synclines are evident: the Greenhills Syncline to the west, and the Alexander Creek Syncline to the east of the Fording River.

The thrust faulting (i.e. the Ewin Pass and Brownie Ridge Thrusts), was probably contemporaneous with the later stages of folding. The intervening anticline was subsequently faulted (Erickson Fault), then eroded.

The Alexander Creek Syncline can be traced from the southern property boundary on Castle Mountain to the northern end of the property on Weary Ridge. The strata of the west limb, on the west face of Eagle Mountain, dip easterly at 20 to 25°, decreasing gradually to zero as the axis is approached. The east limb, however, attains a 20° westerly dip within a much shorter (500 m) distance of the axis.

This asymmetry is possibly due, at least in part, to the influence of the Ewin Pass Thrust which subcrops 600 to 800 meters east of the synclinal axis.

Further to the east, on Brownie Ridge, the strata dip westerly at a mean dip of 42°. The Brownie Ridge Thrust, which subcrops near the crest of the ridge, probably contributes to this steepening.

Within the mining area, the axis of the Alexander Creek Syncline plunges to the north at an average of 4°. Turnbull Mountain exhibits a localized series of an echelon fold structure, plunging both to the north and to the south. These subsidiary folds may be related to thrust faulting. From the south end of Mount Tuxford, the synclinal axis continues north- northwest along the base of Mount Veits and into the Elk River Valley near Aldridge Creek.

On Mount Tuxford, the beds exposed are those of the Elk Formation and the overlying (non-coal bearing) Cadomin Formation. The area has not been extensively explored. The stratigraphic sequence of the east limb, in the more extensively explored Mist Mountain strata near Aldridge Creek (Elco property), closely resembles the east limb strata found on Henretta Ridge, ten kilometers to the south.

On the northwest corner of Eagle Mountain, the lower Kootenay-upper Fernie section is the locus for a zone of near horizontal thrust faulting. The effect is to cause a double repetition of the lower coal seams and basal sandstone on the west synclinal limb. This fault zone is synclinal in form and continuous with the Ewin Pass Thrust zone found in the east limb.

The Greenhills Syncline in the mining area is essentially a "mirror-image" of the Alexander Creek structure. The east limb of the asymmetric syncline dips westerly at 15 to 25°, except in areas near the Erickson Fault, where 45 to 55° dips are common. The west limb exhibits much steeper dips, commonly in the 35 to 45° range. The Greenhills Syncline plunges northward (340 to 350°), at less than 5°, and then appears to die out to the north in the area of the Osborne Creek Depression.

The Erickson Fault, which locally runs along the base of the Greenhills Range, west of the Fording River, is one of the major regional faults. From south to north, this westerly dipping (40 to 70°) normal fault, brings Mist Mountain strata progressively into contact with Rundle, Rocky Mountain, Spray River, Fernie, and Morrissey strata. The downthrown block is to the west. Near the south end of Lake Mountain, the Erickson Fault begins to "splay" into two zones.

The main fault runs along the eastern margin of Lake Mountain, and the subsidiary fault runs to the west and appears to "die out" northward. The steep northward dip exhibited in the Lake Mountain strata could be due to influence from these flanking "splays" of the fault. The flat lying region to the north of Lake Mountain (Osborne Creek Depression area) is completely void of outcrop, and the Erickson Fault has not been traced either through or to the north of this area.

Refer to Figure 3 for a detailed geological map of the Castle Mountain exploration area and corresponding cross section Figure 4.

2020 SUMMARY OF EXPLORATION WORK

i. <u>2020 Castle Mountain Exploration Project Objectives</u>

In 2020, the Fording River geology and geotechnical teams conducted an exploration drilling and coal sampling program on Castle Mountain. Reverse circulation, HQ diamond drill hole, and large-diameter core drilling techniques were used to collect the data.

A total of 28 reverse circulation drill holes, 11 large-diameter core drill holes from two sampling sites, and 11 HQ diamond drill holes were completed. The reverse circulation drill holes were drilled in order to gain coal quality and structural data on various coal seams. Large diameter core drill holes were drilled to gain carbonization and coke strength data on specific seams. Eight HQ diamond drill holes were helicopter assisted and drilled in areas of sensitive high elevation grasslands that required zero disturbance. Three HQ diamond drill holes were drilled for geotechnical purposes to better define large structure present within the property, and to intersect the planned pit design.

A total of 50 drillholes were completed in 2020, for a combined total of 21,993 meters. Downhole geophysical logging was done on all reverse circulation and HQ diamond drill holes, and a summary of the various drilling can be found below:

- 28 RC holes 14,174 meters
- 11 HQ holes 6,922 meters
- 11 LDC holes at 2 sampling sites 897 meters

Additionally, 20 test pit sites were excavated for geotechnical purposes.

The overall objective for the geology team during the 2020 Castle Mountain Exploration drilling program was to improve resource confidence and increase coal location and quality data through increased drillhole density, as well as gain additional geotechnical information to better constrain local and regional subsurface structure.

These objectives were accomplished by:

- Developing and implementing an exploration program that included drilling and geophysical logging of 28 new reverse circulation exploration holes, collecting five bulk coal samples, and drilling of 11 HQ diamond exploration/geotechnical drill holes. Eight of which were helicopter assisted in areas of sensitive high elevation grasslands that required zero disturbance.
- Revising geological interpretation that was based on historic field mapping and drilling in the Castle Mountain area.
- Integrating the new exploration and geotechnical drilling results with previous historic drill programs.
- Updating the geological interpretation based on new drilling.
- Determine the coal quality of the represented coal seams from reverse circulation drill cuttings,
 HQ core samples, and large diameter core bulk coal seam samples.
- Updating the coal resources in the exploration area using Hexagon Minesight 3-D block modelling software.
- Improve resource model and support an economic assessment of Castle Mountain.

Each drilling location was surveyed to obtain exact coordinates and elevations. The exploration project was completed under the direction and supervision of Fording River Operation's site geology team.

Table 3 highlights the drill holes completed during the 2020 season with respect to Coal License which they fall within.

Coal License	Drill holes and LDC sites
LOT 1 DL4588 Greenhills	3500, 3478
389310	3428, 3431, 3433, 3434, 3435, 3436, 3437, 3440, 3441, 3475, 3476, 3477, 3479, 3480, 3481, 3482, 3483, 3484, 3485, 3486, 3487, 3488, 3489, 3490, 3491, 3493, 3494, 3495, 3496, 3497, 3498, 3499, GTF20-01, GTF20-02, GTF20-03, GTF20-05,

Table 3: Drill hole Locations Relative to Coal License

ii. 2020 Castle Mountain Summary of Completed Work

The total cost for the 2020 Castle Mountain Exploration Project was \$9,227,710. See Appendix 1 for the cost statement.

The exploration project planning, execution, and geological interpretation was completed by the Fording River geology team.

Prior to drill site preparation on Castle Mountain, the excavated trails and exploration drill sites were pre-selected and located by the Fording River geology team. Engineered road design was completed by Vast Resources of, Cranbrook, BC in areas of complex terrain. The opening up of pre-existing roads and the construction of new roads and drill pads were constructed by Kettle River Contracting of, Calgary, AB. Danger tree falling was completed by Nupqu Development Corporation of, Cranbrook, BC.

A total of 5.44 km of pre-existing road was re-established in order to access drill pad locations. 2.79 km of new road was designed and constructed. Forty-one (41) new drill pads were constructed for drilling. Large diameter core drilling utilized pre-existing reverse circulation drill pads but were increased in size in order to fit all necessary equipment. 1.1 Ha of previously disturbed roads and pads were reclaimed.

Eight (8) helicopter pads were constructed for use of a diamond drill rig in areas of sensitive high elevation grasslands. At each site two low disturbance timber pads were erected. One to accommodate staging of the helicopter and one to accommodate the drill rig, compressor, pumps, foot clamp, rods and rod rack and any ancillary drilling equipment. Helicopter-pad building services were provided by Rugged Edge Holdings LTD. of, Smithers, BC. All pads were disassembled and all disturbed areas were reclaimed.

Helicopter services were provided by Ascent Helicopter based in Fernie, BC. A twin engine Bell 212HP and a single engine Bell 205A1 were utilized.

Reverse circulation and large diameter core drilling services were performed by Foraco Canada Ltd. of, Calgary, AB using a Foremost DR-24 rotary drill. The reverse circulation drilling method was chosen as the preferred method for collecting uncontaminated, representative and accurately located coal samples. Large diameter core is the preferred method for collecting bulk coal seam samples for the purpose of carbonization and coke strength testing. HQ diamond drilling was completed by Foraco Canada Ltd. and Team Drilling, both of Kamloops, BC. Drillholes for drilled for both geotechnical and exploration purposes. Team Drilling was used in the areas of high elevation grasslands that required no disturbance. HQ drill rod size was used in all diamond drilling instances. Drill core was sampled for coal quality if coal intersection was deemed uncontaminated and representative. Typically, 80% core recovery is used when determining if sample is representative.

As sampling accuracy is critical to develop an accurate understanding of coal seam thickness and quality, Fording River utilized a rigorous Quality Assurance/Quality Control procedure to assure accurate collection of coal samples.

The 28 reverse circulation drill holes were completed for a cumulative drilling length of 14,174 meters. Drill hole depths ranged between 186 meters and 798 meters, averaging 506 meters. 11 HQ diamond drillholes holes were completed for a cumulative drilling length of 6,921 meters, ranging from 251 meters to 756 meters, averaging 629 meters.

A summary of all drill holes completed on Castle Mountain in 2020 can be found in Table 4 below.

Drillhole		_	UTM COORD				Hole	
Name	Project	Purpose	Easting	Northing	Elevation	Azimuth	Dip	Depth (m)
3428	Castle	geological	656192.01	5556082.60	2050.47	0	-90	620.66
3431	Castle	geological	656062.36	5555935.50	2001.12	0	-90	718.00
3433	Castle	geological	655527.67	5558206.90	2228.59	0	-90	738.30
3434	Castle	geological	655458.91	5558263.10	2259.58	0	-90	797.80
3435	Castle	geological	655499.69	5558360.60	2245.69	0	-90	630.35
3436	Castle	geological	656507.46	5557237.40	2313.55	65.9	-70	723.16
3437	Castle	geological	656529.06	5557045.40	2300.30	75	-80	725.00
3440	Castle	geological	655566.50	5558610.80	2302.18	65	-80	740.00
3441	Castle	geological	655450.96	5556359.30	1880.41	0	-90	524.50
3475	Castle	geological	655049.55	5558014.40	2161.75	58.6	-80	501.00
3476	Castle	geological	655381.91	5558725.10	2408.00	70	-80	748.00
3477	Castle	geological	655219.15	5558524.50	2411.10	60	-90	706.00
3478	Castle	geological	655173.00	5556972.80	1962.56	0	-90	518.05
3479	Castle	geological	655360.89	5557292.30	2044.04	0	-90	518.00
3480	Castle	geological	654746.49	5557635.90	2013.22	0	-90	425.94
3481	Castle	geological	654276.59	5558151.60	1960.05	0	-90	262.52
3482	Castle	geological	653922.24	5558871.40	2032.84	0	-90	349.94

Table 4: 2020 Drill hole Collar Locations

3483	Castle	geological	654116.30	5558904.80	2108.81	0	-90	360.14
3484	Castle	geological	654034.95	5559115.70	2118.39	0	-90	369.00
3485	Castle	geological	654376.55	5559287.00	2163.75	0	-90	442.00
3486	Castle	geological	654218.96	5559507.90	2071.38	0	-90	329.90
3487	Castle	geological	654565.21	5559473.40	2033.40	0	-90	390.44
3488	Castle	geological	654471.42	5559699.90	1917.55	0	-90	230.97
3489	Castle	geological	654858.21	5559521.20	2108.09	0	-90	703.00
3490	Castle	geological	654946.19	5559007.60	2137.83	0	-90	528.00
3491	Castle	geological	655403.93	5559456.80	2113.40	0	-90	724.50
3493	Castle	geological	655311.81	5559581.30	2022.18	0	-90	620.00
3494	Castle	geological	655220.93	5559776.60	1926.90	0	-90	468.00
3495	Castle	geological	655677.90	5559816.30	1977.26	0	-90	499.78
3496	Castle	geological	655890.18	5560180.60	1846.93	0	-90	186.33
3497	Castle	geological	655216.79	5560166.30	1843.31	0	-90	440.33
3498	Castle	geological	655508.22	5559740.80	2097.63	0	-90	648.44
3499	Castle	geological	656488.14	5556503.70	2182.09	0	-90	696.32
3500	Castle	geological	655318.93	5555846.00	1764.22	0	-90	432.63
GTF20-01	Castle	geotechincal	654819.69	5560190.50	1814.71	148.0	-60	426.00
GTF20-02	Castle	geotechincal	656724.66	5557604.80	2384.18	100.0	-65	665.60
GTF20-03	Castle	geotechincal	655976.77	5559863.60	1939.11	59.5	-70.1	251.00
GTF20-05	Castle	geotechincal	656025.56	5558606.30	2376.25	70	-60	756.07
GTF20-06	Castle	geotechincal	656804.72	5556508.10	2311.83	70	-70	680.01

Downhole geophysical logs were completed by Century Wireline Services of, Red Deer, AB. Each hole was logged through the drill pipe for gamma-neutron, and open hole logs collected deviation, caliper, resistivity, and gamma density information. Additionally, an acoustic televiewer and dipmeter were run on several select reverse circulation and HQ diamond drill holes in order to gain better insight into structurally complex areas. Copies of all geophysical logs can be found in Appendix 2.

Coal seams intersected by reverse circulation drilling were sampled in 0.5-meter intervals. HQ drill core coal samples were sampled as one seam composite if deemed representative by the Fording River geology team. In total, 6,022 ply samples were collected and analyzed for raw ash for the purpose of making representative seam composites. Representative composite samples for each coal seam were prepared at Fording River Operation's on-site process plant laboratory and Loring Laboratories LTD of, Calgary, AB. Raw composite samples received in-house raw proximate, sulphur, and FSI analysis.

Raw composites were forwarded to GWIL Industries of, Calgary, AB, for single gravity wash, mineral ash analysis (MAA), and fluorine analysis. Some of the clean coal composites were run by GWIL for clean proximate analysis. The majority of clean coal composites were returned to the Fording River laboratory where Fording River Operation's staff completed in-house clean proximate analysis. This includes ash, volatile matter, raw moisture, fixed carbon, sulfur, P₂O₅, and FSI analysis. Pearson Coal Petrography of,

Victoria BC, was utilized to complete a full Petrographic analysis on select composites. All coal quality sample results as of April 12th, 2021 are in Appendix 3.

Large diameter coring is a specialized method of drilling using a conventional reverse circulation rig to drill a 0.23m diameter hole to recover representative core of target coal seams. The seams targeted at site BK-0038 were 160 and 150. A total of five (5) holes were drilled in order to collect the appropriate total material of each of the two (2) seams. At site BK-0039, the target seams were 140, 131, and 120. Six (6) drill holes were drilled in order to collect the appropriate material from the three (3) seams. Coordinates of each of the large diameter core sites can be found in Table 5.

Bulk coal samples from all seams were sent to GWIL Industries Inc. of, Calgary, AB for homogenization and washability analysis, then to Hazen Research Inc. of, Golden, CO for a pilot-plant wash, and finally to Canmet Energy of, Ottawa, ON for carbonization and coke strength testing. All available coal and coke testing of the five bulk samples as of April 12th, 2021 can be found in Appendix 3.

	Droiost	Durmana	UTM COC	ORDINATES	Flowetien	tion Arimuth		# of	Hole Depth
	Project	Purpose	Easting	Northing	Elevation	Azimuth	Dip	Holes	(m)
BK-0038	Castle	LDC	654560.28	5558881.36	2298.12	0	-90	5	5 holes, avg. 45m
BK-0039	Castle	LDC	654870.68	5559130.36	2130.10	0	-90	6	4 holes (avg. 136m), 2 holes (avg. 65m)

Table 5: Bulk Sampling - 2020

Tetra Tech Canada Inc., of Calgary, AB was retained to complete a geotechnical study. Twenty (20) test pits were completed on Castle Mountain by Kettle River Contracting of, Calgary, AB. Logging of the pits was completed by both Tetra Tech and Teck Coal staff. Pits had a surface area of 1 x 2 meter and ranged in depth from 2 – 6 meters. They were taken on the edge of existing roads and all material was backfilled upon completion of mapping and sampling the pit. All work was completed in order to gain more information on water management and spoil suitability. Locations are shown in Table 6. In addition, all recovered core from all 11 HQ diamond drill holes were logged using detailed geotechnical logging methodologies by Tetra Tech. All geotechnical logs and sample results from test pits and drill holes as of October 15th, 2021 can be found in Appendix 3.

Table 6: 2020 Test Pit Locations

		RDINATES		Depth to	Test Pit
Test Pit ID	Easting	Neuthine	Flouretton	Bedrock	Iermination
TP20-01	Easting 656238	5560185	1878	(mbgs*) 0.61	Depth (m)
7020-02	656256	5500105	1070	0.45	0.76
1920-02	656011	5560216	1884	0.15	0.76
TP20-03	655972	5559869	1938	2.43	2.84
TP20-04	655891	5559734	1955	1.5	3.5
TP20-05	655815	5559987	1869	3.96	4.27
TP20-06	655746	5559685	1990	NA	5.87
TP20-07	655933	5559197	2089	3.35	4.04
TP20-08	655738	5559375	2065	4.79	4.79
TP20-09	655672	5559005	2097	0.2	3.66
TP20-10	655215	5559777	1929	1.8	2.64
TP20-11	655085	5559818	1893	0.2	1
TP20-12	655057	5559563	2013	4.88	6
TP20-13	655004	5559724	1953	0.61	1.9
TP20-14	655206	5559133	2070	NA	3.87
TP20-15	655017	5559167	2060	5.7	5.7
TP20-16	654949	5559606	2023	4.6	4.6
TP20-17	654920	5559331	2073	1.83	3.26
TP20-18	654865	5559486	2107	4.88	5
TP20-19	654660	5559962	1906	0	1
TP20-20	653284	5559822	1671	4.66	4.66

Geochemical samples were taken on HQ diamond drill holes 3476, GTF19-08, and GTF20-03. As well as RC drill holes 3494 and 3495. Whole core samples from the HQ drill holes were collected over the entirety of the drill hole in the Elk, Mist Mountain, and Morrissey Formations. Samples were broken up by lithology. Ie. OVBN, SST, SLST, MST, and Coal. RC drill cutting samples from drillholes 3494 and 3495 were 1 to 2 kg(s) in size and were sampled off a shaker table. Sampling started near the bottom of the Mist Mountain Formation at 040 seam and continued into the Morrissey Formation. Samples were taken in one-meter intervals for typical rock, 0.5-meter intervals above and below coal seams, and entire coal seams. Samples underwent testing (Fizz Testing) for the geochemical signatures of the rock, specifically looking for the potential of Acid Generation (PAG). Shipment of samples to Bureau Veritas of Burnaby, BC for further analysis is still pending at the time of this report. The FRO in-house laboratory fizz testing results are on-going and can be found in Appendix 3.

O'Neill Hydro-Geotechnical Engineering Ltd (OHGE) was retained to provide a combination of hydrogeological field support and laboratory testing. Vibrating wire piezometers (VWP) were installed in the three (3) geotechnical HQ drill holes. Data collected is for the purpose of groundwater flow modelling and slope stability. The hydrological work plan and water balance memo can be found in Appendix 4.

A Ground Penetrating Survey (GPR) was commenced by Frontier Geosciences Inc. of, North Vancouver,BC for the purpose of identifying depths to bedrock as an input to geotechnical modelling for

proposed facility foundations. Data was collected over 23 lines, with a total coverage of approximately 6,300 meters. The survey was carried out using two (2) systems to cover a range of possible ground conditions. The GPR survey report can be found in Appendix 5.

Nupqu Development Corporation of Cranbrook, BC under partnership with Hemmera Consulting of Victoria, BC provided daily environmental monitoring relating to day-to-day exploration tasks.

iii. Mount Tuxford

Fording River Geology staff completed five (5) days of geologic field mapping from August 10-14th, 2020. Refer to Figure 5 for a detailed geologic map showing the property and field mapping stations. All mapping and sampling stations as well as tracks were taken with a gps for accuracy. All outcrops were logged in detail including but not limiting; lithology, structure, formation and alteration. In total, seven (7) coal samples were taken from outcrops and sent for a 1.5 SG wash for the purpose of getting RoMAX data for each seam. Two samples were taken in the Elk formation and five samples were taken in the Mist Mountain formation. As of April 12th, 2021 results are outstanding. The geological station notes and coordinates can be found in Appendix 6.

Site	Easting	Northing	Elevation	Sample Description
004	651777	5570432	2472	Elk Fmn, collected from surface of coal seam, needle coal, 3 m carbonaceous coal with 1.5 m mdst above and sst below
005	651860	5570992	2471	Elk Fmn, coal sampled from surface
010	651651	5571733	2418	Mist Mtn Fmn, ~2m coal seam with various partings
013	651372	5572766	2485	Mist Mtn Fmn, ~1.5 m orangey/brown, fine grained, sst above and below
016	651388	5573392	2515	Mist Mtn Fmn
017	651591	5573448	2416	Mist Mtn Fmn, ~8m coal seam, sst above and below
018	651525	5574091	2397	Mist Mtn Fmn, ~8 m coal seam, sst above with local variations in dip, possible depositional change or folding

Table 7: 2020 Mount Tuxford Coal Sample Location and Description

RESULTS

i. <u>Castle Mountain</u>

The primary goal of the 2020 drilling program on Castle Mountain was to improve resource confidence through tighter spaced drilling, and increased coal seam location and quality information. This included drilling helicopter-supported drill holes in areas of sensitive high elevation grasslands in order to leave zero disturbance. Additionally, a focus to gain an increased geotechnical understanding of Castle Mountain by drilling structurally complex areas was also conducted.

The project consisted of drilling 28 exploration reverse circulation drill holes, eight (8) HQ helicoptersupported HQ diamond drill holes, three (3) HQ geotechnical diamond drill holes, and five (5) bulk coal samples from 11 large diameter core drill holes at two (2) sampling sites.

All available raw and clean coal composite assays that have been completed as of October 15th, 2021 are included in Appendix 3. All available coal petrography reports, mineral ash analysis (MAA), and bulk coal seam sample coke testing that have been completed as of October 15th, 2021 are also in Appendix 3. Once all composites are complete, the seam quality data will be added into the geological database and interpolated in the geological model. Previous seam qualities support the coal's marketability and assist the long term mine plan for the region.

Castle Mountain coal resources have been incorporated into the Fording River East 3D Block Model.

Table 7 shows the current Castle Mountain coal resources but does not include any information gathered from the 2020 drilling.

ii. <u>Mount Tuxford</u>

The focus of the field mapping was to better define contacts between the overlying Blairmore and Elk formations and to delineate the Mist Mountain formation. The field mapping session was successful in better defining these contacts and determining the Mist Mountain stratigraphy. The Mist Mountain formation appears conformable with a thickness greater than 550 meters. At least 14 coal seams have been identified. This is very similar to current mining areas, helicopter assisted drilling is strongly recommended to better define the resource.

5. CONCLUSION

The 2020 Castle Mountain exploration drilling program has successfully increased drill hole density and will in turn increase the resource classification confidence in Castle Mountain. The program confirmed the location and continuity of all coal seams in the Castle Mountain area allowing for improved geological and structural interpretation. The assay results are ongoing and coal quality data will be incorporated into the geological model. Fording River Operations is in the process of updating its current model as results become available, and a mine engineering economic assessment of Castle Mountain is under evaluation.

Further RC drilling to improve resource confidence and to increase the amount of coal quality data including ash, volatile matter, P₂O₅, FSI, fluorine, and fluidity is recommended prior to detailed planning

for mining. In addition, bulk sampling of all economic seams using large diameter drilling methods is recommended for carbonization and coke testing.

The 2020 geologic field mapping on Mount Tuxford successfully delineated the Mist Mountain Formation. The formation is at least 550 meters thick and 14 coal seams have been identified. Helicopter assisted HQ diamond drilling is initially recommended to better define the resource.

6. Author's Qualifications

<u>Statements of Author's Academic and Professional Qualifications</u> CERTIFICATE OF QUALIFIED PERSON

Name: Barry F. Musil, P.Geo.

Company: Teck Coal Limited Address:

Fording River Operations P.O. Box 100 Elkford, BC VOB IHO Phone: (250) 865-5169

I, Barry F. Musil, P.Geo, am employed as a Senior Geologist, Supervisor at Fording River Operations. This certificate applies to the report titled "Fording River Operations, 2020 Annual Exploration Assessment Report". I graduated from the University of British Columbia with a Bachelor of Science Degree in Geology, 1984. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia (member # 19361). Since 1986 I have been involved with coal mining projects at Fording River, and other Teck Coal Operations. As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

"Signed and Stamped"

Barry F. Musil, P.Geo.

6. Author's Qualifications

<u>Statements of Author's Academic and Professional Qualifications</u> CERTIFICATE OF QUALIFIED PERSON

Name: Barry F. Musil, P.Geo.

Company: Teck Coal Limited Address:

Fording River Operations P.O. Box 100 Elkford, BC VOB IHO Phone: (250) 865-5169

I, Barry F. Musil, P.Geo, am employed as a Senior Geologist, Supervisor at Fording River Operations. This certificate applies to the report titled "Fording River Operations, 2020 Annual Exploration Assessment Report". I graduated from the University of British Columbia with a Bachelor of Science Degree in Geology, 1984. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia (member # 19361). Since 1986 I have been involved with coal mining projects at Fording River, and other Teck Coal Operations. As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

"Signed and Stamped"

Barry F. Musil, P.Geo.



5,510,000









Appendix 1- Exploration Cost Statement - Caslte Mountain Exploration - 2020			
Exploration Work Type	Company	Comment	Subtotal
RC Drilling	Foraco Drilling (Calgary)	28 holes (14,173.84 m)	\$1,427,848.00
LDC Drilling	Foraco Drilling (Calgary)	2 site, 11 holes (897.4 m)	\$370,818.00
HQ Diamond Drilling (heli-assisted)	Team Drilling	8 holes (5,579.24 m)	\$1,411,423.00
HQ Diamond Drilling	Foraco Drilling (Kamloops)	3 holes (1,342.6 m)	\$610,417.00
		Total Drilling	\$3,820,506.00
Geophysical Downhole Logging	Century Wireline Services	RC + Helicopter	\$377,148.00
		Total Geophysical	\$377,148.00
Helicopter	Ascent	Helicopter Services	\$1,590,938.00
		Total Helicopter	\$1,590,938.00
Lab Analysis	Various	Coal Sample Prep, Prox Analysis, Petrography, MAA, Coke Testing and Prep	\$500,000.00
		Total Lab Analysis	\$500,000.00
Road and Pad Building, Snow removal	Kettle River Contracting	Road Building/Culvert Construction/Pad Clearing	\$1,180,000.00
Danger Tree Falling	Nupqu	Tree falling activities on Castle Mountain	\$4,000.00
Engineered Road and Pad Design	Vast Resources	Road design, layout for new excavated trails, reclaimation plans for extising trails	\$49,000.00
Helicopter Pad Building	Rugged Edge Holdings	Helicopter and Drill Pad Construction	\$181,772.00
		Total Road and Pad Building	\$1,414,772.00
Consumables	Various	Drill casing, Sample Bags & Tags, etc.	\$116,000.00
Consumables	Various	VWPs / Cable / Covers / Hub / etc.	\$30,312.00
	L	Total Consumables	\$146,312.00
Surveying	Align Survey	General Surveying	\$18,000.00
Environmental Monitor	Hemerra	On-site environmental monitor	\$266,000.00
Wildlife Surveys	Anatum	On-site Wildlife surveys	\$72,000.00
Ground Penetrating Radar Survey	Frontier	GPR Survey	\$20,710.00
Hydrogeology Consultant	OHGE	Field Support / 3D Transient Hydro Model	\$59,970.00
Core logging and Geotechincal Consulting	TetraTech	Core logging / VWP install / Test Pitting / Reporting / Lab Testing etc.	\$941,354.00
	L	Total Consulants	\$1,378,034.00
		2020 Castle Cost Total	\$9,227,710.00