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# REPORT ON HYDROGEOLOGICAL DRILLING PROGRAM - 2011 RAVEN PROJECT (TSABLE RIVER COALFIELD)

# **COVERING COAL EXPLORATION LICENCE**

# **TENURE No. 392561**

and

# FEE SIMPLE COAL RIGHTS HOLDINGS

(Southern Comox Coal Basin)

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Compliance Coal CorporationDBA Comox Joint Venture Report on Hydrogeological Drilling Program – 2011 March, 2012



#### 1.0 INTRODUCTION

The purpose of this report is to document the hydrogeological field program carried out from July through October 2011 over the Raven Coal Project. The program was carried out under the terms of Exploration Permit CX-8-008 issued by the Mining and Minerals Division of the Ministry of Energy and Mines. The program was devised to gather additional ground water information and to establish monitoring wells to enhance our knowledge of the regional and local ground water regime(s), The program was in part in response to requests by the Ministry of Environment and other stakeholders for additional monitoring and testing of the impact of proposed mining on ground water resources and in particular on wells in the Fanny Bay area and other proximal communities along the inland coast of Vancouver Island. The program therefore had two primary purposes:

- to better evaluate the impact of the ground water on a potential underground coal mine, and,
- to better evaluate the impact of a potential underground coal mine on ground water resources.

A secondary purpose of the program was to establish sampling sites to collect water and rock samples from varying lithologies at various stratigraphic horizons in support of the EIA. In particular, in response to information from the Ministry of Energy and Mines (MEM), is the Dunsmuir Sandstone above Seam 3 which is viewed as a potential source of arsenic.

#### 2.0 LOCATION

The Raven Project occurs in the Tsable Coalfield at the southern end of the Comox Coal Basin which lies parallel to and along the east coast of Vancouver Island. The property is directly west of Baynes Sound separating Denman Island from Vancouver Island and extends from the communities of Union Bay in the north to Fanny Bay in the south – Figure 1.

The area is located on NTS map sheets (1:50,000) 92F10W and 92F7W or within BCGS (1:20,000) map sheets 092F056 (north) and 092F046 (south). The area lies within the Nanaimo Mining Division and the Nanaimo, Nelson & Newcastle Land Districts. Coordinates at the centre of the project footprint are 49° 30' 8.0742" latitude and 124° 52' 36.4074" west longitude.

The closest city is the city of Courtenay approximately 20 km to the north on the east coast of Vancouver Island. Access to the area is via the Inland Highway which runs parallel to and in part crosses the eastern limits of the area. Local access to all parts of the property is provided by forestry roads and private logging and resource roads. Figure 2 is a general infrastructure and site layout map.

#### 3.0 PROGRAM OVERVIEW

The principal goal of the program was to install and test one (1) pumping well, install one (1) grouted-in vibrating wire transducer equipped piezometer, and install 6 nested piezometer monitoring wells to evaluate hydrogeologic conditions of rock and unconsolidated overburden near the project site. Due to very little water flow being encountered in the targeted pumping well site (site 1) a second site (site 7) was chosen and the original site reverted to a testing and monitoring well. The pilot and monitoring hole (RAV-11-07a) encountered good water flow; however, the targeted pumping well (RAV-11-07c) drilled 6.7m away failed to encounter significant water flow. It was therefore decided to make RAV-11-07a the pumping well and use the larger diameter



RAV-11-07c as the monitoring well with the installation of four 2" pvc standpipe piezometers rather than grouted in vibrating wire transducer piezometers. Table 1 presents the locations of all drill holes and Table 2 is a tabulation of installed piezometers. Figure 3 is a property plan highlighting the 2011 hydrogeological drilling and Figure 4 is a generalized stratigraphic section which illustrates the geological Formation Members and lithologic units intersected by the drilling.

			Location UTM	1 Zone 10 NAD 83			
Excavated	Proposal	DrillHole ID	Fasting (m)	Northing (m)	Elevation (m)	TD (m)	Bedrock
Site	Site ID	Drimitore in	Eusting (III)			,	Depth (m)
Site 1	MW#1b	RAV-11-01b	364949.14	5484492.87	115.13	279.50	15.00
Sito 2	TRMW#2a	RAV-11-02a	363874.09	5486942.60	94.04	212.50	37.50
Sile Z	TRMW#2b	RAV-11-02b	363878.02	5486940.71	93.99	395.40	36.50
Site 3	MW#3	RAV-11-03	368443.62	5483142.72	39.18	102.00	83.80
Site 4	MW#4	RAV-11-04	366319.38	5485431.99	59.51	32.00	12.80
Site 5	MW#5	RAV-11-05	367346.67	5483655.20	44.08	45.70	26.80
Site 6	MW#6	RAV-11-06	364311.26	5488815.03	82.28	59.40	39.30
	MW#7a	RAV-11-07a	365828.94	5485086.78	61.83	352.60	18.50
Site 7	MW#7b	RAV-11-07b	365820.37	5485090.01	61.89	11.00	na
	PW#7c	RAV-11-07c	365822.73	5485088.27	61.90	276.00	22.50

#### Table 1: Hydrogeological Drillhole Locations (2011)



			Screen or TR interval						
Drill Hole ID	Date Finished Drilling	Date Piezometer Installation Completed	Name	Depth From (m)	Depth To (m)	Elev Top (mamsl)	Elev Base (mamsl)	Formation/Member/Lithology Tested	Piezometer Type
			PZ1	77.72	80.77	37.41	34.36	Trent River siltstone	2" Standpipe Sched 40
			Z1	85.34	87.78	29.79	27.35	Cowie sandstone	3/16" high pressure tubes
			Z2	106.68	109.12	8.45	6.01	Cougar Smith siltstone	3/16" high pressure tubes pneumatic piezometer
DAV/ 11 01h	August 8, 2011	Ostobor 4 2011	Z3	141.73	144.17	-26.60	-29.04	Dunsmuir 5 sandstone	3/16" high pressure tubes pneumatic piezometer
KAV-11-010	August 8, 2011	October 4, 2011	Z4	176.78	179.22	-61.65	-64.09	Dunsmuir 4 sandstone	3/16" high pressure tubes pneumatic piezometer
			Z5	204.52	207.26	-89.39	-92.13	Dunsmuir 3 sandstone (upper)	3/16" high pressure tubes pneumatic piezometer
			PZ2	226.16	229.21	-111.03	-114.08	Dunsmuir 3 sandstone (lower)	2" Standpipe Sched 80
			Z6	246.89	249.33	-131.76	-134.20	Cumberland sandstone	3/16" high pressure tubes
			D71	105.20	109.20	11 16	14.16	Lippor Tropt Biyor ciltatopo	2" Standning Schod 40
RAV-11-02a	August 2, 2011	August 10, 2011	PZ1 D72	201.20	204.90	-11.10	-14.10	Cowie Sandstone	2 Standpipe Sched 40
			PZZ D71	201.80	204.60	-107.70	-110.70	Course Smith siltetone	2 Standpipe Sched 80
RAV-11-02b	July 28, 2011	September 27, 2011	PZ1 D72	228.00	251.05	-154.01	-157.00	Dunsmuir 3 Sandstone	2" Standpipe Sched 80
			PZZ D71	70.90	82 00	-2/0.41	-201.31	Sufficial Overburden – Clay Till	2" Standpipe Sched 40
RAV-11-03	August 25, 2011	August 26, 2011	PZ1 D72	09.00	101 10	-40.02 50.02	-43.72	Lipper Trent River	2" Standpipe Sched 40
			D71	8 80	11 90	50.02	47.61	Surficial Overburden – Clay Till	2" Standpipe Sched 40
RAV-11-04	August 31, 2011	August 31, 2011	P72	28.00	31 10	31 51	28.41	Upper Trent River	2" Standpipe Sched 40
			P71	20.00	25.90	21.21	18 18	Surficial Overburden – Clay Till	2" Standpipe Sched 40
RAV-11-05	August 30, 2011	August 30, 2011	P72	41 70	44 80	21.20	-0.72	Upper Trent River	2" Standpipe Sched 40
			P71	35.40	38 50	46.88	43.78	Surficial Overburden – Clay Till	2" Standpipe Sched 40
RAV-11-06	September 2, 2011	September 6, 2011	P72	55.40	58 50	26.88	23 78	Upper Trent River	2" Standpipe Sched 40
RAV-11-07a	August 11, 2011	September 13, 2011	W Strike	0.00	278.00	61.83	-216.17	Cougar Smith Slt and Dunsmuir 5	open hole (prepared for pump
RAV-11-07h	August 12 2011	August 12 2011	Piezo	7 90	10.90	53.00	50.99	Surficial Overburden - gravel	2" Standnine
10.00 11-07.0	///////////////////////////////////////	///////////////////////////////////////	P71	188.00	191 10	-126 10	-129 20	Cowie Sandstone	2" Standpipe
			P72	235.00	238.10	-173 10	-176.20	Cougar Smith Siltstone	2" Standpipe Sched 40
RAV-11-07c	August 24, 2011	September 26, 2011	PZ3	255.00	250.10	-100.00	-202 10	Cougar Smith Siltstone &	2" Standpipe Sched 80
			PZ4	272.70	275.80	-210.80	-213.90	Dunsmuir 5 Sandstone	2" Standpipe Sched 80

Samples of rock cuttings were collected at each site in 1.5m increments and saved in 4" x 6" cloth bags. Representative samples were washed, described and saved in 10ml sample vials for future reference. Samples are stored off site in a secure warehouse in Courtenay.

Additional rock chip samples were collected from the screened intervals and/or rock types represented by the screened intervals of drillholes RAV-11-01b, RAV-11-02a, RAV-11-02b, RAV-11-07a and RAV-11-07c for ARD testing and chemistry analyses. Table 3 attached presents the screened zones and the intervals sampled.



		Groundwater Sar	nple	Rock Samp	le Interval	Stratigraphy and Lithology
Drillhole ID	Name	Depth From (m)	Depth To (m)	Depth From (m)	Depth To (m)	
	Zone 1	85.34	87.78	85	95	Cowie Sandstone
	Zone 2	106.68	109.12	105	115	Cougar Smith Siltstone
	Zone 3	141.73	144.17	135	145	Dunsmuir 5 Sandstone
RAV11-01D	Zone 4	176.78	179.22	170	180	Dunsmuir 4 Sandstone
	PZ 2	226.16	229.21	229	233	Dunsmuir 3 Sandstone
	Zone 6	246.89	249.33	245	255	Cumberland Sandstone
PAV/11.02a	PZ1	105.20	108.20	103.7	112.8	Trent River Siltstone
RAVII-02a	PZ2	201.80	204.80	198.2	205.8	Cowie Sandstone
DAV/11.02h	PZ1	228.60	231.65	224.1	233.2	Cougar Smith Siltstone
RAVII-020	PZ2	372.40	375.50	365.9	378	Cumberland Sandstone
RAV11-07a		260.00	261.00	256.1	265.2	Cougar Smith & Dunsmuir
	PZ1	188.00	191.10	184.5	193.6	Cowie Sandstone
	PZ2	235.00	238.10			Cougar Smith Siltstone
RAVII-07C	PZ3	260.90	264.00	256.1	266.8	Dunsmuir 5 Sandstone
	PZ4	272.70	275.80	268.3	275.9	Dunsmuir 5 Sandstone

#### Table 3: Summary of ABA and Geochemical Rock Samples Collected

Reporting of hydrogeological assessment of testing and analyses will be done separately by Itasca Denver, Inc. and reporting of assessment of chemical analyses and testing for ARD will be done by AMEC Inc. Hydrogeological field work was carried out under the supervision of Rob McLean of Artifex Engineering Hydrology Inc. of Victoria, B.C.

#### 4.0 DETAILS OF HYDROGEOLOGICAL DRILLING PROGRAM

#### 4.1 Introduction

All drilling was done by Drillwell Enterprises Ltd. of Duncan B.C. using Foremost 12DR rigs equipped to drill with air and using a downhole hammer. The air was supplied using a 950 CFM @ 350 psi compressor. All drill holes were nominally 6" except RAV-11-07c which was nominally 12". An extra compressor 900 CFM @350psi was brought in to drill the 12" hole essentially doubling up on the air supply. All holes were cased through unconsolidated overburden into solid bedrock. In drillholes in which piezometers were installed in unconsolidated overburden the casing was pulled back 1 to 2m above the top of the sandpack. All drillholes are being used for ground water monitoring and casing was left as a 1 to 2m stickup. All casing was capped by secure locking caps to protect piezometer tubes and help to prevent damage due to vandalism.

Only drillholes targeted to intercept coal bearing stratigraphy were geophysically logged and only the deepest drillhole on a single site was logged. Those holes geophysically logged were RAV-11-01b, RAV-11-02b and RAV-11-07a. Drillhole logging services were provided by Electrolog Services Inc. Table 3 below summarizes logs run.



		Logs Run							
Drillhole ID	Gamma	Caliper	Density	Resistance	SP	Deviation			
RAV-11-01b	Х	Х	Х	Х	Х	Х			
RAV-11-02b <sup>1</sup>	Х	x x x x x x							
RAV-11-07a	Х	Х	Х	Х	Х	Х			
Note <sup>1</sup> Open Hole to 258.5m only; Gamma only thru pipe from 258.5m to TD of 395m									

#### Table 4: Summary of Geophysical Logs Run (2011 Drillholes)

- 4.2 Drillhole RAV-11-01b was drilled at site 1 and was to have been the primary monitoring well for the pumping test. The hole was drilled to 14m below Seam 1 and intersected a normal sequence of stratigraphy. Table 5 following section 3.11 gives a summary of stratigraphy units intersected. Unfortunately this hole didn't produce enough water to sustain a pump test and a decision was made to abandon the site as a potential pump test and select an alternate site. A decision was made to use this hole to carry out packer tests to obtain permeability data and selected water samples. The packer tests were completed Wednesday August 24, using the Drillwell hiab so as not to tie up the drill. The packer tests indicated that all formations/members tested in this hole were artesian and it was decided to install a series of pneumatic piezometers (high pressure tubes through which purging of the water and sampling of the water could be achieved) in 5 of the formations/members. This was done during the week of September 26. In addition to the pneumatic piezometers two 2" standpipe piezometers were installed in the Dunsmuir 3 sandstone and in the contact area between the Cowie Sandstone and the overlying (undivided) Trent River siltstone. The hole was completed with grout to surface. Table 2 presents a summary of piezometer installations. The drillhole was geophysically logged by Electrolog Services Inc. Logs run included Directional Survey, Gamma Ray, Density, Caliper, Resistance and SP (Spontaneous Potential). A description and graphic representation of the drillhole is provided as Figure A-1 in Appendix A and the geophysical logs are attached in Appendix B-1.
- 4.3 <u>Drillhole RAV-11-02a</u> was drilled at site 2 and was drilled to install two piezometers in the Cowie and the undivided upper Trent River siltstone respectively. This hole made use of the casing drilled and installed in 2009 (NC-2009). The piezometers were installed successfully by Drillwell using a hiab truck so as not use rig time. A description and graphic representation of the drillhole is provided as Figure A-2a in Appendix A.
- 4.4 <u>Drillhole RAV-11-02b</u> was drilled at site 2 approximately 5m from RAV-11-02a to install two 2" standpipe piezometers in the Dunsmuir 3 sandstone and the Cougar Smith siltstone/sandstone members respectively. The drilling encountered difficult drilling which resulted in poor hole wall stability below 260m. As a consequence the lower part of the hole was logged only with a gamma log through the pipe so good contact definition is unavailable and lithology and stratigraphic definitions is provided mainly from sample description. The hole was drilled through a coal seam which is believed to be Seam 3 and stopped 20m below to allow for slough and a cellar for logging. The deep standpipe piezometer in the Dunsmuir 3 sandstone was installed Friday September 16th using the drill and core pipe. Because of poor hole stability during inputting the standpipe, the process took 3 days. Back filling of the hole between the two planned piezometer installations commenced Friday September 23. The upper piezometer was installed during the week of September 26 and the hole was grouted to surface and secured. The



drillhole was geophysically logged by Electrolog Services Inc. Logs run included Directional Survey, Gamma Ray, Density, Caliper, Resistance and SP (Spontaneous Potential). A description and graphic representation of the drillhole is provided as Figure A-2b in Appendix A and the geophysical logs are attached in Appendix B-2.

- 4.5 <u>Drillhole RAV-11-03</u> was drilled at site 3 in the Wilfred Creek water shed. The hole was drilled to a depth of 102m and two piezometers were installed; one in the bedrock and one in the unconsolidated overburden. A description and graphic representation of the drillhole is provided as Figure A-3 in Appendix A
- 4.6 <u>Drillhole RAV-11-04</u> was drilled at site 4 to a depth of 32m and two 2" piezometers were installed; one in the bedrock and one in the unconsolidated overburden. A description and graphic representation of the drillhole is provided as Figure A-4 in Appendix A.
- 4.7 <u>Drillhole RAV-11-05</u> was drilled at site 5 to a depth of 45.7m and two 2" piezometers were installed; one in the bedrock and one in the unconsolidated overburden. A description and graphic representation of the drillhole is provided as Figure A-5 in Appendix A.
- 4.8 <u>Drillhole RAV-11-06</u> was drilled at site 6 to a depth of 59.4m and two 2" piezometers were installed; one in the bedrock and one in the unconsolidated overburden.\_A description and graphic representation of the drillhole is provided as Figure A-6 in Appendix A
- 4.9 Drillhole RAV-11-07a was drilled at site 7, the replacement site for the pump test. The hole was drilled to a depth of 352.6m and terminated approximately 25m below Seam 4. Salt water with a flow of approximately 60 l/min was intersected in this hole at 260m at the base of the Trent River Fm (Cougar Smith Mbr). It was planned to install vibrating wire transducers (VWT) (piezometers) in this hole as the primary monitoring well for the pump test; however, because water was not intersected in the hole designated as the pumping well - RAV-11-07c - the VWT was not installed. RAV-11-07a was instead designated as the pumping well for the pump test. The hole was back filled to a depth of 280m by alternating pea gravel and bentonite layers. A pump was installed at an approximate depth of 256m and a step test was carried out to determine pumping rate and duration. The pump test using this modified arrangement will have an expected duration of from 3 to 7 days and is to be carried out when water levels stabilize. The drillhole was geophysically logged by Electrolog Services Inc. Logs run included Directional Survey, Gamma Ray, Density, Caliper, Resistance and SP (Spontaneous Potential). A description and graphic representation of the drillhole is provided as Figure A-7a in Appendix A and the geophysical logs are attached in Appendix B-3.
- 4.10 <u>Drillhole RAV-11-07b</u> was drilled at site 7 approximately 5m from RAV-11-07a and was drilled to monitor water level and quality in the surficial overburden. A water zone in gravels was intersected at 7.9 to 10.9m and a single 2" standpipe piezometer was installed. A description and graphic representation of the drillhole is provided as Figure A-7b in Appendix A.
- 4.11 <u>Drillhole RAV-11-07c</u> the designated 12" pumping test hole was terminated at a depth of 276m on Wednesday August 24 without intersecting the water zone intersected in drill hole RAV-11-07a drilled approximately 6.7m away. After doing a few packer tests on adjacent drill hole RAV-11-07a, it was decided to make RAV-11-07a the pumping test well and make RAV-11-07c the primary monitoring well. It was decided to install four 2" piezometers in this hole as monitoring piezometers. The deeper two piezometers were installed from Wednesday to Friday September 14 to 16 and the upper two piezometers



were installed Monday and Tuesday September 19 and 20. Intervening layers of gravel and bentonite pellets were installed between piezometer tubes and the hole was back filled with grout above the upper piezometer to the surface in two lifts and was completed Friday September 23. A description and graphic representation of the drillhole is provided as Figure A-7c in Appendix A.

Drill Hole	Surficial Depth (m)	Top Cowie Mbr (m)	Top Cougar Smith Mbr (m)	Top Dunsmuir 5 (m)	Seam 5 (m)	Top Dunsmuir 4 (m)	Seam 4 (m)	Top Dunsmuir 3 (m)	Seam 3 U (m)	Seam 3 Lower (m)	Top Cumberland (m)	Seam 1 (m)
RAV-11-01b	15	80	100.25	121.7	147.4 - 147.7	147.7	195.1 - 196	196	235.5 - 235.75	236.85 - 237.75	237.75	263.5 - 265.3
RAV-11-02a	37.5	196.5	203									
RAV-11-02b	36.5	196.5	203	232	278 - 278.5	278.5	296.25 - 297.25	297.25	263.15 - 265.25		265.25	
RAV-11-03	83.8											
RAV-11-04	12.8											
RAV-11-05	26.8											
RAV-11-06	39.3											
RAV-11-07a	18.5	182.25	210.25	260.5	285.2 - 285.75	285.75	326 - 327	327				
RAV-11-07b	na											
RAV-11-07c	22.5	184	212	263								

Table 5: Stratigraphic Intervals Intersected by 2011 Drill Holes

#### 5.0 ENVIRONMENTAL PROTECTION AND RECLAMATION PROGRAM

Drillsites were constructed along existing forestry roads or pre-existing forestry and/or resource roads. Pre-existing roads required rehabilitation to allow vehicular traffic; rehabilitation consisted of brushing, infilling swales and culvert emplacement where necessary. Access roads requiring rehabilitation varied from 3.5 to 6.5m wide and averaged 5.5m including set backs for brush, soil and ditching requirements. A policy of avoidance was practiced.

Drillsites were constructed to meet the smallest foot print for drill set up and operation as was safely possible. Set ups varied from a widening of access roads requiring push backs to the construction of larger sites to accommodate equipment and extra sumps where necessary. Normal practice was to construct drillsites with maximum dimensions of approximately 30m x 15m (including area for sumps). Sumps for drilling fluid return and drill cuttings were dug along one side. The pumping well required an additional sump which was excavated approximately 400m north-northwest from the pumping wellsite. Ground water was conveyed through a 3" pipe to the discharge point. . Drillsites were cleared of all trees, shrubs, plant growth, deadfall and any other combustible material down to mineral soil. Table 6 gives a summary of the disturbance at each drillsite.



Drill Hole	Access Surface Rights	Freehold / Crown Licence Blocks/Lots	Type of Disturbance	Length (m)	width (m)	Area (ha)
RAV-11-01b	Crown 'Titled Lands'	Lot 88	Drillsite	18	7.5	0.014
RAV-11-01b	Crown 'Titled Lands'	Lot 88	Sump	43	4	0.017
RAV-11-02a	Island Timberlands	DL 20C of Soc 24	Drilleite & Summ	20 5	6.5	0.020
RAV-11-02b	Island Timberlands	DL 39G OF SEC ZA	Drinsite & Sump	50.5	0.5	0.020
RAV-11-03	Island Timberlands	DL 88	Drillsite & Sump	27	15	0.041
RAV-11-03	Island Timberlands	DL 88	trail rehabilitate	108	3.5	0.038
RAV-11-04	Island Timberlands	DL 38G of Sec 2A	Drillsite & Sump	21.5	13	0.028
RAV-11-05	Island Timberlands	DL 88	Drillsite & Sump	27.5	17.5	0.048
RAV-11-05	Island Timberlands	DL 88	trail rehabilitate	581	5.5	0.320
RAV-11-06	Island Timberlands	Lot 33G	Drillsite & Sump	18	7	0.013
RAV-11-06	Island Timberlands	Lot 33G	trail rehabilitate	1138	5.5	0.626
RAV-11-07a	Crown 'Titled Lands'	Lot 88				
RAV-11-07b	Crown 'Titled Lands'	Lot 88	Drillsite & Sump	24	23	0.055
RAV-11-07c	Crown 'Titled Lands'	Lot 88				
RAV-11-07c	Island Timberlands	Lot 38 of Sec 2a	Sump	227	7.5	0.170
RAV-11-07c	Island Timberlands	Lot 38 of Sec 2a	trail rehabilitate	222	5.5	0.122
	Number of drillsites			7		
	Drillsite (including Sump) Average dimension	S		23.79	12.79	0.03
	Total Drillsite (including Sump) Area					0.22
	Separate Sump Dimensions (Site 7 - disposal)			270.00	5.75	0.19
	Average trail width and area rehabilitated				5.00	0.28
	Total Trail length and area rehabilitated			2,049.0		1.11
	Total Disturbed Area					1.51

#### Table 6: Table of Disturbance due to Exploration Drilling in 2011

Rotary drilling techniques using air as a drilling medium were used to drill the holes generating rock cuttings. The cuttings and any fluids produced were disposed of directly to the sumps at drillsites. Table 7 gives an approximation of the volume of cuttings produced and disposed of in sumps.

DrillHole ID	TD (m)	Bedrock Depth (m)	hole size in inches	hole diam in metres	volume of cuttings m <sup>3</sup>
RAV-11-01b	279.5	15	6	0.152	5.098
RAV-11-02a	212.5	37.5	6	0.152	3.876
RAV-11-02b	395.4	36.5	6	0.152	7.213
RAV-11-03	102	83.8	6	0.152	1.861
RAV-11-04	32	12.8	6	0.152	0.584
RAV-11-05	45.7	26.8	6	0.152	0.834
RAV-11-06	59.4	39.3	6	0.152	1.084
RAV-11-07a	352.6	18.5	6	0.152	6.432
RAV-11-07b	11	na	6	0.152	0.201
RAV-11-07c	276	22.5	12	0.305	20.139
Total					47.320

#### Table 7: Cuttings Volumes Disposed of in Sumps

All drillholes were completed as piezometers for ground water monitoring. Casing was left in the ground to protect the piezometers and are clearly marked.

Sumps were filled in with stockpiled excavated material and re-contoured.

Access roads to all sites are being maintained to provide access to monitoring wells.



#### 6.0 PRE-EXISTING MONITORING WELLS NEAR COWIE CREEK

During the course of the 2011 drilling, information was received about the 5 monitoring wells developed by Hillsborough in 2001. All are situated near Cowie Creek in the vicinity of the test mine proposed by Hillsborough prior to their relinquishing the property. The holes are located on the attached map Figure 5. The holes were re-numbered in 2009 and are matched to the original ID in location table - Table 8 - below.

		Location	n UTM Zone 10	NAD 83			
Hillsborough ID <sup>1</sup>	Drill Hole ID	Easting (m)	Northing (m)	Elevation (m)	TD (m) <sup>2</sup>	Depth Reached (m) <sup>3</sup>	
MW01-A	TS-01-01	364,717.91	5,485,491.97	78.38	26.2	26.25	
MW01-B	TS-01-02	364,734.08	5,485,279.01	76.58	30.5	29.29	
MW01-D	TS-01-03	364,723.97	5,485,335.76	79.80	36.6	4.61 <sup>4</sup>	
MW01-C <sup>5</sup>	TS-01-04	364,850.39	5,485,299.53	75.78	25.0	24.02	
MW01-C(2) 5	TS-01-05	364,850.44	5,485,296.79	75.82	7.9	8.05	
Note <sup>1</sup>	No location in reached with TD taken from	nformation fou original logs. m Hillsboroug	ind for Hillsboro h Logs	ugh holes; hole	es id'd by c	omparing depths	
Note <sup>3</sup>	Depth reache	ed with water	probe; as meas	ured by Dan Er	nerson (AN	1EC) July, 2009.	
Note 4	The 2" Piezo	The 2" Piezometer is missing and the 1" Piezometer is damaged and not usable.					
Note 5	The 1" & 2" p well was drill to be usable.	piezometers w ed to replace It also appea	vere damaged du the 2" piezome rs the 2" piezon	ue to bridging a ter and the 1" neter is also us	and pulling was unplug able.	up of casing. A second ged and determined	

Table 8: Location	and Identification	of Hillsborough	Monitoring Wells
Tubic 0. Looution		or rimsborough	monitoring meno

Monitored zones and depths and elevations of piezometers established during the 2001 monitoring wells program by Hillsborough are presented in Table 9 below.

			Screen or T	R interval			
Hillsborough ID's	Drill Hole ID	Depth From (m)         Depth To (m)         Elev Top (mamsl)         Elev Base (mamsl)         Formation/Member/Litholo		Formation/Member/Lithology Tested	Piezometer Type		
	TC 01 01	8.00	11.05	70.38	67.33	Surficial Overburden – sandy silt & gravel	2" PVC
IVIVV01-A	13-01-01	19.39	25.48	58.99	52.90	Upper Trent River - shale	1" PVC
	TE 04 02	2.36	5.41	74.21	71.17	Surficial Overburden – silty sand & gravel	2" PVC
IVIVVUI-D	15-01-02	19.51	28.65	57.07	47.92	Upper Trent River - shale	1" PVC
	<b>TO</b> of op 1	8.72	11.77	71.09	68.04	Surficial Overburden – sandy silt & gravel	2" PVC
	15-01-03	25.60	34.75	54.20	45.06	Upper Trent River - shale	1" PVC
	TE 01 04	3.05	5.79	72.73	69.99	Surficial Overburden – Silty Sand & gravel	2" PVC
1010001-0	13-01-04	17.37	23.47	58.41	52.31	Upper Trent River - shale	1" PVC
MW01-C(2)	TS-01-05	<b>01-05</b> 4.88 7.92 70.94 67.9		67.90	Surficial Overburden – Silty Sand & gravel	2" PVC	

#### Table 9: Tabulation of Piezometers Installed - Hillsborough Holes

Note <sup>1</sup> Piezometers in this hole are damaged or missing and should not be used.

Graphics of the holes and original measured data are provided from data acquired from Hillsborough and is found attached as Appendix C.

These holes were refurbished and re-secured and added to the monitoring wells for the Raven Project.



### 7.0 REVIEW OF 2009 HYROGEOLOGICAL DRILLHOLE PROGRAM

Additional information about the 2009 hydrogeological drill holes came to light during the 2011 program and a review of the 2009 program is warranted.

Five drill sites were selected for groundwater testing and monitoring. Eight drill holes were drilled; four of the holes were exploration holes which were converted to monitoring wells and 4 of the holes were drilled specifically for hydrogeological testing. Site N-2009 was selected as a potential pump test site and 2 holes were drilled – RAV-09-040, a monitoring well and RAV-09-041 a pump test well. The site proved to be unsuitable for a pump test owing to a lack of sufficient water. A 3 day pump test was carried out at drill hole RAV-09-012 but deemed unsuitable for a long term pump test. A search for a suitable site was made and site V-2009 (the site for abandoned and reclaimed hole RAV-09-020) was selected. RAV-09-020 intersected the greatest flow intersected of any drill holes in the 2009 exploration drilling. Two holes were drilled at the site; RAV-09-042 a monitoring well and RAV-09-043 a pump test well. A pump test was carried out from April to June 2010. The Hydrogeological testing was under the supervision of AMEC of Vancouver, BC with input from Itasca Denver Inc. (formerly HCI Corp. of Denver).

Drillholes drilled for hydrogeological monitoring and testing purposes are listed in Table 10 below. Also listed are 5 holes where water level measurements were made in standing open hole casing where the surface hole into bedrock was drilled but the holes not completed owing to curtailment of the exploration program. A summary of the piezometer installations is provided in Table 11.



		Locatio	on UTM Zone	10 NAD 83								
Site <sup>1</sup>	Drill Hole ID	Easting	Northing	Surface Elev.	Total Depth	Bedrock Depth						
		(m)	(m)	(mamsl)	(m)	(m)						
X-2009	RAV-09-006	365554.44	5483048.71	185.90	179.05	67.67						
U-2009	RAV-09-012	365810.38	5483763.43	133.39	324.16	28.04						
AA-2009	RAV-09-022	366174.58	5482646.81	179.45	168.30	77.50						
	RAV-09-034	364304.18	5484572.28	128.48	187.30	13.00						
N-2009	RAV-09-040	364306.81	5484568.03	128.49	121.92	13.40						
	RAV-09-041	364291.98	5484564.36	128.48	110.93	13.40						
V 2000	RAV-09-042	366386.63	5483953.50	75.84	339.50	4.50						
v-2009	RAV-09-043	366424.46	5483951.48	74.86	297.50	4.50						
TS-96-04 <sup>2</sup>	TS96-04	364165.17	5483547.35	207.4	63.00	59.99						
AB-2009 <sup>3</sup>		367298.68	5483105.43	77.93	47.26	47.20						
AD-2009 <sup>3</sup>		366402.09	5482274.79	173.77	74.00	58.00						
NB-2009 <sup>3</sup>		364783.64	5486496.29	79.49	34.40	27.70						
NC-2009 4		363874.05	5486942.59	94.05	43.70	37.70						
Notes: 1	Site is site ID	prior to drillin	ng									
2	Open cased h	nole from Hill	sborough 199	6 drilling prograr	n							
3	<sup>3</sup> Open cased hole to bedrock but not drilled											
4	Open cased h	nole to bedro	ck; used in 20	011 for RAV-11-0	2a							

### Table 10: Hydrogeological Drill Holes Locations (2009)

Table 11:	Tabulation	of Piezometers	Installed	(2009)
-----------	------------	----------------	-----------	--------

			Screen or Th	R interval			Formation/Member/Lithology Tested	Piezometer Type		
Drill Hole ID	Total Depth	Name	Depth From	Depth To	Elev Top	Elev Base				
	(m)		(m)	(m)	(mamsl)	(mamsl)				
RAV-09-006	179.05	Piezo	96.00	115.00	89.90	70.90	Seam 1	2" Schedule 40 PVC Pipe		
RAV-09-012	324.16	Piezo	92.00	130.00	41.39	3.39	Cougar Smith, Cowie and Undivided Upper Trent River	5" PVC Pipe		
RAV-09-022	168.30	Piezo	158.50	164.60	20.95	14.85	in Seam 1	2" Schedule 80 PVC Pipe		
RAV-09-034	187.30	Piezo	134.10	140.50	-5.62	-12.02	in Seam 1	2" Schedule 80 PVC Pipe		
RAV-09-040	121.92	VWT 90	90	90	38.49	38.49	Dunsmuir 3 Sandstone	VWT 3.0Mpa		
RAV-09-040	121.92	VWT 111	111	111	17.49	17.49	Dunsmuir 3 Mudstone in roof of Seam 3 Upper	VWT 3.0Mpa		
RAV-09-040	121.92	VWT 119	119	119	9.49	9.49	Cumberland 2 Sandstone	VWT 3.0Mpa		
RAV-09-041	110.93	Piezo	101.80	111.00	26.68	17.48	Seam 3, and Dunsmuir 3 Sandstone and Siltstone in roof	5" PVC Pipe		
RAV-09-042	339.50	Piezo 2	148	159	-72.16	-83.16	Cougar Smith SS/SLTST	5/8" high density polyethelene tubing and 1" schedule 40 PVC pipe over upper 18.3m		
RAV-09-042	339.50	Piezo 1	161	162	-85.16	-86.16	Cougar Smith SLTST	3/4" Schedule 40 PVC Pipe		
RAV-09-042	339.50	VWT 280	280	280	-204.16	-204.16	Dunsmuir 3 SS Above Seam 3	VWT 5.0Mpa		
RAV-09-042	339.50	VWT 314	314	314	-238.16	-238.16	Cumberland 1 SS Between Seam 3 and Seam 1	VWT 5.0Mpa		
RAV-09-042	339.50	VWT 326	326	326	-250.16	-250.16	Cumberland 1 MS Above Seam 1	VWT 5.0Mpa		
RAV-09-043	297.50	Standpipe	0	231	74.86	-156.14	TD to top of Seam 3; pump test near base of Cougar Smith	Standpipe		
TS96-04	63.00	Standpipe	0.00	63.00	207.40	144.40	bedrock at 59.9m	Standpipe 6" steel casing		
AB-2009	47.26	Standpipe	0.00	47.26	77.93	30.67	shale 1.0 m below till; base of till at 46.26m	Standpipe 6" steel casing		
AD-2009	69.21	Standpipe	0.00	69.21	173.77	104.56	Bedrock at 58m SS/SLTST to 74m	Standpipe 6" steel casing		
NB-2009	23.60	Standpipe	0.00	23.60	79.49	55.89	Bedrock at 27.7m; probably slough in bottom of hole	Standpipe 6" steel casing		
NC-2009	43.70	Standpipe	0.00	43.70	94.05	50.35	Bedrock at 37.5m	Standpipe 6" steel casing		

Graphic presentations of hydrogeological drillholes are attached as Appendix D.

#### 8.0 STATEMENT OF EXPENDITURES - 2011

Table 12 summarizes exploration expenditures at the Raven Project during 2011.



Table 12:	Statement	of Exp	enditures	- 2011
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Permit Application	5,000
Site Preparation, Access, Reclamation and Surveying	43,000
Drilling (including abandonment)	500,000
Geophysical Logging	10,000
Geotechnical and Hydrogeological Testing	146,000
Geological Supervision (personnel, room & board,	120,000
travel, vehicles, core storage etc)	
TOTAL	\$824,000







		Group	Formation	Member	'Sub-Member	
-0					Irden	glacial till, clay and sand and gravel deposits and swamp and river alluvium
20		$\leftarrow$	$\uparrow$	$\wedge$	Overbr	mudstone and siltstone with minor sandstones
40	= = = = = = =  = = = = = = = = = = = =			Itstone		
				River Sil		
60	= =			ber Trent F		
80	= = = = = =  = = = = = =  = = = = = =			livided Up		
100	- - - - - - - - - - - - - - - - - - -		River Fm -	- Und		
120				br →		sandstones with hard pan calcareous lenses
 140				- Cowie M		
				$\downarrow$		
160	= = = = = = = = = = = = = = = = = = = =			smith Mbr		sity shales, slitstones and thin sandstones
180	= = = = = = 			Cougar S		
200			$\bigwedge$	$\uparrow$	$\bigwedge$	m-c gr ss, minor shales and/or mudstones, and thin coals with carbonaceous mudstones; contains Nos 4 and 5 Seams.
220					Junsmuir 5	
		GP -				
240		Vanaimo			$\rightarrow$	Seam 5 Ply 550 - thin and discontinuous
260				smuir Mbr	smuir 4	Seam 5 Ply 540 - thin and discontinuous
280				Duns	Dun	
					$\rightarrow$ $\leftarrow$	Seam 4 (Ply 450)- variable to 2.4m; ave <1.5
- 300					3	
320			ox Fm —		Dunsmuir	
240			- Come		$\downarrow$	Seam 3 Zone in 2 plies: Seam 3U (Ply 360) 0 to 6.8m ave 3.4m; Seam 3L (Ply 340) 0 - 3.8m, ave 0.58; separated by 0.2 to 14.5m;
340 				$  \uparrow$	Iberlan	alternating siltstone, carbonaceous mudstones, minor sandstones, and coal seams; contains No. 1(lower), No.2 and No. 3 coal seams.
360				Abr	1 Curr	Seam 2 - thin and discontinuous
- 380				Cumberland N	Cumberland	





	Compliance Coal Corp.										
	Raven Project										
G	Generalized Stratigraphic Section										
	(Trent River Truncated)										
January, 2012 Figure 4											



# **APPENDIX A**

# Graphic Logs of 2011 Drill Holes

Drilled I	Ву	Drillwell	Cuttir	ngs/Core I	Descriptio	on By	OC/RM	D	DH ID RAV-11-01b							
Date C	omplet	ed August	8, 2011		Date	Logged	4	ugus	t 4 - 8, 2011		L	ocation l	JTW	Zone 10 N	AD 83	
Drilling	Туре	Air Rotary	T.D.	279.5	Geo	physical L	ogger	Electr	olog Service	es Inc	Easti	ng (m)	No	orthing (m)	Elevation	<u>n (m)</u>
Hole S	ize	6"	Angle	-90	Date	e Logged		Augu	st 8, 2011		364	949.14	54	484492.87	115.1	3
Depth (m)	Lithology Graphic	Lithology	∕ Descripti	on	0 50 -2500	Gamma API Caliper mm SP mV	150 250 2500	1.0	Density g/cc Resistance Ohm 2	3.0	-	Drill Hole Construction		Comme	ents	Depth (m)
															0-	
- - - - - - - - - - - - - - - - - - -		Gravel and Sa small to large g siltstone, sand granodiorite?, ' - wet below 7.3	nd: Dense, bi gravel consist stone, and trace of cobb	rown, ing of les, dry	m									Water level in PZ1 PZ2 water l 25 Nov 201	artesian level on 1	
-		Till: silty, grey a	and moist		كمممكر					-						-
- - - - - - - 20 - - - - - - - - - - - -		Siltstone: TRE SILTSTONE, v massive, slight competent - trace of light i sandstone at 1	NT RIVER UI weak strength ly decompos grey medium 9.8 m	PPER , grey, ed, -grained		Mar Mar and								Casing set	at 17m	- - - - - 20 — - - - - - - - - - - - - -
- - - - - - - - - -					<	Munumum										
- - - - - - - - - - - - -						mm www.								Grout 72.8 surface (W:C:B = 1 mass)	to 2:3:1 by	- - - 40 - - - - - - - - - - - -
- - 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$					wwwwww				; <b>&gt;</b> }						  50 - - -
			lione	Car	1					Compliance Coal Corp.						
57	ait	Sal.	hilauc	f rog		-				Raven Coal Project						
do.		- Aud	COR DBA CO	PORA mox Join	TION Ventur	е			Hy	droge	eologica	I Drilling	g Pr	ogram, 20	)11	
		an fi					Dece	ember 6, 20	11	Scale:	1:300		Figure	e A-1b		

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Drilled By Drillwell Enterprises							ngs/Core Des	criptio	n By	OC/RM		DH ID RAV-11-01b				
Date C	omplet	ed	August	8, 2011		Date	Logged	Α	ugust	4 - 8, 201	1	Locati	on UTI	M Zone 10 N	AD 83	
Drilling	Туре	Air	Rotary	T.D.	279.5	Geo	physical Logo	ger <b>E</b>	lectro	olog Servio	es Inc	Easting (n	i) N	lorthing (m)	Elevatio	n (m)
Hole S	lize	6"		Angle	-90	Date	e Logged		Augus	st 8, 2011		364949.1	4 !	5484492.87	115.1	3
Depth (m)	Lithology Graphic		Lithology	<sup>7</sup> Descript	ion	0 50 -2500	Gamma API Caliper mm SP mV	150 250 2500	1.0	Density g/cc Resistance Ohm	3.0 2000.0	Drill Hole Construction		Comme	nts	Depth (m)
- 60 - 70 - 70 70 70 		S 	* VATER DISC salcite chips i addite	th below 67. hoted at 68. CHARGE at mulative ov limulative ov JWIE SAND gd, massive, ate and very strr bleow 85.4 r at 89 m r at 89 m GAR SMITI veak strengt e chips at 11	1 m 5 m 77.7 m er the 0.85 STONE, ey, trace of ong m 1 h, dark 26.7 m		Mon Man Man Mar			Mr. Man h man by more thank				PZ1 - 2" sci standpipe Piezometer contact of T River Uppe Siltstone ar Sandstone Members Silica sand piezometer Zone 1 - Tv (0.11" insid diameter) n sampling tu at depths sl	hed 40 rat rent r d Cowie at screens vo 3/16" e ylon be inlets hown	
				Com	nliona	Can	1				C	ompliance (	coal C	Corp.		
rounhuguce rogi								-				Raven Coa	l Proie	ect		
CORPORAT DBA Comox Joint V							e			H	ydrogeo	blogical Dril	ing P	Program, 2011		
1.00	104	11							Dece	mber 6, 2	011 S	cale: 1:3	00	Figure	e A-1b	

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Drilled E	By	Drillwell	Enterpri	ses	Cutt	tings/Core	ion By	OC/RM			DH ID RAV-11-01b					
Date Co	mplet	ed August &	8, 2011		Dat	e Logged	1	Augus	t 4 - 8, 20	11		Location	UTM Z	Zone 10 N/	AD 83	
Drilling <sup>-</sup>	Туре	Air Rotary	T.D.	279.5	Ge	ophysical	I Logger	Electr	olog Serv	vices Ind	C East	ting (m)	Nort	thing (m)	Elevation	<u>ı (m)</u>
Hole Si	ze	6"	Angle	-90	Da	ate Logge	d	Augu	st 8, 2011		364	4949.14	548	34492.87	115.1	3
Depth (m)	Lithology Graphic	Lithology	<sup>7</sup> Descript	ion	0 50 -2500	Gamm API Calipe mm SP ) mV	na 150 Pr 250	0 1.0 0 0.0	Density g/cc Resistan Ohm	y 3. ice 2000.	0	Drill Hole Construction		Comme	nts	Depth (m)
- - - - - - - - - - - - - - - - - - -		- grey below 16 - trace of siltsto - dark grey with below 176.8 m - weak strength medium-graine 178.3 m - trace of black with no calcium matrix below 18	54.6 m one at 173.8 h trace of ca h, sample cc d sand parti shale and s carbonate 82.9 m	m Icite chips Insists of Icles at illtstone in the rock		www. my how www. www. how			Then the hast					Zone 4 - Tw (0.11" insida diameter) n sampling tu at depths sł	vo 3/16" e ylon be inlets nown	170
- - - - - - - - - - - - - - - - - - -		- weak strength of medium-grai to 195.1 m Coal: Seam 4, Siltstone: medi some carbonad	n and sampl ined sand fr with shale um strength ceous shale	e consists om 189.0		my my wan										190 — - - - - - - - - - - - - - - - - - - -
- - - - - - 210 - - - - -		Sandstone: DL strength, light of - some shale a - strong strengt carbonate belo - weak strength - moderate stre	JNSMUIR 3, grey, mediur nd coal at 2 th with calcic w 208.8 m n below 210 ength below	moderate n-grained 07.3 m Jm 4 m 214.9 m		Mar May I was								Zone 5 - Tw (0.11" insidd diameter) n sampling tu at depths sh	vo 3/16" e ylon be inlets nown	
	310		Com	plianc	e Co	al	-				Compliance Coal Corp. Raven Coal Project					
10		- And	DBA CO	mox Join	t Ventu	ILE IN				Hydrog	geologica	al Drilling	g Pro	gram, 20	11	
	ni-	an fa						Dece	ember 6,	2011	Scale:	1:300		Figure	e A-1b	

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Drilled B	Drillwell	Cut	tings/C	Core D	escriptio	on By 🏼	OC/RM		DH ID RAV-11-01b									
Date Co	mplet	ed August	Dat	te Log	ged	A	ugust	4 - 8, 2	011		Loca	ation U	ТМЗ	Zone 10 N	AD 83			
Drilling T	Гуре	Air Rotary	T.D.	279.5	Ge	ophys	ical Lo	ogger	Electro	log Ser	vices I	Inc	Easting	(m)	Nor	thing (m)	Elevatio	<u>n (m)</u>
Hole Siz	ze	6"	Angle	-90	Da	ate Log	gged		Augus	t 8, 201	1		364949	9.14	548	84492.87	115.1	3
Depth (m)	Lithology Graphic	Lithology	<sup>,</sup> Descript	ion	0 50 	Ga Ca	amma API aliper mm SP mV	150 250 2500	1.0  0.0	Densi g/cc Resista Ohm	nce 200	3.0	Drill Hole Construction			Comme	nts	Depth (m)
220		<ul> <li>weak strengtl</li> <li>strong streng</li> <li>strong streng</li> <li>strong streng</li> <li>weak to mode</li> <li>228.7 m</li> <li>Shaly Coal: Se</li> <li>Mudstone: dar</li> <li>and carbonace</li> <li>Coal: Seam 3 I</li> <li>Mudstone: dar</li> <li>and carbonace</li> <li>Coal: Seam 3 I</li> <li>Mudstone: dar</li> <li>and carbonace</li> <li>Coal: Seam 3 I</li> <li>Silty Sandston</li> <li>low strength, li</li> <li>white particles,</li> <li>grained, poorly</li> <li>siltstone at top</li> <li>high strength</li> <li>carbonate below 256.0 m, trace</li> <li>below 256.0 m, trace</li> <li>below 256.0 m, trace</li> <li>below 256.0 m, siltston</li> <li>some shale a</li> <li>calcium carbor</li> <li>Sandy Siltston</li> <li>siltstone</li> <li>Shaly Coal: Se</li> <li>Carbonaceous</li> <li>Coal: Seam 1</li> <li>Carbonaceous</li> <li>Coal: Seam 1</li> <li>Carbonaceous</li> </ul>	am 3 Upper am 3 Upper are UMBER by the and shale and shale are and are an	5 m 2.6 m h below R siltstone siltstone LAND 2, black and ium- e of s calcium tone at 251.5 to us shale ith trace of Seam 2 with dark grey		Wy WW MAN M AND WWWW A July A MANWW MANWWWW		2500								PZ2 - 2" sci standpipe Piezometer Dunsmuir 3 Sandstone Silica sand piezometer Zone 6 - Tv (0.11" insid diameter) n sampling tu at depths sl Pea Gravel Bentonite F Sodium ber coated pelle	vo 3/16" e ylon be inlets nown Pack	
	31D		Com Cof	pliance PORA	e Coal						Co	Compliance Coal C Raven Coal Proj cological Drilling F			p. t ogram, 20	11	210	
20	1	and for		66.5			Decei	mber 6	, 2011	Sc	ale: 1	:300		Figure	e A-1b			
								-								Page	5 of 6	

Drilled	Ву	Drillwell	Enterpr	ises	Cut	tings/Core D	escriptic	on By	OC/RM	DH ID		RAV-11-01	o		
Date C	omplet	ted August	8, 2011		Da	te Logged	A	ugust	: 4 - 8, 201	1	Location UTM Zone 10 NAD 83				
Drilling	Туре	Air Rotary	T.D.	279.5	Ge	ophysical Lo	ogger I	Electro	olog Servi	Easting (m)	n) Northing (m)		Elevation (m)		
Hole Size 6" Angle -90						ate Logged		Augus	st 8, 2011		364949.14	5	484492.87	3	
	aphic				0	Gamma API	150	1.0	Density g/cc	3.0	itruction				
Depth (m)	E E C E C C C C C C C C C C C C C				50 	Caliper 50 mm 250 SP 2500 mV 2500			Resistanc Ohm	Drill Hole Cons		Comments		Depth (m)	
- 270 		Silty Sandston strength, light i coarse-grained carbonate, inte siltstone and s	e: weak to r grey, mediu d, contains r rrbedded wi hale	moderate im to no calcium ith grey		my MM									270



Compliance Coal Corp.												
Raven Coal Project												
Hydrog	geologica	l Drilling Pı	rogram, 2011									
December 6, 2011	Scale:	1:300	Figure A-1b									
	•		Page 6 of 6									



November 3, 2011 Scale: 1:500

FIGURE A-2a Page 1 of 3



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Drilled By Drillwell Enterprises					ses	Cuttings/Core Descrip	tion By R. McLean	DH ID RAV11-02a				
Date Completed August 2, 2011						Date Logged	July 28 - 2 August, 2011	Location U	TM Zone 10 N	AD 83		
Drilling	Drilling Type Air Rotary T.D. 212.5 m				212.5 m	Geophysical Logger	NA	Easting (m)	Northing (m)	Elevation (m)	)	
Hole S	Hole Size 6" Angle -90				-90	Date Logged	NA	363874.09	5486942.60	94.04		
Depth (m)	Lithology Graphic		Lithology	Descript	tion			Drill Hole Construction	Comme	nts Debt		
180		San	idstone: CO ded with da	WIE SAND rk grey silts	STONE, moder tone, percentag	ate to strong strength, light gre e silstone decreases with dep	y, medium-grained, medium h, contains calcium carbonate		2" sched 80 standpipe Piezometer Sandstone	180 190 200 in Cowie Member		
210		Silts	stone: COU dium-graine	GAR SMITH d sandstone	H SILTSTONE, a layers	moderate strength, dark grey,	medium bedded with fine to		Pea gravel bottom of h for fill betwe	at ole and 210 een		



Compliance Coal Corp.													
Raven Coal Project													
Нус	Hydrogeological Drilling Program												
November 3, 2011	Scale:	1:500	FIGURE A-2a										
			Page 3 of 3										

Drilled By	Drillwell Er	terprises	Cuttings/Core Descrip	tion By R. McLean	DH ID RAV-11-02b				
Date Comp	leted July 28, 20	11	Date Logged	July 25 - 28, 2011	Location UTM Zone 10 NAD 83				
Drilling Type	Air Rotary	.D. 395 m	Geophysical Logger	Electrolog Services Inc	Easting (m)	Northing (m) Elevation	<u>n (m)</u>		
Hole Size	6" /	angle <b>-90</b>	Date Logged	August 3, 2011	363,878.02	5,486,940.71 93.98	,		
Depth (m) Lithology Graphic	Lithology D	escription	Gamma         0         API         15           50         mm         25           SP           -2500         mV         250	Density       1.0     g/cc     3.0       0     Resistance       0.0     Ohm     1000.0	Drill Hole Construction	Comments	Depth (m)		
	Cravel and Sand:	Somo cobblos							
	Gravel and Sand: trace boulders, ligi	Some cobbles, ht brown, dry	Mrv Mary Mr Mary Mr Mary	Marman Correction		Piezo 1 WL @ 1.42m measured Nov 27, 2011 Piezo 2 WL @ 1.25m measured Nov 27 2011	10		
	Sitstone: TRENT		Mary Mary				30		
	SILTSTONE, mod grey, medium to tr fine-grained sands - trace of calcite cl	rerate strength, dark tickly bedded with stone and shale tips 37.5 to 39.6 m	WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	Mar Mar		Casing set at 41.5m	40		
			M M M M M				60		
	Sandstone: strong grey, fine-grained, carbonate     Siltstone: dark gre trace of calcite, thi grained sandstone	strength, dark contains calcium y, weak strength, n layers of fine-	WWW-WWACMAN				70		
	WATER DISCHAF 82.3 m (EC = 4 m) - strong strength b - trace of calcite cl	RGE of 4 L/min at S/cm and pH = 7.7) elow 85.4 m nips at 86.9 m	May My May				80		
						_			
C (		Compliance	e Coal	C	Compliance Coal Corp. Raven Coal Project				
de la	2.1	DBA Comox Joint	Venture	Hydrogeo	logical Drilling F	Program, 2011			

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marine for

December 13, 2011 Scale: 1:500

FIGURE A-2b

Page 1 of 5

Drilled By Drillwell Enterprises							ngs/Core	Descripti	on By	R. McLea	an	DH ID RAV-11-02b					
Date Co	omplet	ted	July 28,	2011		Date	e Logged		July 25	- 28, 201	1	Location UTM Zone 10 NAD 83					
Drilling	Туре	Air	Rotary	T.D.	395 m	Geo	physical	Logger	Electro	olog Serv	vices Inc	Easting	(m)	North	ing (m)	Elevatio	<u>n (m)</u>
Hole S	ize	6"		Angle	-90	Dat		1	Augus	st 3, 2011	 	363,87	8.02	5,486	,940.71	93.9	9
Depth (m)	Lithology Graphic	Lithology Description					Gamma API Caliper mm SP mV	a 150 r 250 2500	0.0	Density g/cc Resistan Ohm	3.0 Ince 1000.0	Drill Hole Construction			Comme	nts	Depth (m)
⊢ <sup>90</sup>	11 11						<b>⊼</b>	X: I	- <u> </u>	🗸	5						90
- - - - - - - - - - - - - - - - - - -		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	race of calcit	e chips 105 f	to 110 m		Month and the second second			warman Maria	m Munner						100
		, , , , , ,	race of calcit	e chipes 116	3 to 119 m		Mr.m. Mary			Mar war with							110 -
		1					And Mary										120
130		W. be	ATER DISCH gan at 129.6 34.1 m grave	HARGE of 20	0 L/min of calcite		Andrad			var de var le							130 -
140		- ti	race of calcit	e chips 140 t	to 142 m		Mun mar Mar			- marker							140
- 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	' - ti i i i	race of calcit	e chips 148 t	to 157 m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			In warman							150
160		- V	VATER DISC	CHARGE of 2	20 L/min		And Mary and			Jury mary							160
170		- ti	race of calcit	e chips at 16	39 m		Angen Angen Prove			war Maria	V						170 -
180		1					- Arlan										180 —
-			200	Com	nliane	Cos					C	Complianc	e Coal	Corp.		_	
COMPORATIO DEA Comox Joint Ventu							N	-	Door	h mbor 12	Hydroge	Raven C ological D	oal Pro	oject Prog	ram, 20	11	
									Dece	mber 13	s, 2011   S	cale: 1	:500		FIGUR	= A-2b	

Page 2 of 5

Drilled By	Cu	uttings/	Core	Desc	riptio	n By	R. McL	Lean	DH ID RAV-11-02b										
Date Comp	plete	d July 28,	2011		Da	ate Log	gged		J	July 25 - 28, 2011				Location	Location UTM Zone 10 NAD 83				
Drilling Typ	pe A	ir Rotary	T.D.	395 m	G	Geophysical Logger					olog Se	ervice	s Inc	Easting (m)	No	orthing (m)	Elevatio	<u>n (m)</u>	
Hole Size	6		Angle	-90		Date Logged				Augus	st 3, 20			363,878.02	5,4	486,940.71	93.9	9 	
(m) oov Graphic		C  		0 50	0 API 150 Caliper 50 mm 250			150 	1.0	g/c	tance	3.0	e Construction						
Depth		Lithology Description				SP -2500 <sup>mV</sup> 2500			:500	0.0	Ohm 1000.0			Drill Hol		Comments		Dept	
180																180			
		- trace of calcit	e chips at 17	77 m		A A 4	Sum A mr. d				- Warder								
		Sandetono: CC		STONE	_	M N	MM MM	· (			M. M. M.							190 —	
200		moderate to str grey, medium-g bedded with da contains calciu	rong strengt grained, med ark grey silts m carbonate	h, light dium tone,		mm	Λ				W.V.		- L					200 -	
- 210 ''''		Siltstone: COU SILTSTONE, n grey, medium b medium-graine	GAR SMITH noderate stru- bedded with ad sandstone	l ength, dark fine to a layers			my Mw Mw				Salar And					Grout 226. surface	16 to	210	
- 220		-218.0 m trace sandstone	of medium-	grained		Z	MM MAnne				- Alt Annu SV					(w:C:B = 1. mass)	2:3:1 Dy	220 -	
230		-233.2 m calcit sample	e chips note	d in			مرام بدالهم المريم		•••		- warden		m			2" sched 80 standpipe	)	230 —	
- - - - - - - - - - - - - - - - - - -		Sandstone: DL SANDSTONE, grey, particle c white to black, in shape, conta carbonate -237.8 m thinly	INSMUIR #5 strong strer olours range particles are ains trace of bedded with	5 hgth, light from irregular calcium		MM MM					- marine					Diezometer Cougar Sm Member Silica sand piezometer	in ith at screens	240 —	
		and trace of ca -240.9 m grey i -243.9 to 245.4 with trace of sil	lcite chips in colour I m light grey Itstone	y in colour		Mun	M .				John St.		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Bentonite P Sodium ber coated pelle	iug - htonite ets		
250 		<ul> <li>light grey and</li> <li>250 m</li> <li>light grey belo</li> <li>calcite chips a</li> <li>trace of calcit</li> <li>trace of siltsto</li> </ul>	grey in colo ow 253 m at 254.5 and e chips at 25 one at 259 m	256 m 55 m 1		MM MM	M. AMM	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			munne					Pea Gravel	Pack	250	
- 260 		Shaly Coal: wit sandstone laye - Blockage belo Sandstone: mo grey, medium-g black siltstone calcjum carbon	h siltstone a ers ow 262 m oderate strer grained, thin and shale, c nate	nd ngth, light bedding of contains		Many	-Star Gar thru	rt of nma L Pipe;	og	A market		and and a						260	
- 270	••••	- 271 m strong	strength and	d coarse-		}	note	gam	ma									270 -	
2	Compliance Coal											C	compliance Coa Raven Coal P	al Co roje	orp.				
	here with	. 4.1	Hydrogeological Drilling Program, 2011								11								

December 13, 2011 Scale:

Meran J.

FIGURE A-2b

1:500

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Drilled E	Зу	Drillwell	Enterpris	ses	Cuttin	igs/Core	Descriptio	on By I	R. McLear	DH ID RAV-11-02b						
Date Co	omplet	ed July 28,	2011		Date	Logged	J	uly 25	- 28, 2011		Location I	Location UTM Zone 10 NAD 83				
Drilling	Туре	Air Rotary	T.D.	395 m	Geo	physical L	ogger	Electro	log Servi	ces Inc	Easting (m)	Northing (m)	Elevation	<u>n (m)</u>		
Hole S	ize	6"	Angle	-90	Date	e Logged		Augus	t 3, 2011		363,878.02	5,486,940.71	93.99	)		
pth (m)	nology Graphic				0 50	Gamma API Caliper mm	150 250	1.0	Density g/cc Resistanc	3.0	tole Construction			epth (m)		
De		Lithology	Descript	on	-2500	SP mV	2500	0.0	Onm	1000.0	Drill	Comm	ents	De		
- - - - -		grained			Andred	-										
280 		Shaly Coal: SE shale, strong s black Sandstone: DL	AM 5 coaly, trength,dark	trace grey to	- Jower - John -									280		
		SANDSTONE, light grey, med siltstone and sl - dark grey to b	moderate st ium-grained, nale lack, with sil	rength, trace tstone,		7								-		
290  		trace of coal, s from 286.6 to 2 - thinly bedded seams below 2 thinly bedded v below 300.9 m	hale and cal 87.0 m with coal an 96.3 m vith siltstone	cite chips d shale and coal	Marray									290		
300		Coal: SEAM 4, sandstone	with trace o		~	>		-						300 -		
		Sandstone: DL SANDSTONE, strong strength grained, trace of - cuttings show throughout but	INSMUIR #3 trace of silts , light grey, r of calcium ca trace of coa it is suspect	tone, nedium- rbonate I ed the coal	A freed by									-		
310 		was washed ou - trace of calciu	it from uppe im carbonate	at 303 m	And the second	5								310		
320		- coarse-graine	d sandstone	329.3 to	and hours									320 -		
		332.3 m - coarse-graine	d at 335.4 m	I	AMM V									-		
- 330		- trace of calciu	m carbonate	e at 340 m	Mary Ann									330		
340					Avend									340 —		
					And									-		
350 					June A									350		
 360					A A	<b>-</b>   -								360 -		
577	nich	-	Com	pliance	e Coa		_			C	Compliance Coa	Il Corp.				
de la		And	COR DBA CO	PORA mox Join	TION Venture	e	-		H	ydroge	Raven Coal Propical Drilling	g Program, 2	011			
	124	and for						Dece	mber 13,	2011 S	cale: 1:500	FIGURE A-2b				
												Page	4 of 5			
Drilled By Drillwell Enterprises			Cuttir	Cuttings/Core Description By R. McLean				DH ID	RAV-11-02	5						
-------------------------------------	----------	--	---	---	--------------------------	---------------	------------	-----------------------------	-----------------	--------------	------------	--	---	----------		
Date Completed July 28, 2011			Date	Date Logged July 25 - 28, 2011				Location UTM Zone 10 NAD 83								
Drilling Type Air Rotary T.D. 395 m			Geo	physical Lo	ogger <b>E</b>	Electro	olog Servi	ces Inc	Easting (m)	Northing (m)	Elevatior	n (m)				
Hole S	ize	6"	Angle	-90	Date	e Logged		Augus	t 3, 2011		363,878.02	5,486,940.71	93.99	)		
	raphic				0	Gamma API	150	1.0	Density g/cc	3.0	struction					
spth (m)	hology G				50	Caliper mm	250		Resistanc	ce	Hole Con			epth (m)		
ă		Lithology	/ Descript	ion	-2500	SP mV	2500				Drill	Comme	nts	ă		
370		Coal: SEAM 3 Sandstone: str coarse-grained Coal: SEAM 3 Sandstone: lig coarse-grained - strong calciur calcite chips - 391.8 m stror END OF DRILL	UPPER, wit ong strength J LOWER, wi ht grey, wea m carbonate	h shale h, light grey, th shale k strength, in area of and grey 394.8 m	Mr. Martin Martin Martin							2" sched 80 standpipe piezometer Dunsmuir 3 Sandstone Pea gravel bottom of h for fill betwe bentonite la	) Member at ole and een yers	370		



Compliance Coal Corp.								
	Raven Coal Project							
Hydrog	geologica	l Drilling Pi	ogram, 2011					
December 13, 2011	Scale:	1:500	FIGURE A-2b					
			Page 5 of 5					

Drilled By	Drillwell Enterprises	Cuttings/Core Description By OR		DH ID	RAV-11-0	03	
Date Completed	August 26, 2011	Date Logged August 26, 2	011	Locati	on UTM Zone 10	NAD 83	
Drilling Type	Air Rotary	Geophysical Logger NA		Easting (m)	Northing (m)	Elevation (	m)
Hole Size/Angle	e 6" / -90	Date Logged NA		368,443.62	5,483,142.72	39.18	
Depth (m) Litho	ology Description		Drill Hole (	Construction	Comr	nents	0
	Gravel: Wthrd., m	brn., stn, p.srt., f.gr.sd to c.pbl					0-
	Gravel: AA becom m.gy. and coloure	ing less brn and wthrd looking to d pbls			Pizo 1 WD	=7.29m	
	Gravel: AA out of	surface effects			NOV 25,20	11	
-	Gravel: AA; more	sand					
					Pizo 2 WE Nov 25,20	D=7.89m 11	
- 10	Gravel: AA gravel	pea to coarse					10 -
					Bentonite	Plua	
	Sand: Sand seam	(from drillers)					
	Gravel: c.pbl., w.ri	nd., water strike; air lift					
	Till: Silty Clay Tillv	vater logged and very fine;			Gravel Pac	ck	
-20	Till: Silty Clay TillA various	AA with Rx frags; volc., qtz, and			Gravelpac gravel app 6m (20') to	k of pea proximately 1m(3')	20 -
	Till: Clay Till v.pla	stic,			bentonite	(2)	
	Till: Clay Till AA v	vith more Rx frags					
	Till: Clay Till AA lo (24.99m); water st	ess clay; top of gravel at 82 ft rike; air lift at 20 gal/min					
	Gravel: pbl to cobl	ble; water strike; air lift at					
							30 -
	Till: various Rx fra says back into Till	gs, minor clay; boulders; Driller at 111' (33.83m)					00
	Till: boulder field						
	Till: Sandy Clay T drilling/casing	ill boulders of volc Rx; diifficult					
	Till: Sandy Clay Ti	ill mostly sd & gravel in clay					
- 40	Till: Sandy Clay T	ill Rx dominantely volc					40 -





### **Compliance Coal Corporation RAVEN PROJECT**

### HYDROGEOLOGICAL DRILLING PROGRAM, 2011

December 13, 2011 Scale:

**FIGURE A-3** 1:200

Drilled By	Drillwell Enterprises	Cuttings/Core Descr	ription By <b>ORC</b>	DH ID	RAV-11-	03
Date Completed	August 26, 2011	Date Logged	August 26, 2011	Locati	on UTM Zone 10	NAD 83
Drilling Type	Air Rotary	Geophysical Logger	NA	Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	6" / -90	Date Logged	NA	368,443.62	5,483,142.72	39.18

# Depth (m) Lithology Comments Description **Drill Hole Construction** Till: Sandy Clay Till boulders of volc Rx Till: Sandy Clay Till very plastic Till: Clay Till very plastic, slate gy., various lith Rx frags - 50 50 - 60 60 Till: Clay Till sd to gravel, s&p, qtz and volc & sltst 70 - 70 Casing into bedrock and pulled back to Till: Clay Till pebbly, various lith 75m Till: Clay Till less clay, larger Rx frags, dom sltst, minor volc et al Till: Clay Till less clay, larger Rx frags, dom sltst, 2" sched Piezo 1 80 80 minor volc et al 40 surficial piezometer





### Compliance Coal Corporation RAVEN PROJECT

### HYDROGEOLOGICAL DRILLING PROGRAM, 2011

1:200

December 13, 2011 Scale:

FIGURE A-3

Drilled By	Drillwell Enterprises	Cuttings/Core Description By ORC	C DH ID	RAV-11-	·03
Date Completed	August 26, 2011	Date Logged August 26, 2	011 Locat	ion UTM Zone 10	0 NAD 83
Drilling Type	Air Rotary	Geophysical Logger NA	Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	e 6" / -90	Date Logged NA	368,443.62	5,483,142.72	39.18
Depth (m) Lith	ology Description		Drill Hole Construction	Com	ments
	Till: wthrd shale m         Drillers put top of         Shale: m.dk.gy., p	n.dk.gy, sh & sltst frags in clay; bedrock at 273' (83.21m) laty to blocky, soft, fragmental		Piezo 2 bedrock p sandpack sand	2" sched 40 iezometer is silica
- 100	Shale: AA; becom	ing more blocky, silty			100 -



Compliance Coal Corporation

RAVEN PROJECT

HYDROGEOLOGICAL DRILLING PROGRAM, 2011

1:200

December 13, 2011 Scale:

FIGURE A-3

Page 3 of 3

Drilled By	Drillwell Enterprises	Cuttings/Core Descr	iption By ORC	DH ID	RAV-11-	04
Date Completed	August 31, 2011	Date Logged	August 31, 2011	Locati	on UTM Zone 10	NAD 83
Drilling Type	Air Rotary	Geophysical Logger	NA	Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	6" / -90	Date Logged	NA	366319.3822	5485431.988	59.5061

### Depth (m) Lithology Description

### **Drill Hole Construction**

### Comments

-0		1	0
-	Gravel: wthrd, m.brn., silty and sandy, f -m c.pbl. gravel	Piezo 1 WD=1.65m	_
	TILL: Clay Till; partialy wthrd., m.brnm.gy.,	1100 20,2011	
_	TILL: Clay Till; m.gy., very plastic, Rx frags,	Piezo 2 WD=1.75m Nov 26,2011	_
_		Casing set to bedrock; pulled back to 6.8m	-
-		Bentonite Plug	_
- 10 -	TILL: Clay Till; AA mostly sltst/sh frags within clay with minor various other Rx	Piezo 1 2" sched 40 surficial piezometer sandpack - silica sand	- 10 -
-		Gravel Pack - Pea Gravel	-
_	shale: m.dk.gy., platy to blocky, pebbly appearance, soft, breaks down when wet, fractured. driller places bedrock at42' (12.8m)	gravelover approx 6m (20') with bentonite layers of 1m (3')	-
-	shale: clayey texture, plastic		-
-	shale: m.dk.gy., platy to blocky, pebbly appearance, soft, breaks down when wet,		_
	fractured. air lift 80gal/min		
20			20 —
-			_
-	shale: clayey texture, very plastic		-
-	shale: m.dk.gy., platy to blocky, pebbly appearance, soft, breaks down when wet, fractured		_
F			
-			-
-			-
-		Piezo 2 2" sched 40	-
30		sandpack is silica	30 -
-		sand	
L			



Compliance Coal Corporation	

RAVEN PROJECT

HYDROGEOLOGICAL DRILLING - MONITORING WELL

1:200

December 13, 2011 Scale:

**FIGURE A-4** 

10 NAD 83
i) Elevation (m)
44.08
e m .2

### Depth (m) Lithology Description

## Drill Hole Construction

Jopin (	in) Liniology	Description			Struction	Comments	_
		Gravel: wthrd., m.brn., silt to c.pbl.grav	vel; R, p.sort.			Piezo 1 WD=0.25m Nov 27,2011	0
_		Gravel: AA more pbls; less silt				Piezo 2 WD=0.76m Nov 27,2011	-
-		Till: Boulder Clay Till m.gy., Clay, silt, with Rx frags	sd, & gravel			Pontonito Diug	-
- - 10		Till: Boulder Clay Till more gravelly, le Rx frags, s&p sd and small frags	ess clay, large				
-		Till: Boulder Clay Till More clay and R volc, granite, qtz, sltst	tx; various			rea Glavel Fack	-
- - 20 -		Till: Clay Till m.to slate gy., very plast volc and sltst	ic, Rx frags,			Casing to 20m; pulled back from bedrock.	
- - -		shale: m.dk.gy, silty pebbly to platy Dr	iller places			Piezo 1 2" sched 40 surficial piezometer sandpack - silica sand	-
- - - - - - - -		Shale: m.dk.gy., in part with clayey tey breaks down when wet; fractured, peb appearance; probably fractured due to glaciation static water level at 80	kture; soft, bbly ) )' (24.3m)				
- - 							- - 40
	2	- Compliance Coal		Comp	liance Coal Corp	oration	
	31 - S	CORPORATION DBA Comox Joint Venture		HYDROGEOLOG	RAVEN PROJEC	G PROGRAM 2011	
20	Prepare -		Dece	mber 13, 2011 Sca	le: 1:200	FIGURE A-5	
				1		1	

Drilled By	Drillwell Enterprises	Cuttings/Core Descr	iption By ORC		DH ID	RAV-11-	05
Date Completed August 29, 2011		Date Logged	Date Logged Augudt 29, 2011		Location UTM Zone 10 NAD 83		
Drilling Type	Air Rotary	Geophysical Logger	NA		Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	6" /-90	Date Logged	NA		367,346.67	5,483,655.20	44.08
Depth (m) Litho	ology Description		Di	rill Hole (		Comr Piezo 2 2 bedrock pi	ments " sched 40 ezometer
-						sandpack	IS SILICA

State State	<b>Compliance</b> Coal
to tal	CORPORATION DBA Comox Joint Venture
S MARINE S.	

С	ompliance	e Coal Corpo	oration								
RAVEN PROJECT											
HYDROGEO	LOGICA	L DRILLIN	G PROGRAM 2011								
December 13, 2011	Scale:	1:200	FIGURE A-5								

Page 2 of 2

Drilled By	Drillwell Enterprises	Cuttings/Core Descr	ription By ORC	DH ID	RAV-11-	06
Date Completed	September 6, 2011	Date Logged	September 2, 2011	Locati	on UTM Zone 10	NAD 83
Drilling Type	Air Rotary	Geophysical Logger	NA	Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	6" / -90	Date Logged	NA	364,311.26	5,488,815.03	82.28

### Depth (m) Lithology Description

### Drill Hole Construction

Comments

0	 			0
_	Till: Sandy Gravel Till wthrd., m.brn., sandy, pebble			
-	Till: Gravel Boulder Till wthrd m brn. candy			-
-	boulder till			-
-	Till: Clay Till mslate gy., clayey, moderate			_
_	III: Clay III m.gy., very plastic, mixture Rx frags, volcanics, granite, siltstone		bentonite plug	-
-				-
-			pea gravel pack	-
10				10-
_				-
-				-
_				-
_	Till: Sandy Clay Till AA, less plastic, more Rx			_
_	frags, sandy, increase sandiness grittyness downward; driller air lift approx 2gal/min 52 - 54'			-
-	(15.85 - 16.46m)			-
-				-
20	Till: Boulder Clay Till m.gy., Low plasticity,			20 -
_	becomes deeper			-
-				-
_		$\times$		-
_				-
_				-
_			Casing to 33m; pulled	-
30	Till Clau Till as any high glasticity		back from bedrock	30 —
_			Piezo 1 WD=32.85m Nov 28,2011	-
-	Till: Clay Till AA mod plasticity		Piezo 2 WD=32.87m	-
_			Nov 28,2011	-
-	Till: Clay Till AA low plasticity		Piezo 1 2" sched 40	
_	Till: Clay Till m.gv., Low plasticity, various Rx frags		surficial piezometer sandpack - silica sand	
-	but predominantly sltst/sh; minorgranite and volc			-
-	Till: Clay Till AA, less plastic, more Rx frags, predominantly sh/sltst			
40				40 —





### December 13, 2011 Scale: 1:200

**FIGURE A-6** 

Compliance Coal Corp

**RAVEN PROJECT** 

HYDROGEOLOGICAL DRILLING PROGRAM 2011

Drilled By	Drillwell Enterprises	Cuttings/Core Desc	cription By ORC		DH ID	RAV-11-	06
Date Completed	September 6, 2011	Date Logged	September 2, 2	011	Locat	ion UTM Zone 10	NAD 83
Drilling Type	Air Rotary	Geophysical Logge	er NA		Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	6" / -90	Date Logged	NA		364,311.26	5,488,815.03	82.28
Depth (m) Litho	ology Description			Drill Hole	Construction	Com	ments
	Shale: mm.dk.gy. with pebbly appear at 129'	, platy to slightly blo ance, soft; driller ca	cky, in part alled bedrock			Piezo 2 2 bedrock pi sandpack sand	" sched 40 ezometer is silica



Compliance Coal Corp RAVEN PROJECT

HYDROGEOLOGICAL DRILLING PROGRAM 2011

December 13, 2011 Scale: 1:200

FIGURE A-6

Date Longenet         August 11, 2011         Date Longen         August 11, 2011         December 2000 (0000)         <	Drilled E	Drilled By Drillwell Enterprises					Cuttings/Core Description By R.McLean & ORC							DH ID RAV-11-07a					
Deling 7 w         Ar Rotan         D. 3 32.0 m         Delenged 9 delinger         Electrologe Services ne         Ensite (m)         Mening (m)         Elevation (m)           Hole Size         0         Date Logged         August 11.201         365.82.94         985987.7422         01.37           Image 10 and 100	Date Co	omplet	ed August	11, 2011		Date Logged         August 11, 2011         Location UTM Zone 10 N							Zone 10 N	AD 83					
Hole Size         6'         Angle         90         Date Logged         Logget 1, 2011         365,28.24         545308.74622         01.83           0	Drilling	Туре	Air Rotary	T.D. 352.6	m	Geo	ophy	sical	Logger	Elec	ctro	log Servic	es Inc	Eas	sting (m)	No	orthing (m)	Elevatior	n (m)
Image: Second	Hole S	ize	6"	Angle <b>-90</b>		Dat	te Lo	gged		Aug	gust	t 11, 2011		36	5,828.94	548	35086.78422	61.83	6
0       Cary Till: Achubm       0         10       Cary Till: An more day less tx       10         10       Greet Address of Representation of Representat	Depth (m)	Lithology Graphic	Lithology	Description	( 	50 -1200	G	API Caliper mm SP mV	a 1: 2: -80	50 1. <sup>1</sup>	0	Density g/cc Resistance Ohm	3.0 3.0 1000.0		Drill Hole Construction		Comme	nts	Depth (m)
Clay Til: An rook clay last X. Clay Til: may we plastic Clay Til: may we plastic Clay Til: may we plastic Clay Til: may we plastic Gravet: LAA Gravet: Ing cmslar than above, 200 Clay Til: May we find a scape more x Boulder Clay Til: May exceeding Clay Til: May we find a scape more x Boulder Clay Til: May exceeding Boulder Act, minor clay Boulder Act, minor clay Boulder Act, minor clay Boulder Act, fragments are bacomong more blocky - maybe silly Boulder Act, fragments are bacomong Boulder Act, fragments are ba				-	r	्रा	1		Ŀ I					П		п			
Clay Till: An more day less n       Casing set at 23.1m       20         Clay Till: An more day less n       Casing set at 23.1m       20         Clay Till: An more day less n       Casing set at 23.1m       20         Clay Till: An more day less n       Casing set at 23.1m       20         Clay Till: An more not faga       Casing set at 23.1m       20         Clay Till: An more not faga       Casing set at 23.1m       20         Clay Till: An more not faga       Casing set at 23.1m       20         Clay Till: An more not faga       Casing set at 23.1m       20         Clay Till: An more not faga       Casing set at 23.1m       20         Clay Till: An more not faga       Casing set at 23.1m       20         State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay         State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An innor clay       State: An	F		Clay Till: dk.ol.	brn		ş		ج ا		_   ·									
10       Clay Tile Ange and Stratement of Rate product       10         20       Clay Tile Ange and stratement of Rate product       20         21       Clay Tile Ange and stratement of Rate product       20         20       Clay Tile Ange and stratement of Rate product       20         30       Backet Clay Tile Ange and stratement of Rate product       30         30       Backet Clay Tile Ange and stratement of Rate product       30         30       Backet Clay Tile Ange and stratement of Rate product       30         30       Backet Clay Tile Ange and stratement of Rate product       30         30       Backet Clay Tile Ange and stratement of Rate product in the ange of Rate product in the stratement of Rate product in the stratement of Rate Product in the stratement of Rate Product in the Rate Product in the stratement of Rate Product in the Rate Product in t	E		Clay Till: AA m	ore clay less rx		F				_   '									
10       Gravet: assortment of Px types: violances s.s. gitter, tables granth       10         20       Gravet: A       Gravet: A         20       Gravet: A       Gravet: A         11       Gravet: A       Gravet: A         12       Gravet: A       Gravet: A         130       Gravet: A       Gravet: A         140       Gravet: A       Gravet: A         150       Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         30       Bodie: Clay TE: AA more or trags       30         40       Bodie: Clay TE: AA more or trags       30         50       Bodie: AA, immore also trags for Clay TE: AN more or trags       50         50       Stake: AA, immore also trags for Clay TE: AN more or trags       50         50       Stake: AA, immore also trags for Clay TE: AN more or trags for Clay TE: AN more or trags for Clay TE: AN more also trags for Clay TE: AN more or trags for	-		Clay Till: m.gy.	, very plastic		3			2				1						-
10       Consist, Summary,	-		Gravel: assortr	ment of Rx types;		3													-
Oracle rule       Grade in a prote 2 c/s       Casing set at 23.1m       20         Clay Tit: May a maler than above.       Casing set at 23.1m       20         Clay Tit: May a maler than above.       Casing set at 23.1m       30         30       Bodder Cary Tit: A more arc frags       30         Clay Tit: May a set any more x       Bodder Cary Tit: store Rx frags performed to store the set and the set	F 10				_/	2		<											10
Gravelt AA         Gravelt AA         Gravelt may, smaller than above, 22% smaller         Cay Till: m.gv, vplastic         Clay Till: AA more nr. frags         Bodder Cay Till: AA more cay         Brade: AA, rimore adave			sand	cobble ; approx 25%		_ }	:			1									-
20       Carbon and the map with the above. 20% share is frags. Clay Till: And ress frags proby could at it.       Casing set at 23.1m       20         30       Boulder Clay Till: And ress frags proby could at it.       Share Range frags proby could at it.       30         30       Boulder Clay Till: And ress frags proby could at it.       Share Range frags proby could at it.       30         40       Boulder Clay Till: And ress frags proby could at it.       Share Range frags proby could at it.       30         50       Share Range frags proby could at it.       Share Range frags proby could at it.       40         50       Share Range frags proby could at it.       Share Range frags proby could at it.       50         60       Share Range frags proby could at it.       Share Range frags proby could at it.       50         60       Share RA; fragments are becoming more bad with a smaller harmner bad with a smaller harm	F		Gravel: AA			1		6				···- 8							-
20     A=20% sand     Casing set at 23.1m     20       30     Clay Tilt: AA more xt trags     30       30     Boulder Clay Tilt: larger Rx trags problematic to shale regression to regression to shale regression to shale regression to shale regression to shale regression to regression to shale regression to shale regression to regress	F		Gravel: m.gy.,	smaller than above,	-//	A A		ک											-
A Clay Til: AA loss day more x     30       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Til: Targer Rx frags prob     Soulder Clay Til: Targer Rx frags prob       Soulder Clay Targer Rx frags     Soulder Clay Targer Rx frags       Soulder Clay Targer Rx frags     Soulder Clay Targer Rx frags       Soulder Clay Targer Rx frags     Soulder Clay Targer Rx frags	- 20		>25% sand				3		<u>}</u>								Casing set	at 23.1m	20 -
20     Clay Till: AA more x frags     30       30     Boulder Clay Till: Ager Rx frags ptbly boulder till     State: Upper Trent River: m.gv., some clay with a smaller hannee bat weining     30       40     Shale: AA: minor calofte veining     40       50     Shale: AA: fragments are becoming more blacky - maybe ality     50       60     Shale: AA: fragments are becoming more blacky - maybe ality     50       60     Shale: AA: fragments are becoming more blacky - maybe ality     50       70     Shale: AA: fragments are becoming more blacky - maybe ality     60       70     Shale: AA: fragments are becoming more blacky - maybe ality     60       80     Shale: AA: fragments are becoming more blacky - maybe ality     60	F		Clay Till: m.gy.	, v.plastic			Ξ						_	ļ		ļ	e dening e e e		-
30       Clay Til: AA less day more rx         Boulder Clay Til: Lager Rx frags proby       30         31       Stale: Upper Trent River m.gv., some clay with Rx fragments         32       Stale: Upper Trent River m.gv., some clay with Rx fragments         40       Stale: A. minor clay         40       Stale: A. minor clay         50       Shale: A. more clay with a smaller hammer bit         50       Shale: A. more clay         50       Shale: A. more clay         50       Shale: A. more clay         50       Shale: A. fragments are becoming more blocky - maybe ally         50       Shale: A. fragments are becoming more blocky - maybe ally         50       Shale: A. fragments are becoming more blocky - maybe ally         50       Shale: A. fragments are becoming more blocky - maybe ally         50       Shale: A. fragments are becoming more blocky - maybe ally         50       Shale: A. fragments are becoming more blocky - maybe ally         60       Shale: A. fragments are blocky - maybe ally         70       Shale: A. fragments are blocky - maybe ally         80       Shale: A. fragments are blocky - maybe ally         80       Shale: A. fragments are blocky - maybe ally         80       Shale: A. fragments are blocky - maybe ally         80	F		Clay Till: AA m	ore rx frags				M				-							-
30     Beuder Clay Til: targer Rx frags proby     30       40     Shale: Upper Trent River: m.gv., some clay with Rx targenents     40       40     Shale: May: play appearance to the revent with a smaller hammer bit     40       50     Shale: AA; minor calcy     50       50     Shale: AA; fragments are becoming more blocky - maybe sity     50       50     Shale: AA; fragments are becoming more blocky - maybe sity     50       60     Shale: AA; fragments are becoming more blocky - maybe sity     60       70     Shale: AA; fragments are becoming more blocky - maybe sity     60       80     Shale: AA; fragments are becoming more blocky - maybe sity     60	E		Clay Till: AA le	ss clay more rx				MAN NO					5						-
40     Babe: Upper Tent River: m.gy., some day with Rx fragments     40       40     Shale: Al; minor clay     40       50     Shale: Al; minor clay     50       50     Shale: Al; fragments are becoming more blocky - maybe sity     60       60     Shale: Al; fragments are becoming more blocky - maybe sity     60       60     Shale: Al; fragments are becoming more blocky - maybe sity     60       60     Shale: Al; fragments are becoming more blocky - maybe sity     60	- 30		Boulder Clay T	ïll: larger Rx frags prb	ly			X					<u>_</u>						30
40       Shale: Al; minor clay       40         50       Shale: Al; minor clay       50         60       Shale: Al; fragments are becoming more blocky - maybe sity       50         60       Shale: Al; fragments are becoming more blocky - maybe sity       50         60       Shale: Al; fragments are becoming more blocky - maybe sity       50         60       Shale: Al; fragments are becoming more blocky - maybe sity       50         60       Shale: Al; fragments are becoming more blocky - maybe sity       50         60       Shale: Al; fragments are becoming more blocky - maybe sity       50         60       Shale: Al; frages       60         70       Shale: Al; frages       60         70       Shale: Al; frages       80	-							X					<u>}</u>						-
40       Shale: m.gv., platy appearance to shale frageCasing set to 76 (23.1m) Drillers were with a smaller hammer bit.       40         50       Shale: AA: minor calce veining       50         51       Shale: AA: minor calce veining       50         50       Shale: AA: minor calce veining       50         50       Shale: AA: minor calce veining       50         50       Shale: AA: minor calce veining       50         51       Shale: AA: few qtz frags       60         60       Shale: AA: few qtz frags       60         70       80       80       80	F		some clay with	Rx fragments				3				_							-
40       Image Arage Casing set to 76 (23.1m) Drillers were with a smaller hammer bit       40         Shale: AA; minor clay       50         50       Shale: AA; minor clay         50       Shale: AA; fragments are becoming more blocky - maybe sity       50         60       Shale: AA; fragments are becoming more blocky - maybe sity       60         70       Shale: AA; fragments are becoming more blocky - maybe sity       60         80       Shale: AA; fragments are becoming more blocky - maybe sity       60         70       Shale: AA; fragments are becoming more blocky - maybe sity       60         70       Shale: AA; fragments are becoming more blocky - maybe sity       60         80       Shale: AA; fragments are becoming more blocky - maybe sity       60         80       Shale: AA; few qtz frags       60         80       Shale: AB; few qtz frags       80	E		Shale: m.gy., p	laty appearance to				<u>s</u>					-						
40       bit       shale: AA; minor clay       40         Shale: AA; minor clay       50       50         50       Shale: AA; fragments are becoming more blocky - maybe silty       50         60       Shale: AA; fragments are becoming more blocky - maybe silty       60         70       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       60         80       Shale: AA; fragments are becoming more blocky - maybe silty       80	F		Shale fragsCas	ing set to 76' (23.1m) ith a smaller hammer				Ŵ	Ķ.			2	3						-
Shale: AA; minor calcite veining         Shale: AA; fragments are becoming more blocky - maybe silty         Shale: AA; few qtz frags         60         70         80	- 40		bit					$\leq$											40
Shale: AA; rew qtz frags       50         50       Shale: AA; frew qtz frags         60       Shale: AA; few qtz frags         60       70         80       80	E		Shale: AA; min	or clay															-
Shale: AA; fragments are becoming more blocky - maybe silty       50       50         60       Shale: AA; few qtz frags       60         70       80       80       80	E		Shale: AA; mi	nor calcite veining				$\sum_{i=1}^{n}$											-
50     Shale: AA; fragments are becoming more blocky - maybe silty     50       60     Shale: AA; few qtz frags     60       70     70     70       80     80	-		Shale: AA; min	orclay															-
Shale: AA; fragments are becoming more blocky - maybe silty       Shale: AA; few qtz frags       60         -60       Shale: AA; few qtz frags       60         -70       -70       -70         -80       -70       -70         -80       -70       -70	50				⊢		_	$\frac{1}{2}$		-		<u></u>							50 —
-60         Shale: AA; few qtz frags         60           -70         -70         -70           -80         -80         -80	E		Shale: AA: frac	ments are becoming				2					=={-						
-60       Shale: AA; few qtz frags       60         -70       -70       -70         -80       -80       -80	E		more blocky - r	maybe silty				<b>\~</b> {											-
	F		Shale: AA: few	gtz frags				Z											-
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Shale: AA; sample contains a few	F		Shale: AA; san	nple contains a few				V					5						
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	Compliance Coal Corp											
	Raven Project											
Hydro	ogeologica	al Drilling P	rogram, 2011									
Jan 6, 2012	Scale:	1:500	Figure A-7a									

Drilled By Drillwell Enterprises					Cuttings/Core Description By R.McLean & ORC					D	DH ID RAV-11-07a								
Date C	omple	ted	August	11, 201	1	Da	Date Logged				st 11, 20	11		Location UTM Zone 10 NAD 83					
Drilling	Туре	Air	Rotary	T.D.	352.6m	G	eophy	ysical L	ogger	Elect	rolog Se	ervices	s Inc	Easti	ng (m)	No	orthing (m)	Elevatio	n (m)
Hole S	ize	6"		Angle	ə <b>-90</b>		Date L	ogged		Augu	ust 11, 2	011		365	,828.94	548	5086.78422	61.83	3
	Graphic					0		Gamma API Caliper	15	0 1.0	Den: g/c	sity :c	3.0		onstruction				Ē
ш ц	logy					50		mm	25	0	Resist	ance			о О				h (n
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90										-									90
		SI	HALE/CLAY	STONE: C	Clay with frags			2	, in the second				Ś						-
	===		shale		/								-3						-
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E		Si	iltstone: dk.g	y., modera	ate strength			1			3		3						-
- 160		Si	iltstone: AA;	strong, tra	ace calcite			<u>s</u>	<u>}</u>		<u></u>		2						160 -
E		Si	iltstone: AA:	minor san	dstone			AV4			Ç.		- Second						-
-			agments					AN I	;;{		2		Ş						-
_		Si	iltstone: AA;	trace calc	ite chips							-	$\overline{\mathbf{x}}$						
- 170		Si	iltstone: AA;	minor san	dstone				<u>}</u>		5		- <u>Ş</u>						170 -
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Lompliance Loai											Rav	/en Proi	ect	•					
CORPORATION																			
DBA Comox Joint Venture									Hyd	lrogeo	ologica	I Drillin	g Pr	ogram, 20	11				
24		11		ti						Jan	6, 2012	)	S	cale:	1:500		Figur	e A-7a	

Page 2 of 4

Drilled	rilled By Drillwell Enterprises						Cuttings/Core Description By R.McLean & ORC					С	DH ID RAV-11-07a						
Date C	omple	ted	August ?	11, 2011		Da	ate Lo	gged		A	ugust	11, 2011			Location	UTN	Zone 10 N	AD 83	
Drilling	Туре	Air	Rotary	T.D.	352.6m	G	eophy	/sical	Logg	er E	Electrol	og Serv	rices Inc	C E	Easting (m)	No	orthing (m)	Elevation	<u>n (m)</u>
Hole S	Size	6"		Angle	-90		ate Lo	oggeo	4		August	11, 201	1		365,828.94	548	35086.78422	61.83	8
Depth (m)	Lithology Graphic		Lithology	Descrip	tion	0 50 -120	00	Gamma API Caliper mm SP mV	r	150 250 -800	1.0	Density g/cc Resistan Ohm	/ 3. ce 1000.	0	Drill Hole Construction		Comme	nts	Depth (m)
  190		Sa f.c Sa Sa Sa fra	andstone: Co gr., trace calc andstone: AA alcite chips andstone: m andstone: AA andstone: AA ags	wie Membe ite .; strong, co -lt.gy., m.gr .; some silts ; some dk.s	rr: m.dk.gy., ntains , tone frags gy., siltstone		And a Martin Martin	-			Marian								190 —
_		Sa	andstone: AA	; moderate	strength									Ş					
200		•					2	8	R R R R R R R R R R R R R R R R R R R		1			2					200
		Sa	andstone: AA	; strong			NA ANA	nha A	وينديدن يتقصيه		- Serve		~						
210		Sa m	andstone: Co .dkdk.gy, f.g	ugar Smith gr.,	Member:			Mm/m/			Jane	·							210
220		Sá ca	andstone: AA alcite	.; It gy., san	dstone; with			mm ran mr			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								220 —
230		Si Si	andstone: AA andstone: AA	.; lt.gy., with .; lt.gy., with	calcite		A A A A A	MAMAA			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		4						230 —
240	· · · · · · · · · · · · · · · · · · ·	Si	andstone: AA	.; lt.gy., with	calcite		. MW WW		in the second second		- Mar		1	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2					240 —
		Si dk Si	Ity Sandstone a.gy. siltstone Ity Sandstone	e: m.gy., f.g frags e: AA; stron	r., with g		MÅ.	MMAAA			And No								
250 		i Si	Ity Sandstone	e: dk.gy. & I	brownish			MW/NV			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			2 2 2 2 2			4" pump se	t at denth	250
260		Sa wi wa	andstone: Du ith calcite; ca ater strike - fl	Insmuir Mer Icite bands; ow of 60l/m	nber: lt gy Note: in, saline		MM							<u>}</u>			of 256m		260 -
270		•																	270 —
			-	Com	Inliana	n C	nal							Com	pliance Coa	al Co	orp		
2.4	ARE	1	3.1	LUII	ihiigiic	ես	Jdl								Raven Proj	ect			
10			And	CO DBA C	RPORA omox Join	t Ven	ture					ł	Hydrog	geolog	gical Drilling	g Pı	rogram, 20	11	
		4.1									Jan 6,	2012		Scale	e: 1:500		Figur	e A-7a	
										Ĺ							Page 3	of 4	

Drilled By	/	Drillwell	Enterpri	ses	Cut	ttings/0	Core D	escriptio	n By 🏾	R.McLean	& ORC	DH ID		RAV-11-07a	a	
Date Con	nplet	ed August	11, 2011		Da	ite Log	ged	Α	ugust	11, 2011		Location	υτν	Zone 10 N	AD 83	
Drilling Ty	уре	Air Rotary	T.D.	352.6m	G	eophys	sical Lo	ogger E	Electro	log Servi	ces Inc	Easting (m)	No	orthing (m)	Elevatio	n (m)
Hole Size	e	6"	Angle	-90	D	ate Lo	gged		Augus	t 11, 2011		365,828.94	548	35086.78422	61.83	3
Depth (m)	Lithology Graphic	Lithology	<sup>,</sup> Descrip	tion	0 50 -120	G: C: 0	amma API aliper mm SP mV	150 250 -800	1.0	Density g/cc Resistanc Ohm	3.0 e 1000.0	Drill Hole Construction		Comme	nts	Depth (m)
280		Sandstone: wit Sandstone: dk. banding Siltstone: dk. gg Sandstone: dk. banding Siltstone: dk.gg bands Carbonaceous black, coal frac Silty Sandstone: m. Siltstone and si Sandstone: m. Sandstone: m. Carbonaceous dk.gy., carbona	h shale lam . gy., and lt. y., . gy., and lt. y., with carb Shale: Sea js, weak strr e: dk.gy., fra andstone gy., m.gr., n gy. and brow Sandstone	inations gy. gy. onaceous m 5 Zone, ength ags of noderate wn, m.gr., : m.dk I frags.		Mr. Mrs. Merting menerica N. a. M. M. M. M.					my when when when when when when we want we want want when we want we want want want want want want want want			Hole backfil 280m alterr layers pea ( and benton gravel pack 6m (20') bentonite la 1m(3')	lled to nating gravel ite approx ayers	280
310		Sandstone: m. strength, Sandstone: m.	gy., m.gr., n gy brn., c.	gr.,		Munhaman	2222 C				wwwww					310
		Sandstone: m. strength, Shaly Sandsto shale frags Coal: Seam 4 ( Sandstone: m. strength, with s frags Sandstone: AA Sandstone: AA	gy., m.gr., n ne: sandsto Coal and sh gy., f.gr., m shale and si with siltsto to m.gr.	noderate		Munda June marker marker June June					www.					330
350					:				K-							350 -



Compliance Coal Corp												
	Raven Project											
Hydro	geologica	ll Drilling Pi	rogram, 2011									
Jan 6, 2012	Scale:	1:500	Figure A-7a									

Drilled By	Drillwell Enterprises	Cuttings/Core Descr	iption By R.McLean	DH ID	RAV-11-	07b
Date Completed	August 12, 2011	Date Logged	August 12, 2011	Locatio	on UTM Zone 10	NAD 83
Drilling Type	Air Rotary	Geophysical Logger	NA	Easting (m)	Northing (m)	Elevation (m)
Hole Size/Angle	6" / -90	Date Logged	NA	365,820.37	5,485,090.01	61.89

### Depth (m) Lithology

### **Drill Hole Construction**

### Description Comments -0 0 Clay Till: dk.ol.brn to gy. downwards; more clay less rx; very plastic WD=5.87m Nov 30,2011 Gravel: assortment of Rx types; volcanics, ss, sltstn, shale, granite; pbl to cobble ; approx 25% Casing set to 11m and pulled back to 6.1m sand increasing downwards 2" sched 40 standpipe piezometer 10 - 10 Clay Till: m.gy., v.plastic decreasing downwards



	Complia	nce Coal C	orp
	Rav	ven Project	
Hydrog	jeological	l Drilling Pi	rogram, 2011
December 13, 2011	Scale:	1:200	Figure A-7b

Drilled	Ву	Drillwell	Enterpri	ses	Cuttings/Core Des	cription By OC/RM			DH ID		RAV-11-070	;	
Date C	omplet	ed August	25, 2011		Date Logged	August 15-25, 2	2011		Location l	JTN	Zone 10 N	AD 83	
Drilling	Туре	Air Rotary	T.D.	275.9 m	Geophysical Log	ger		Ea	asting (m)	No	orthing (m)	Elevatio	<u>n (m)</u>
Hole S	Size	12"	Angle	-90	Date Logged		1	36	65822.73 m	54	85088.27 m	61.90 m	
Depth (m)	Lithology Graphic	Lithology	/ Descript	tion					Drill Hole Construction		Comme	nts	Depth (m)
F_0		Till: Clay dark	olive brown							$\square$			0-
		<ul> <li>more clay and</li> <li>medium gray,</li> </ul>	d less grave , very plastic	l below 3m : below 4m									
-													=
		Gravel: assorm	nent of grave	el types includin	g volcanics, sandstone, si	iltstone, shale and granite					PZ1 WD=7.	86m 1	-
											100 30,201	'	10 —
-		Till: medium gr	ay, very pla	stic									
		- cobbles and b	oulders bel	ow 18m									=
-	$\mathcal{O}_{4}$												20
- 20		Shale: medium	i gray, some	clay and grave	fragments					$\square$			20 -
											Casing set a	at 23.2m	
E													
- 30		- minor calcite	veining at 3	) 5m									30 —
			g										
F													
Ē			00.4										-
- 40		- minor clay at	38.1m								P72 WD=44	l 27m	40 —
-									_		Nov 30,201	1	-
E		- trace calcium	carbonate a	at 42.7m							Nov 30,201	1.96m	
											PZ4 WD=43 Nov 30.201	3.27m 1	-
50											,		50 —
E													-
F (0													-
- 60											Grout 185m	to C·B	60 -
E											=12:3:1 by r	nass)	-
-											installed in 6	50m lifts	-
- 70													70
E													
F													- 1
Ę	===	- trace calcium	carbonate a	at 76.2m									-
80													80 -
-  -													
Ē													
└ <u>90</u>		1								$\mathbb{Z}$			90 —
			Com	nlianco	Coal			Comp	liance Coa	l Co	orp.		
2	AND	1.54	GUII	ihiidiire	0001			Rav	ven Coal Pr	oje	ct		
	the Area	4 4	COF	PORAT	ION		،ام .	aoda-'				11	
20		S alter	DBA Co	omox Joint	l'enture		nyaro	yeologi		, PI	ogram, 20	11	
3.1	100	and the				January 6, 20	012	Scale	: 1:500		Figure A-	7c	
											5.5.1		

Drilled By	Drillwell	Enterpri	ses	Cuttings/Co	ore Descript	ion By OC/RM			DH	ID		RAV-11-07c	;	
Date Complet	ed August 2	25, 2011		Date Logge	ed	August 15-25, 2	2011		Loc	ation L	JTM	Zone 10 N/	AD 83	
Drilling Type	Air Rotary	T.D.	275.9 m	Geophysic	al Logger				Easting	g (m)	No	orthing (m)	Elevatio	n (m)
Hole Size	12"	Angle	-90	Date Logg	jed		_		365822	.73 m	548	85088.27 m	61.90 m	nasl
Depth (m) Lithology Graphic	Lithology	Descript	ion						Drill Hole Construction			Comme	nts	Depth (m)
90	1													90
90 100 110 120 130 140 150 160	- medium-gray - alternating lat Sandstone: stro siltstone Siltstone: mode	to light-gray yers of weal	, less platy and < to strong stren , trace of calciur h, dark grey	more blocky belo gth and trace of	ow 120.4m calcium carbon	n-grained, with						Grout 185m surface (W:0 =12:3:1 by n installed in 6	to C:B nass) SOm lifts	90 100 110 110 120 130 140 140 150 160 170 170
	1											surface (W:0	C:B	-
⊢ 180 IIIIII											//	=12.3.1 DY N	11055)	180 —
		Com Cor DBA Co	PORAT	Coal TO N Venture			Hydro	Cor F ogeolo	mplianc Raven ( ogical [	e Coal Coal Pr Drilling	Co ojec Pr	orp. ct ogram, 20	11	
S Aller	and the				-	January 6, 2	012	Sca	ale:	1:500		Figure A-	7c	
					l							Page 2	of 4	

Drilled E	Зу	Drillwell	Enterpri	ises	Cuttings/C	ore Descript	tion By OC/RM		DH	ID		RAV-11-070	•	
Date Co	omplet	ted August	25, 2011		Date Logo	ged	August 15-25, 2	2011	Lo	cation	UΤΝ	Zone 10 N	AD 83	
Drilling	Туре	Air Rotary	T.D.	275.9 m	Geophysi	cal Logger			Easting	g (m)	No	orthing (m)	Elevatio	<u>n (m)</u>
Hole S	ize	12"	Angle	-90	Date Log	ged			365822	2.73 m	54	85088.27 m	61.90 m	nasl
Depth (m)	Lithology Graphic	Lithology	Descrip	tion					Drill Hole Construction			Comme	nts	Depth (m)
180		1												180
- - - - - - - - - - - - - - - - - - -		Sandstone: CC calcite chips - light grey, me - grey to dary g	WIE SAND dium-graine rey, trace o	STONE, modera ed, and trace of s f siltstone below	ate to strong sti siltstone 184.5 193.6m	rength, dark grey to 189.0m	y, fine-grained, trace					PZ1 - 2" sch standpipe piezometer silica sand b	ned 40 with backfill	190 —
200												Bentonite pe	ellet seal	200 —
		- trace of dark g	grey fine-gra	ained sandstone	at 208.8m							. ou gravor		240
210 		Siltstone: COU	GAR SMITH	H, weak to mode	erate strength, ç	grey to light grey	,							210
220 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	- light grey at 2	18.0m											220
- 230		- grey at 228.7	m											230 —
		- light grey at 2	31.7m									PZ2 - 2" sch standpipe piezometer silica sand b	ned 80 with backfill	
240  		- light grey and - trace of light t - grey below 24	fine-graine o dark grey I3.9m	d below 240.9m fine-grained sar	ndstone at 242.	4 m								240
250		i - dark grey and i	brownish a	at 253.1m										250 —
		1										D72 0" a-h	od 90	
260		Sandstone: DU	INSMUIR #	5 SANDSTONE, nedium-grained b	strong strengt	h, light grey, fine	⊱grained	- 820				piezometer silica sand b	with backfill	260
- 270	•••	•				г						1		270
	310	19. L	Con	pliance	Coal			Co	ompliano Raven (	ce Coa Coal P	l Co roje	orp. ct		
10		- 3.0	DBA C	omox Joint \	/enture			Hydrogeol	ogical I	Drilling	g Pi	rogram, 20	11	

1:500

January 6, 2012 Scale:

Figure A-7c

Page 3 of 4

Drilled E	Зу	Drillwell	Enterpri	ses	Cuttings/Core Descrip	otion By OC/RM		DH ID	RAV-11-070	>	
Date Co	omplet	ed August 2	25, 2011		Date Logged	August 15-25, 20	011	Location L	JTM Zone 10 N	AD 83	
Drilling	Туре	Air Rotary	T.D.	275.9 m	Geophysical Logger			Easting (m)	Northing (m)	Elevation	n (m)
Hole S	ize	12"	Angle	-90	Date Logged			365822.73 m	5485088.27 m	61.90 m	asl
Depth (m)	Lithology Graphic	Lithology	Descrip	tion				Drill Hole Construction	Comme	nts	Depth (m)
270									PZ4 - 2" sch standpipe piezometer	ned 80 with	270



	Complia	nce Coal Co	orp.
	Raver	n Coal Proje	ct
Hydrog	geologica	l Drilling Pi	rogram, 2011
January 6, 2012	Scale:	1:500	Figure A-7c
			Page 4 of 4

## **APPENDIX B**

**Geophysical Logs of 2011 Drill Holes** 

## **APPENDIX B-1**

## **Geophysical Logs of Drill Hole RAV-11-01b**

GAMMI	RAY	
S.P. /	RESIS	STANCE
DENSITY	- - 	LIPER
LC	ă	
ICE COAL CORPOR	VATION	~
OJECT		
COTORIDITY		OTHER SERVICES
		DEVIATION
TWP.		SURVEY
Elevation		K. B.
Above Perm	. Datum	G.L.
Type Fluid	WATER	
Wellhead Pressure	0	
Max. Temp.°C	N/A	
Oper. Rig Time	2.5 HR.	
Recorded By	W. PUBA	287
Witnessed By	O. CULL	LINGHAM
Apparent Cement Top	N/N	
Hoist Unit# / Loc.	WIRELIN	NE #1
Program	86 NIM	
DRIFF RIG		
GRADE TYPE JOIN	T FRO	0M T0
	SURF.	Ŧ.D.
	eune	17 0
	OUNE -	11.0
	F	
	GRADE TYPE JOIN	GAMMA RAY       S.P. / RESIS       S.P. / RESIS       DENSITY / CJ       DENSITY / CJ       LOG       COLUMER       TWP.       Elevation       Above Perm. Datum       Nax. Temp.°C     MATER       Neihead Pressure     N/A       Above Perm. Datum       Vinessed By     O. CULI       Vinessed By     O. CULI       NA     N/A       Apparent Cement Top     M/A       WIRELIN     VIRELING       GRADE     TYPE JOINT       GRADE     TYPE JOINT       GRADE     TYPE JOINT

RUN: R	AV-11-01	IB LAS	S REF	>																		STA	RT:	28	34.7	0m
DIR.: U	P							_				-										ST	OP:	-1	0.20	m
DATE: 08	8/08/11							F	R۶	V-	11	-0′	۱B									R	ES.:	0.05	5 m	
TIME: 16	6:40:50																					SCA	ALE:	100	:1 m	1
-Time Ma	rk [60.0	s]																								
								20.2		··· <b>-</b> ··							<u>m</u>	<u></u>		 						20.0
																	0	P-								
50.0		150			25	50.0		00									Ohr	ns								500
	Ca	liper n	nm													ĥ	esis	tanc	e	 						
0.0	0.0	API	2		1:	50.0		1.2									1.:	50								3.0
	Ga	mma r	kay													De	nsity	/ (g/	CC)							
			3				0														1		******	****		
9																										
181																					$\vdash$					
		+	1																	 				10000		
⊢s⊢†		+	1					$\vdash$				*****	******	*****						 	L				$\vdash$	-
			1																		-					
5	$\rightarrow$	_	1							-										 						
$  \mathbf{A}  $	$\rightarrow$		¥												10002						<u> </u>			$\vdash$	$\square$	

































				GAMMA	RAY		
ELEC	TROL	G		S.P. / 1	RESIS	TANC	H
SERVI	CES	INC.		DENSITY	\ G≱	LIPE	57
				Lo	G		
FILING #	Company	COMPLIA	NCE CON	L CORPORI	ATION		
LSD	Well	RAV-11-	01B				
SEC TWP	Field Province	RAVEN P BRITISH	ROJECT	Ĩ			
м.	Location					OTHER	SERVICES
	LSD.	SEC.		TWP.		SURVE	Y
	RGE.	W.					
Permanent Datum GRO	UND LEVEL		Elevatio	D		K.B.	
Log Measured From G	ROUND LEVEL			Above Perm.	Datum	G.L.	
Date Run Number	8 AUGUST 20	011	Type Fluid Fluid Level		WATER 35.0		
Type Log	GR-DEN-CAL-	-RES-SP	Wellhead P	ressure	0		
Depth - Driller (OH)	279.5 m		Max. Temp.	°°°	¥/B		
Depth - Driller (CH)			Oper. Rig T	ime	2.5 HR.		
P.B.T.D. By Logger	278.8 m		Recorded E	3y	W. PUBA	ZM	
Bottom Log Interval	277.0		Witnessed	By	0. CULL	INGHW	Å
Logged Interval	277.0		Apparent C	ement Top	V/B		
Top Log Interval	00.0		Program	/Loc.	WINELIN 02	8 #1	
Gun Type and Size			DRILL RIG				
Gun Charges							
CASING RECORD	SIZE	Kg/m	GRADE	TYPE JOINT	FRO	Ň	TO
DRILL BIT	152.4 200				SURF.		T.D.
SURF. CASING	168.0				SURF.		17.0
FLASTIC LINER							
						l	

RUN: R/	AV-11-01B L	AS REP	)																STA	RT:	28	84.7	0m
DIR.: UF	>					_				~									ST	OP:	-1	0.20	m
DATE: 08	V08/11					F	٢A	V-	11	-0'	1B								R	ES.:	0.05	5 m	
TIME: 16	3:40:50																		SCA	ALE:	200	:1 m	1
-Time Ma	rk [60.0 s]																						
						20.2	2					 		<u>m</u>	<u>v</u>		 					<u> </u>	20.0
														s	Р								
50.0	150	1	2	50 O		00								Ohr	ne								500
00.0	Calipe	r		50.0		<u> </u>						 	R	esis	tand		 						
0.0	API		1	50.0		1.2								1.5	50								3.0
	Gamma	a Ray											De	ensity	/ (g/	cc)							
					-																		
- 4		3			0																	*****	
5		1																					
3										••••		 					 						
3		3															 						
7													142				 						
4	+++	1		$\vdash$		$\vdash$	-	-					-					00222	***113				
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l	Galiilia Ray			ensity (groc)	
l	50.0 150	250.0	00	Ohms	500
	Caliper mm			Resistance	
			20.2	mv	-20.0
				SP	
1	-Time Mark [60.0 s]				
ļ					
l	RUN: RAV-11-01B LAS REP				START: 284.70m
l	DIR.: UP		DAV/ 11 01D		STOP: -0.20m
l	DATE: 08/08/11		RAV-II-UID		RES.: 0.05 m
	TIME: 16:40:50				SCALE: 200:1 m
Î					

## **ELECTROLOG DIRECTIONAL SURVEY**

COMPANY COMPLIANCE COAL CORP WELL RAV-11-01B

FIELD RAVEN PROJECT PROV. B.C. DATE

40763.0

BEARING CORRECTION

& TOOL READING = S/A BEARING

DEPTH	SLANT ANGLE	S/A BEARING		DEPTH	SLANT ANGLE	S/A BEARING
0	0.60	CASING				
15	0.63	CASING				
30	0.56	N/A				
45	0.51	N/A				
60	0.96	66.8	REPEAT	60	1.91	152.5
75	2.53	117.1				
90	2.55	130.0				
105	3.20	170.1				
120	3.61	174.6	REPEAT	120	3.81	165.3
135	3.74	165.7				
150	3.61	185.1				
165	3.75	172.1				
180	3.72	179.3	REPEAT	180	3.74	161.9
195	3.21	159.3				
210	3.86	169.9				
225	4.32	210.1				
240	4.53	176.4	REPEAT	240	4.43	169.4
255	4.29	143.1				
270	4.42	196.5				
275	4.30	160.5				

## **APPENDIX B-2**

### Geophysical Logs of Drill Hole RAV-11-02b

		WAY D	A RAY	
ELEC	TROLOG	S.P. /	RESIS	TANCE
SERVI	CES INC.	DENSIT	⊻ / C≱	LIPER
		г	ଜ	
FILING #	Company COMPLI	ANCE COAL CORPO	RATION	
LSD	Well RAV-11	-02B		
SEC	Field RAVEN	PROJECT		
TWP	Province BRITIS	H COLUMBIA		
W.	Location			OTHER SERVICES
	LSD. SEC.	TWP.		SURVEY
	RGE. W.			
ermanent Datum GRO	UND LEVEL	Elevation		K.B.
og Measured From G	ROUND LEVEL	Above Perr	n. Datum	G.L.
late	3 AUGUST 2011	Type Fluid	WATER	
lun Number	ONE	Fluid Level	10.1	
ype Log	GR-DEN-CAL-RES-SP	Wellhead Pressure	0	
Depth - Driller (OH)	395.4 m	Max. Temp. °C	N/A	
Depth - Driller (CH)		Oper. Rig Time	2.5 HR.	
P.B.T.D. By Logger	DRIDGED AT 259.5 m	Recorded By	W. PUBJ	UN2
Sottom Log Interval	258.5	Witnessed By	O. CULL	LINGHAM
ogged Interval	258.5	Apparent Cement Top	N/N	
op Log interval	00.0	Hoist Unit# / Loc.	WIRELIS	VE +1
one(s) of Interest		Program	86 NIM	
sun Type and Size		DRILL RIG		
sun Charges				
ASING RECORD	SIZE Kg/m	GRADE TYPE JOIN	T FRO	DM TO
RILL BIT	152.4 mm		SURF.	T.D.
SURF. CASING	168.0		SURF.	40
LASTIC LINER			+	
GAMMA RAY LOGGED	THROUGH DRILL PIPE TO	T.D. ONLY BOTTOM OF L	OG PRESEN	NTED 225-395M
DRILL COLLARS PRE	SENT AS LOWER COUNTS O	N GAMMA RAY DUE TO DI	FERENCE	OF METAL
THICKNESS				

RUN:	RAV-11-02B													STAR	Γ:	266.1	0m
DATE:	08/03/11			P٨	v.	11 (	າວອ							DES	~: 2 - n	-1.00	m
TIME:	17:28:33			Г\ <i>Г</i>	\v-	11-(	JZD							SCALE	7.1 O. E: 10	00·1 m	,
THVIC.	11.20.00													JUNE		00.111	
Time N	fark [60.0 s]																
				20				 					 				-10
								 Sh	ale P	otenti	al ( m	N)	 				
60.0	150	250 O		15						Jhme							250
50.0	Caliper mm	250.0		15				 	Re	sistar	ice		 				550
	Samper time																
0.0	API	150.0		1.2						1.50							2.7
	Gamma Ray								Den	sity (g	g/cc)						
1																	
DE																	
$\square$																	
$\square$			0												$\top$		
5															T		
5															+		
															$\top$		
1															+	10	<u> </u>
											-	-			+	-	· · ·

































RUN: RAV-11-02B GA DIR.: UP DATE: 08/03/11	GAMMA RAY LOGGED THROUGH DRILL PIPE	START: 396.60m STOP: 225.10m RES.: 0.05 m
TIME: 12:13:42		SCALE: 100:1 m
0.0 API	100.0	













	← F.R.														
	395														
8															
0.0 API 100.0 GAMMA RAY															
GAMMA RAY															
-Time Mark [60.0 s]															
RUN: RAV-11-02B GAMM	A RAY							ST	ART:	39	6.60	m			
DIR.: UP	DAV	11 020	CAM		v			s	TOP:	22	5.10	m			
DATE: 08/03/11	KAV-	026	GAIVI		11			F	RES.:	0.05	m				
TIME: 12:13:42								sc	ALE:	100:	1 m				

			6	AMMA RI	A¥	
ELEC	TROL	G	S.P.	/ RE	SISTA	NCE
SERVI	CES	INC.	DEN	SITY /	CALI	[PER
				LOG		
FILING #	Company	COMPLIA	NCE COAL CO	RPORAT	- N	
LSD	Well	RAV-11-	02B			
SEC TWP	Field	RAVEN P	ROJECT			
NGE	Location				9	HER SERVICES
	LSD.	SEC.	TWP.		SG 10	RVEY
	RGE.	W.				
Permanent Datum GRO	UND LEVEL		Elevation		×	.В.
Log Measured From G	ROUND LEVEL		Above	Perm. Dat	ш G	.F.
Date	3 AUGUST 20	011	Type Fluid	WAT	ER	
Run Number	ONE		Fluid Level	10.	۲	
Type Log	GR-DEN-CAL-	-BES-SP	Wellhead Pressur	e 0		
Depth - Driller (OH)	395.4 m		Max. Temp. °C	N/A		
Depth - Driller (CH)			Oper. Rig Time	2.5	贤.	
P.B.T.D. By Logger	DRIDGED AT	259.5 m	Recorded By	W.	PUBANZ	
Bottom Log Interval	258.5		Witnessed By	.0	CULLIN	GHNM
Logged Interval	258.5		Apparent Cement	Top N/A		
Top Log Interval	00.0		Hoist Unit# / Loc.	WIR	ELINE	+1
Cone(s) of Interest			Program	NTM	36	
Gun Type and Size Gun Charges			DRITT RIG	-		
CASING RECORD	SIZE	Kg/m	GRADE TYPE	JOINT	FROM	TO
DRILL BIT	152.4 mm			SU	RF.	T.D.
SURF. CASING	168.0			su	RF.	40
PLASTIC LINER						
GAMMA BAY LOGGED	THROUGH DRIL	L PIPE TO T	D. ONLY BOTTOM	OF LOG PR	ZSZNIZ	D 225-395M
PHILIPPINESS FIG	SENT AS LOND	IR COUNTS ON	GARRA RAI DUE T	O DIFFERE	NCE OF	METAL

RUN: R DIR.: U DATE: 0 TIME: 1	2AV-11-02B IP 8/03/11 7:28:33			RA	\V-'	11-0	)2B						START STOP RES. SCALE	0.05	36.10m 1.00m 5 m :1 m
-Time Ma	ark [60.0 s]														
				20				 Sha	ale Pote	Intial	(mv	)	 		-10
50.0		250.0		15				 	Oh Resis	ms stanc	e		 		350
0.0	API Gamma Ray	150.0		1.2				 	1. Densit	50 y (g/d	) )		 		2.7
			0												























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L 18																					
0.0	0.0 API 100.0 GAMMA RAY																				
Time Ma	rk [60.0 s]																				
RUN: R/	AV-11-02B	GAMMA	RAY														STA	RT:	39	6.60	Om
DIR.: U	P				RAV-	11_	028	G	ΔΝ	ллл	Δ	R4	١V				ST	OP:	22	5.10	Om
DATE: 08	9/03/11				11/11			0			Γ		1				RI	ES.:	0.05	m	
TIME: 12	2:13:42																SCA	LE:	200	1 m	1

# **ELECTROLOG DIRECTIONAL SURVEY**

COMPANY COMPLIANCE COAL CORP. WELL RAV-11-02B

FIELD RAVEN PROJECT PROV. BRITISH COLUMBIA

BEARING CORRECTION & TOOL READING = S/A BEARING

DEPTH	SLANT ANGLE	S/A BEARING	DEPTH	SLANT ANGLE	S/A BEARING
0	0.11	CASING	225	3.40	261.0
15	0.95	CASING	240	3.16	220.8
30	1.12	CASING	255	3.29	295.6
45	0.95	313.0	270	3.12	250.1
60	1.20	1.4	285	2.77	2.42.3
75	1.65	40.5	300	2.11	241.8
90	1.82	25.0			
105	2.24	327.3			
120	2.50	322.2			
135	3.08	310.6			
150	3.55	283.6			
165	3.59	271.6			
180	3.87	271.8			
195	3.56	271.8			
210	3.51	263.7			

## **APPENDIX B-3**

### **Geophysical Logs of Drill Hole RAV-11-07a**

			GAMMI	RAY		
			3.P. /	RESIS	TANCE	
L L	Ĉ.		DENSITY		LIPER	
			5	ធ័		
bany co	MPLIAN	CE COAL	CORPOR	NTION		
RA	V-11-0	7A				
RA	VEN PR	OJECT				
nce BR	ITISH	COLUMB	A			
tion					OTHER S	ERVICES
	SEC.		TWP.		SURVEY	
	W.					
13L		Elevation	,		K.B.	
EVEL			Above Perm	. Datum	G.L.	
JUST 2011		'ype Fluid		WATER		
	-	luid Level		124.2		
-CAL-RES-	SP 1	vellhead P	ressure	0		
3	_	/ax. Temp.	°C	N/A		
		Oper. Rig T	me	2.5 HR.		
p	_	Recorded B	×	W. PUBA	20	
	_	Vitnessed E	Зу	O. CULL	INGHAM	
		Apparent C	ement Top	N/N		
	-	foist Unit#	/ Loc.	WIRELIN	8 #1	
	-	orogram		86 NIM		
		WRILL RIG				
E K	m/b	GRADE	INIOF JAAL	T FRO	M	10
ann				SURF.	H	
				SURF.	24	0
				T		
	E K	S INC. S INC. S INC. S INC. RAVEN PR RAVEN PR S m SEC. S m	SINC. SINC. SINC. SINC. SINC. SINC. SINC. RAVEN PROJECT RAVEN PROJECT BRITISH COLUMBI ion SEC. W. SEC. W. SEC. W. SEC. W. SEC. INT SH COLUMBI INT SH COLUMBI N. SEC. W. SEC. W. SEC. W. SEC. N. SEC. S. SEC. W. SEC. S. SEC. W. SEC. S. SEC. W. SEC. S. SEC. W. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. SEC. S. S. SEC. S. S. S. SEC. S. S. S. S. S. S. S. S. S. S. S. S. S.	GAMMA S.P. / S.P. / DENSITY RAVEN PROJECT RAVEN PROJECT RAVEN PROJECT NCC BRITISH COLUMBIA ion SEC. TWP. W. Elevation Type Fluid Level I-CAL-RES-SP Wellhead Pressure Sm. Recorded By Wilnessed By Hoist Unit# / Loc. Program DRILL RIG DRILL RIG	COLOG S INC.   GAMMA RAY S.P. / RESIS DENSITY / CA DENSITY / CA DENSITY / CA NGVPLIANCE     PANY   COMPLIANCE   COAL     RAVEN   PROJECT RAVEN   COAL     RAVEN   PROJECT NCC   SEC.     SEC.   TWP.     W.   SEC.     STATE   Fluid     Above Perm.   Datum     JUST 2011   Type Fluid     Heist Unit# / Loc.   N/A     Max.   Temp.°C     Max.   Temp.°C     Max.   Max.     Program   N/A     Mitnessed By   O. cutLi     Mitnessed By   N/A     Program   N/A     Program   MIX     Program   NIX     Surger,   GRADE     TYPE JOINT   FRO     Surger,   Surger,	GAMMA RAY     SINC.   S.P. / RESISTANCE     DENSITY / CALIPER     DAMY COMPLIANCE COAL CORPORATION     RAVEN PROJECT     NCE     TWP.     RAVEN PROJECT     NCE     TWP.     SEC.     TWP.     SEC.     TYPE Fluid     W.     SEC.     Type Fluid     WATER     SEC.     WITERSER     SEC.     SEC.     WITERSER     SEC.     WATER     COLSPERT     SEC.     SEC.     SEC.     SEC. </td

RUN: RA	V-11-07A																		STA ST	ART: FOP:	30	56.2 0.30	0m Im
DATE: 08	/11/11					F	'A	V-'	11.	-07	7A								R	ES.:	0.05	5 m	
TIME: 16	:31:30																		SC/	ALE:	100	:1 m	1
-Time Mar	k [60.0 s]																						
						20.2	2					 		m	<u>v</u>			 <b>.</b>					20.0
														s	Ρ								
50.0	15	10	25	io ol		00								Ohr	ns								500
	Calipe	er mm	 									 	R	esis	tand	e		 					
0.0	AP	PI	15	i0.0		1.2								1.3	50								3.0
	Gamm	1a Ray											De	nsity	/ (g/	cc)							
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RUN: RA DIR.: UP DATE: 08/ TIME: 16:	V-11-0 (11/11 :31:30	17A							F	łА	V-'	11	-07	7A							STA ST R SC/	OP: ES:	35 -( 0.05 200	56.20 0.30 5 m ):1 m	Om m
-Time Mark	k [60.0	)s]																							
									20.2						 		m S	<u>v</u>		 	 			2	20.0
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0.0	Gi	API amma	a Ra	y		15	i0.0		1.2						 	De	1.s	50 / (g/	cc)	 	 				3.0
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# **ELECTROLOG DIRECTIONAL SURVEY**

COMPANY COMPLIANCE COAL PORP. WELL RAV-11-07A

FIELD RAVEN PROJECT PROV. B.C. DATE

40766.0

BEARING CORRECTION

& TOOL READING = S/A BEARING

DEPTH	SLANT ANGLE	S/A BEARING		DEPTH	SLANT ANGLE	S/A BEARING
0	0.58	CASING				
15	0.85	CASING				
30	1.89	201.7				
45	1.93	213.1				
60	2.51	213.3	REPEAT	60	2.94	197.5
75	2.55	196.8				
90	2.85	205.6				
105	3.58	206.2				
120	4.26	215.4	REPEAT	120	4.28	203.9
135	4.71	206.6				
150	4.49	207.9				
165	4.36	193.6				
180	4.47	206.3	REPEAT	180	4.60	203.2
195	4.38	222.4				
210	4.95	198.0				
225	4.84	203.8				
240	4.50	195.6	REPEAT	240	4.63	200.4
255	4.49	187.7				
270	4.47	209.4				
285	4.62	211.5				
300	4.60	183.6	REPEAT	300	4.84	200.6
315	4.93	176.4				
330	5.18	205.4				
345	4.68	208.3				

# APPENDIX C

## **Graphics and Data on Hillsborough Monitoring Wells**

### WELL COMPLETION DETAILS T'Sable River Coal Corporation: MW01-A Project Number: 012-1158

Location: Date Completed: Drilling Method: T'Sable River 17-Nov-01 Tamrock Driltech D25KW Air Rotary

Casing: 61/8" ID Driller: Drillwell Enterprises Ltd. Depth: 0-86 ft



WELL COMPLETION DETAILS T'Sable River Coal Corporation: MW01-B Project Number: 012-1158

Location: Date Completed: Drilling Method: T'Sable River 14-Nov-01 Tamrock Driltech D25KW Air Rotary Casing: 61/8" ID Driller: Drillwell Enterprises Ltd. Depth: 0-100 ft





**Golder Associates** 

### WELL COMPLETION DETAILS T'Sable River Coal Corporation: MW01-D Project Number: 012-1158

Location: Date Completed: Drilling Method: T'Sable River 15-Nov-01 Tamrock Driltech D25KW Air Rotary\_\_\_\_ Casing: 61/8" ID Driller: Drillwell Enterprises Ltd. Depth: 0-120 ft

Ft		Well Completion Details
0	Borehole Geology Loose, wet, reddish brown, silty SAND, some gravel. Compact, wet, brown, sandy SILT,	1"     2"       Vell Completion       0-1 ft concrete
0	some gravel. Compact, wet, dark brown, gravelly SAND, some silt. Compact to dense, wet, reddish brown silty GRAVEL, some sand.	1-26 ft bentonite 26-39 ft filter sand 39-80 ft bentonite 80-120 ft filter sand
0	Compact, wet, brown, gravelly SILT, some sand. Compact, saturated, brown SAND	
I	Compact, saturated, grey-blue sandy SILT. Compact to dense, saturated, grey-blue sandy	2" PVC screened section
	SILT, some gravel. Dense, wet, grey-blue sandy SILT (Till?), some gravel, cobbles?	28.6-38.6 ft
	Dense black SHALE	
D		
Ì		
I	Dense black SHALE Sandstone stringer at 72 ft.	
	Dense black SHALE Sandstone stringer at 78 ft.	
	Dense black SHALE Sandstone stringer at 86 ft.	
D	Dense black SHALE	The sections
00	Sandstone stringer at 96 ft. Dense black SHALE Sandstone stringer at 98 ft. Dense black SHALE	84-89 ft and 109-114 ft
10		
120	Sandstone at 119 ft. End of Borehole: Sandstone at 120 ft.	

# **Piezometer Installation Geometry**

Installation	Identification	Ground Surface	Stick up	Filter Sand	Interval	Screen	Interval	Bottom End of
Tvbe	Number	Elevation	Height					Piezometer
			6	Тор	Bottom	Top	Bottom	
		(m)	(m)	(m.b.g.s)	(m.b.g.s)	(m.b.g.s)	(m.b.g.s)	(m.b.g.s)
	MW01-A (deep)	n/a	0.764	15.54	26.21	19.38-20.91	23.96-25.48	25.48
<b> </b> €	shallow	n/a	0.787	7.01	10.97	8.00	11.05	11.05
Ŵ	MW01-B (deep)	n/a	0.640	15.24	30.48	19.51-21.03	27.13-28.65	28.65
ßu	shallow	n/a	0.685	1.83	5.79	2.36	5.41	5.41
ii10	MW01-C (deep)	n/a	0.732	14.33	24.99	17.37-18.90	21.95-23.47	23.38
tinc	shallow	n/a	0.896	3.96	7.95	4.90	7.95	7.95
νM	MW01-D (deep)	n/a	0.710	24.38	36.58	25.60-27.13	33.22-34.75	34.75
	shallow	n/a	0.714	7.92	11.89	8.72	11.77	11.77
	TP01-7	e/u	1.15	n/a	n/a	~2.09	3.09	3.09
er	TP01-8	n/a	0.85	n/a	n/a	~2.03	3.03	3.03
ຸງອເ	TP01-9	n/a	1.20	n/a	n/a	~2.58	3.58	3.58
по	TP01-12	n/a	0.49	n/a	n/a	~1.49	2.49	2.49
zəļ	TP01-13	n/a	0.84	n/a	e/u	~2.79	3.79	3.79
d	TP01-14	n/a	0.30	n/a	n/a	~1.70	2.70	2.70
	TP01-15	n/a	0.48	n/a	n/a	~0.69	1.69	1.69

**Golder Associates** 

# Table :T'Sable River Piezometer Water Levels

<u> </u>				_	_	 
TP01-15	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	0.48	0.14		
TP01-14	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	0.30	0.489	1	
TP01-13	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	0.84	1.65	•	
TP01-12	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	0.49	1.051	E	
TP01-9	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	1.20	2.753	•	
TP01-8	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	0.85	0.634	E	
TP01-7	G.S. Elevation ( )	G.W. Depth (m.b.g.s)	1.15	1.094	1.07	
Well ID	Peading Date		Stick up (m)	20-Nov-01	07-Jan-02	

				Sable River, the	iu matei	Chemisti y	
Well ID	Date	рН	Conductivity (uS/cm)	Temperature (°C)	Eh (mV)	TDS (ppm)	Weather
Sump (MW01-B)	13-Nov-01	5.56	58	9.1	272.1	-	Overcast, rain
					0010		
Cowie Creek (at Bridge)	13-Nov-01	7.17	38	8.5	284.3	-	Overcast, rain
	14-Nov-01	6.06	33	8.4	223.8	-	Overcast, rainy periods 11°C
	16-Nov-01	7.45	34.3	8.3	228.1	-	Clouds with sun 9°C
	16-Nov-01	7.19*	24*	8.4*	-	11*	Clouds with sun 9⁰C
	17-Nov-01	6.92*	28*	6.8*	275.5	14*	Sunny 3⁰C
	20-Nov-01	7.40*	24*	8.2*	202.2	11*	Overcast, rain 11⁰C
MW01-A (Shallow)	07-Jan-02	7.37	553	10.6	-	- ,	Overcast, rain 10°C
	08-Jan-02	8.46*	536*	8.9*	-	271*	Overcast, 10ºC
	07 Jan 02	8 40	541	0.8			Overcest rain 10 <sup>0</sup> C
WWWWI-A (Deep)	07-Jan-02	0.40	041 C10*	9.U 0.7*	-	200*	Overcast, $10^{\circ}$ C
	00-Jan-02	0.39	010	0.7	-	309	
MW01-B (Shallow)	07-Jan-02	_	-	_	-	-	Overcast, rain 10ºC
	08-Jan-02	6.14*	29*	6.1*	· _	16*	Overcast, 10⁰C
						~	
MW01-B (Deep)	07-Jan-02	-	-	-	-	-	Overcast, rain 10ºC
	08-Jan-02	8.36*	559*	8.3*	-	279*	Overcast, 10ºC
MW01-C (Shallow)	20-Nov-01	6.54*	180*	11*	231.0	90*	Overcast, rain 11°C
	20-Nov-01	6.67*	149*	10.5*	175.4	72*	Overcast, rain 11⁰C
	07-Jan-02	-	-	-	-	-	Overcast, rain 10⁰C
	08-Jan-02	6.29*	155	9.6*	-	77*	Overcast, 10⁰C
MW01-C (Deep)	07-Jan-02	-	-	-	-	-	Overcast, rain 10°C
	08-Jan-02	8.27*	647*	8.7*	-	322*	Overcast, 10°C
MW01-D (Shallow)	07-Jan-02	5.63	644	10 1	<u>_</u>	_	Overcast rain 10°C
	08- Jan-02	7 35*	610*	8.2*	_	308*	Overcast 10°C
	00-0411-02	1.00		0.2	_		
MW01-D (Deep)	07-Jan-02	-	-	_	-	_	Overcast, rain 10⁰C
	08-Jan-02	7.19*	6.31 ms/cm	8.3*	-	over 2000*	Overcast, 10°C

**T'Sable River; Field Water Chemistry** 

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Notes: \* indicates the Hanna HI 991300 pH/EC/TDS/Temp probe

All other measurements are from the Hanna HI 9025 pH/Eh Probe and the Hanna HI 9033 Conductivity probe

**Golder Associates** 

### Table :T'Sable River Groundwater Water Levels

Well ID	MW01-A (Deep)	MW01-A (Shallow)	MW01-B (Deep)	MW01-B (Shallow)	MW01-C (Deep)	MW01-C (Shallow)	MW01-D (Deep)	MW01-D (Shallow)
Reading Date	G.S. Elevation ( )							
Reading Date	G.W. Depth (m.b.g.s)							
Stick up (m)	0.764	0.787	0.64	0.685	0.732	0.896	0.71	0.714
14-Nov-01	-	-	0.20	0.699	-	-	-	-
16-Nov-01	-	-	1.17	0.603	-	~	2.73	3.256
17-Nov-01	4.850	dry	1.29	0.641	-	2.733	2.61	2.932
20-Nov-01	1.116	1.328	1.06	0.498	-	2.394	2.39	2.567
11-Dec-01	-	-	-		2.478	-	-	-
07-Jan-02	0.795	1.193	1.05	0.525	2.126	2.138	2.28	2.449
08-Jan-02		8.443	17.37	0.660	2.789	2.390	-	3.451

Note: The monitoring wells were developed on Jan 7, 2002.

.

# APPENDIX D

Graphic Logs of 2009 Drill Holes

Drilled I	Ву	Drillwell	Enterpri	ises	Cuttings/Core Descrip	tion By Drillwell		DH ID		AD-2009		
Date C	omplet	ed July 5, 2	009		Date Logged	July 5, 2009		Locatio	n UTN	Zone 10 N	AD 83	
Drilling	Туре	Air Rotary	T.D.	69.2 m	Geophysical Logger	NA	E	asting (m	) No	orthing (m)	Elevation	າ (m)
Hole S	ize	6"	Angle	90 deg	Date Logged	NA		366402		5482274	173.7	7
Depth (m)	Lithology Graphic	Lithology	<sup>,</sup> Descrip	tion				Drill Hole Construction		Comme	nts	Depth (m)
⊏_0		Gravel and So	ad: coarse a	rained cilty wi	th cohbles dry		Г	л Г				0
		Gravel and Sar	ιd: coarse-ξ	rained, silty, wi	th cobbles, dry							10
30		Sand: brown, v	vater bearin	g								30
		Gravel: coarse - grey below 40 Gravel and Sar	-grained, wi ).5 m nd: coarse-g	th cobbles, brow grained, silty, so	vn, water bearing me cobbles, brown, water bear	ing		▼		WD=37.2m 2012	Jan 14,	40
50												50 —
60		Sand: some gr. Gravel and Sar Clay: blue, with Gravel and Sar	avel, grey, v nd: coarse-ç ı some grav nd: coarse-c	water bearing grained, some c el grained, some c	obbles, grey, water bearing	/						60
E70		Sandstone: gre	ey, WATER	DISCHARGE o	f 10 L/min	/				Bottom of s casing	teel	70



	Complia	ince Coal Co	orp.	
	Rave	n Coal Proje	ect	
Hydrog	geologica	l Drilling P	rogram, 20	09
February 22, 2012	Scale:	1:500	FIGURE	D-AD-2009





Page 2 of 3
Drilled By Drillwell Enter	rprises	Cuttings/Core Description By AB DH ID RAV-0						4V-09-00	)6	
Date Completed June 1-6, 2	2009	Date Logged	June 1-6, 200	9	L	ocat	ion UTN	I Zone	NAD 83	
Drilling TypeD-09-06	T.D. 179.1 m	Geophysical Logg	erWeatherford	E	Easting	(m)	Northin	g (m)	Elevatio	on (m)
Hole Size 6"	Angle -90	Date Logged	June 6, 2009	)	365554	1	54830	)48	185.9	
Depth (m) Drill Type Lithology Symbol	and Water Obse	ervations	Gamma 0 API 200 Caliper 0 mm 300	0 g,	nsity /cc 4	Re 10 R 10	es-S 10000 es-D 10000	Ba Equ Ins	ackfill and uipment stallation	Depth (m)
										180
	liance Coal			Comp	liance (	Coal	Corp.			
Card Sol Ulli	mance Gudi			De:	on 0	D'	ia at			
COR BBA COR	PORATION nox Joint Venture		Hydroge	eologi	cal Drill	ing F	Program	, 2009		
Same to		Febr	uary 23, 2012		Sca	le 1:	:500	Fig	ure D-09-	-06
									Page 3 of	of 3







Drilled ByDrillwell EnterprisesCuttingsDate CompletedJune 29, 2009Date Loc				Description	By EP/FS	DH ID		F	RAV-09-01	12
Date Con	npleted June 29, 2	2009	Date Logged	June 25-29	, 2009	Location	UTM	Zone 1	0 NAD 83	
Drilling Ty	ype Air Rotary/PQ3	T.D. 324.2 m	Geophysical L	ogger Wea	therford	Easting (m)	North	ning (m)	Elevation	n (m)
Hole Size	e 6"	Angle -90	Date Logged	June 30, 20	009	365810	5483	3763	133.4	
Depth (m) Drill Type Lithology Symbol	Lithology ar	nd Water Observ	vations	Gamma 0 API 200 Caliper 0 mm 200	Density 1 g/cc Porosity 100 %	4 Sonic 4 100us/m600 0	Res- 1 10 	-S 000 -D 000 - I	Backfill and Equipment nstallation	Depth (m)
- 270	- 15 deg from horizontal Coal: with layers of mud Sandstone: grey, with la plant fossils common, fr with <1 mm aperture	claystone bands at a stone yers of mudstone, ca esh rock, strong, join	269.0 m alcite filled fractures, ts are slightly rough							280 -
- 290	<ul> <li>&gt; 25 joints per 3 m run f mostly near horizontal a</li> <li>gouge at 292.4 m, 293</li> <li>at 294.2 m a 30 cm thic calcite</li> </ul>	, fractures are alcite n mudstone was healed with	man and a second						290	
- 310	> 25 joints per 3 m run f - at 313.6 m a 5 deg fror	rom 313.1 - 317.6 m n horizontal 2 cm thi	ck fracture healed							310 -
- 320	with calcite	ts filled with calcite, f v rough with <1 mm a	resh rock, very aperture			. ζ				320 -
- 220										220
	Com Cor Dra Co	pliance Coal PORATION Mox Joint Venture			Hydro	Compliance Raven C geological Dr	Coal C oal Pro	Corp. oject Program	n, 2009	
111	an ju			Februa	iry 23, 201	2Scale 1:500	)	Figure	D-RAV-0	9-012





Page 2 of 2

Drille	ed	By	Drillwell	Enterprises	Cuttings/Core	Description	ByDH	DH ID		R	AV-09-03	34
Date	e C	Com	pleted August 15	, 2009	Date Logged	August 10-	15, 2009	Location	UTM Zor	e 10	NAD 83	
Drilli	ng	Ту	pe Air Rotary/PQ3	T.D. 187.3 m	Geophysical L	ogger Wea	atherford	Easting (m)	Northing	(m)	Elevatior	ר (m)
Hole	S	ize	6"	Angle -90	Date Logged	August 15.	2009	364304	548457	2	128.5	. ,
				0		Gamma	Density	Sonic	Res-S			
		-				0 API 200	) 1 g/cc	4	1 1000	F	Backfill	
		qu,						100us/m600		-	Juonan	
Ê	e	y Sy	Lithology ar	nd Water Observ	rations	Caliper	Porositv		Res-D	_	and	Ê
th (	Ž					0 mm 200	100 %	0	1 1000	E	quipment	th (r
Dep	Drill	Lith								In	stallation	Dep
_0											n	
Ę	$ \uparrow$	<mark>6</mark>	Gravel and Sand: with la	ayers of silt, brown a	nd grey	5						
		$\frac{2}{2}$				3	],	••••				
-									. / .		<ul> <li>casing</li> </ul>	
L 10									<u> </u>			10
		$\bigcirc$				<u>;</u> ;	Ŵ					
Ē		•••	Sandstone: white, dry			<b>┤                                    </b>	.     [:					
-			- some siltstone at 23.5	m					6			
- 20							l l }∶	.   <u> </u>				20 -
- 20												20
E								<b>\$</b>	Į			
-								.   2				
-							{∶		15			20
- 30		E	Shalo:			$ $ $ $	ાં					30-
-			- WATER DISCHARGE	of 5 L/min at 31.4 m					Ιζ			
Ē			Condetence como vestos			√ <b>≬</b>   €			ΙŞ			
-	Sandstone: some water - some siltstone, dry at 38.7 m	Sandstone: some water			{:		Ś			10		
- 40		- some siltstone, dry at 38.7 m									40-	
E	Siltstone: dry		/ <b>S</b>     <b>]</b>									
Ē	otarv		Sandstone: dry				} .	\$   <b>\$</b>	8			
50	Ir Ro		- some water at 44.2 m					·   <	$P$			50
- 50	N. A		- dry at 44.8 m			₹ I						50-
E	Ĩ											
F		•••	Coal: trickle of water				I °S	Z				
60			Sandstone: dry					<u> </u>				60 -
			- siltstone laminations be	etween 59.5 and 61.	0 m	S			8			
-									<b>)</b>			
-			- with siltstone between	62 5 and 64 m				.			<ul> <li>concrete</li> </ul>	
70							\ <u>`</u>		LK		2" PVC pipe	70 -
-									2		pipo	
Ē		<u>.</u>	Coal: trace of pyrite, DIS	SCHARGE OF 1 L/m	in	121			3			
-		•	Sandstone: with siltston	e between 76 2 and	77.7 m. drv	- 5 -						
- 80			Canasione. with sitiston		in, dry		<u> </u> {::					80-
-			- some water at 80.8 m						N			
E												
F			- dry at 82.3 m				() :					
- 90												90-
F			- trace of water at 84.5 r	m								
Γ	11	•••		0.55				· · · · · · · · · · · · · · · · · · ·	••••••••••••••••••••••••••••••••••••••			
			Com	Inliance Coal				Compliance	Coal Corp	).		
	CORPORATION							Raven C	oal Projec	ct		
-		015	COR	PURATION			Hydro	geological Dr	illing Proc	Iram	2009	
20			DBA Co	omox Joint Venture								
			an the			Febru	arv 23. 201	2Scale 1:500	) Fia	ure	D-09-034	
					1		. ,,,		5			



	Drille	rilled By Drillwell Enterprises Cuttings, Pate Completed August 15, 2009 Date Log			Cuttings/Core I	Core Description By DHDH IIJed August 10-15, 2009Locat			ID RAV-09-034				
	Date	С	om	oleted A	ugust 15	, 2009	Date Logged	August 10-1	5, 2009	Location	UTM Zone 2	10 NAD 83	
ſ	Drilli	ng	Тур	e Air Ro	tary/PQ3	T.D. 187.3 m	Geophysical Lo	ogger Weat	therford	Easting (m)	Northing (n	n) Elevatior	า (m)
ſ	Hole	Si	ze	6"		Angle -90	Date Logged	August 15,	2009	364304	5484572	128.5	
	Depth (m)	Drill Type	Lithology Symbol	Li	thology an	nd Water Observ	vations	Gamma 0 API 200 Caliper 0 mm 200	Density 1 g/cc Porosity 100 %	4 Sonic 4 100us/m600 0	Res-S 1 1000 Res-D 1 1000	Backfill and Equipment Installation	Depth (m)
	- 190	v	77									ш	190
										Compliance			
	-	-		N	🔤 Com	nliance Coal				Compliance	Coal Corp.		
		in	250	1		DODATION				Raven C	oal Project		
	1.40	CORPORATION DBA Comox Joint Venture						Hydro	geological Dr	ical Drilling Program, 2009			

Figure	D-09-034
	Page 3 of 3

February 23, 2012Scale 1:500







Compliance Coal Corp. Raven Coal Project

Hydrogeological Drilling Program, 2009

Scale 1:500

Figure D-09-040

Drill	ed	By	Drillwell Enterp	rises	Cuttings/	Core Description By S	ы	DH ID		R	AV-09-04	41
Date	e C	Com	pleted October	13, 2009	Date Log	gged October 11-13, 20	009	Locatior	UTM .	Zone 1	0 NAD 83	3
Drilli	ing	Ту	peAir Rotary	T.D. 115.0 m	Geophys	sical Logger NA		Easting (m)	North	ing (m)	Elevatio	on (m
Hole	e S	ize	6"	Angle -90	Date Log	gged		364292	5484	564	128.5	
Depth (m)	Drill Type	Lithology Symbol		Lithology and	Water Ob	oservations			Backi and Equipr Installa	fill I nent ation		Depth (m)
-0	$\overline{\Lambda}$	$\overline{\bigcirc}$	Gravel and Sand: wit	h lavers of silt, brown	and grey							0-
- 10			Sandstone						casi	ng		10 -
- 20			Sitstone. with interbe	sandstone laye	15							20-
- 30												30 -
-												
-			Sandstone: occasion	al siltstone interbeds								
40												40 -
- - - -												
- 50									5" P			50 -
										vo pipe		
-	totan	••• =••	<sup>/</sup> Mudstone: grades to	siltstone/sandstone			\		con	crete		
60	Air R		Sandstone									60
- 60	.9	••• —••	Mudstone				/					00-
-			Sandstone									
- 70		••• •••	Siltstone: grades bac	k to sandstone			\					70 -
F			Sandstone									
		•••	Coal: mudstone laye	rs			/					
- 80			Mudstone: carbonac	eous								80 -
-			Sandstone									
-			Sandstone: occasion	al siltstone interheds								
- 90									90 -			
			Ca	mulianaa Car			Comp	liance Coal	Corp			
							Rav	en Coal Proi	ject			
		1	CO	RPORATIO	N	Hydro	ogeologi	cal Drilling F	rogram	n, 2009		
	15	ł.	DBA	comox Joint Ventu	IE	February 24, 2012	Scale	1:500	F	igure	D-09-04	1

	Drille	illed By Drillwell Enterprises     C       ate Completed October 13, 2009     E       illing Type Air Detery     T.D. 115.0 m (C				Cuttings/Core De	escription By SH	DH ID	RA	4V-09-04	41				
	Date	e C	om	pleted October	13, 2009	Date Logged Oc	ctober 11-13, 2009	Locatior	UTM Zone 10	NAD 8	3				
	Drilli	ng	Ту	peAir Rotary	T.D. 115.0 m	Geophysical Log	iger NA	Easting (m)	Northing (m)	Elevatio	on (m)				
	Hole	s S	ize	6"	Angle -90	Date Logged		364292	5484564	128.5					
	Jepth (m)	Drill Type	-ithology Symbol		Lithology and	Water Observatior	าร		Backfill and Equipment Installation		Depth (m)				
	1100			Mudstone: carbonac Sandstone: grades to Siltstone: interbedde Coal: interbedded wi Siltstone: carbonace	eous o siltstone d with sandstone, occ ith siltstone layers ous	assional carbonaceous	seams		bentonite sand		110				
E											-				
				C.0	moliance Coa		Comp	bliance Coal (	Corp.						
		1	-	00	RPORATIO	N	Rav	/en Coal Proj	ect						
	4			DBA	Comox Joint Ventu	re	Hydrogeological Drilling Program, 2009								

Mary A

Scale 1:500

Page 2 of 2

Figure D-09-041



Page 1 of 4



Page 2 of 4

Drille	d B	By Drillwell Enterprises	Cuttings/Core Desc	cription E	By RM	DH IE	)		RA∖	/-09-042	2	
Date	Co	mpleted March 4, 2010	Date Logged Feb 2	23 - 4 M	ar, 2010		Locatior	UTM	Zone 10	) NAD 8	3	
Drillin	gТ	ype AR/Tri-Cone/PQ3	Geophyscial Logge	r Weat	herford	Easting	(m)	Northi	ng (m)	Eleva	ation (r	m)
Hole S	Size	e 6" Angle -90	Date Logged March	11, 201	10	366386		54839	953	75.8		
(m) /pe	gy Symbol	Lithology and Water Ob	servations	EC 0 mS 60  Temp	Gamma 0 API 200 Caliper	Densi 0 1 g/cc  Porosi	ty S 3 1000	ionic Js/m600	Res-S 10 1000  Res-D	Back and Equipi	fill d ment	(m)
epth ill Ty	holo			0 C 20	0 mm 20	0 100 %	°		10 1000	Instal	ation	pth
ď	Ē				•••••		••••					De
- 190		-PZ1 CONSISTS OF 3/4" SCH 40 SECTION WRAPPED IN GEOFA	PVC PIPE. SCREEN BRIC.									190 -
							85					
-		<ul> <li>light grey with trace of black silts</li> <li>no siltstone noted below 205.8 m</li> </ul>	tone layers below 203.7 m		I کر I	*						
- 210		- No artesian seepage with drillho	le stopped at 210.7 m.		5		:  <b>}</b>		{ _			210 -
-		- dark brown with layers of light gr below 211.0 m	ey and black, very strong		<b>}</b>				K			
-	Ŀ	*** RISING HEAD TEST *** 1 of 3	- packer set at 213 m		S S		÷		ΙĮ			
- 220	ŀ	- trace of black siltstone layers be	low 216.5 m	_	I S i			$\mathbf{X}^{\dagger}$	18	c	oncrete	220 -
-		Coal: black with some mudstone				::•:: <b>:</b> :::::::::::::::::::::::::::::::		$\rightarrow$				
- 230		Sandstone: medium-grained, light layers, strong strength - no siltstone layers noted below 2 - grey and brown below 228.4 m - trace of black siltstone layers be	grey, with black siltstone 225.6 m low 229.6 m									230 -
- 240		<ul> <li>some black siltstone layers below</li> </ul>	w 236.3 m			·			<u>}</u>			240 -
				1			:					
250		Coal: black with some mudstone Sandstone: medium-grained, dark quartz material, strong strength be - grey and dark grey, trace of shal - medium-grained, grey, black silts strength - WATER DISCHARGE continued drilling was stopped with 270 L/mi - static water level near surface at *** RISING HEAD TEST *** 2 of 3	grey to black, trace of elow 242.4 m le layers below 246.7 m stone layers, strong I to increase with depth and in at 253 m the end of RC drilling a packer set at 253 m									250 -
- 260	 	Mudstone: consists mostly of silts	tone with shale layers,		$\mathbf{z}$		3	5				260 -
		Sandstone: with siltstone and sha	le layers, black, weak						X			
- 270		Coal: black with some mudstone			}   !				16			270 -
- 280		Sandstone: with siltstone and sha black, weak strength - coal seam of undetermined thick - coal seam of undetermined thick - medium-grained with some black 265.9 m	le layers, coarse-grained, iness at 262.8 m iness at 265.9 m k and white particles below			•					entonite seal	280 -
	:				<b>∥</b>   <b>\$</b>     :		:   (		}		280m /WP	
		Complia			Complia Raven	nce Coa Coal Pi	al Corp oject	D.				
		DEA COMOX	Joint Venture		Hydr	ogeologi	cal Drilli	ng Pro	ogram, 2	010		
21	N	Mar Ju		March	n 4, 2012		Scale	1:4	430	Figure	D-09	-042

Drilled I	By Drillwell Er	nterprises	Cuttings/C	ore Des	criptior	By RM		DH ID		RA۱	/-09-042	2	
Date Co	ompleted March	4, 2010	Date Logg	ed Feb	23 - 4	Mar, 201	0	Lo	cation UTM	Zone 1	NAD 8	3	
Drilling	Type AR/Tri-Cor	ne/PQ3	Geophysci	al Logge	er Wea	atherford		Easting (m	i) North	ing (m)	Elev	ation (r	n)
Hole Siz	ze 6" Angle	e -90	Date Logg	ed March	<u>י 11, 2</u>	010		366386	5483	953	75.8	}	
Depth (m) Drill Type Litholoav Svmbol	Lithology and	l Water Ob	oservations		EC 0 mS 6  Temp 0 C 2	Gamn 60 0 API 	na 200 er 200	Density 1 g/cc Porosity 100 %	3 Sonic 3 100us/m600	Res-S 10 1000  Res-D 10 1000	Bacł an Equip Instal	tfill d ment lation	Depth (m)
- 290 - 300	- fine-grained, grey a trace of coal and sh *** RISING HEAD T Coal: SEAM 3 - blac	and brown wi ale below 28( EST *** 3 of 3	th trace of black 0.5 m 3 - packer set at mudstone	particles, 293 m								ieal pea gravel ieal gravel seal seal	290 -
- 310	<ul> <li>Coal: SEAM 3 - black with some mudstone</li> <li>Sandstone: with siltstone and shale layers, coarse-gr black, weak strength</li> <li>Mudstone: consists mostly of carbonaceous siltstone grained, layered, grey, low strength, slightly weathered backet and a strength siltstone strength strength</li></ul>											seal 314m VWP seal bea	310 -
core bit	grained, layered, gra- bedded structure - 2 joints 30-60 deg All joints are rough.	off horizontal	and 12 joints at	0-30 deg.								jravel seal 326m √WP	
330 puomei C - 0 - 340	Coal: SEAM 1 - laye structure Mudstone: consists grey, low strength, s -12 joints 60-90 deg 30 joints 0-30 deg. s slickensided.	mostly of silts mostly of silts slightly weath off horizonta Some joints a	w strength, bedo stone, fine-grain ered Il, 12 joints 30-60 re rough and so	ded ed, layered, ) deg, and me					ξ	F		pentonite seal pea gravel	330 -
	Sandstone: medium medium strength, sl rough joints - 1 joint 60-90 deg o joints are rough. - 8 cm wide fault at 3 particles - 5 mm thick calcite	i-grained, gra ightly weathe off horizontal a 338.4 m dept veins noted r	nular texture, lay red, bedded stru and 3 joints 30-6 h containing mos	vered, grey, cture, with 0 deg. All stly silt size ble									
57	-			(		e Coal Cor	р.						
and the second se	CORPORATION							Raven C	oal Project				
		H	ydro	ogeologica	I Drilling Pr	ogram, 2	010						
200	true fo	JUN OUTION	come rontaro		Mar	ch 4, 201	2 Scale 1:43		430	Figure	D-09	-042	

Drill	lled By Drillwell Enterprises te Completed March 29, 2010				Cuttings/	Core Description By R	RM	DH ID RAV-09-0				43
Date	e C	Com	pleted March 2	9, 2010	Date Log	ged March 15-29, 200	)9	Location	n UTM	I Zone 10	NAD 83	3
Drill	ing	зTy	peAR/Tri-Cone	T.D. 297.5 m	Geophys	sical Logger NA		Easting (m)	Nor	thing (m)	Elevatio	on (m)
Hole	e S	Size	8"	Angle -90	Date Log	gged		366424	548	3951	74.9	
Depth (m)	Drill Type	Lithology Symbol		Lithology and	Water Ob	oservations			Bac ar Equi Insta	ckfill nd pment allation		Depth (m)
-0	$\wedge$		Fill: Gravel - sandy w	vith silt, brown, loose,	moist							0-
F		: : :	Till: Clay - boulders,	cobbles, gravel, sand	and silt, gre	, low plasticity, moist, firm	/		- ca	asing		-
Ē			Mudstone: consists of	of siltstone and shale.	fine-grained	lavered, grev, moderate strength	/ n. slightly	4-1				
E 10		· · ·	weathered	,	g	,,, g, ,	., eg,					10
-		$\frac{\cdot}{\cdot}$	- weak strength help	w 11 m								
Ē			weak strength belo	** 1111							×	-
-		·										
- 20		·										20 -
		· · ·										
		· · · ·										
-		: : :										
- 30												30 -
	- mottled light brown below 35 m											
F		$\frac{\cdot}{\cdot}$										
		· · ·										-
- 40 E		·										40 -
-		· · · · · · ·										-
		· ·										-
-		·										50
- 50		·										50-
		·										-
-		· · ·		h a law 00 m								-
60		: : :	- moderate strength	below 60 m								60 -
		<u>.</u>										
-		· · ·										-
-												-
- 70		· · ·										70 -
F		·										-
	otarv	:										-
-	ir R	·								PVC no back	cfill	
- 80	8" A	·										80 -
F												-
È												-
-			Sandstone: medium-	-grained, granular ma	assive. dark o	irev, strong strength, slightly weat	thered					. 00
		•••• •••••	Mudstone: consists o	of siltstone and shale.	fine-grained	lavered, dark grev, moderate stru	enath					
					ал ал	[ [ [ ] ] ] ] ] ] ] ] ] ] [ ] ] ] ] ] [ ]						-
5	Compliance Co					Compliance Coal Corp.						
	49	And	0.0	RPORATIO	N	Raven Coal Project						
			DRA	Comox Joint Ventu	Hydrogeological Drilling Program, 2009							
51			1 2 2				0	4.500				<u>ີ</u>
	1		97 J.M			repruary 24, 2012	Scale	1:500		⊢ıgure	J-09-04	3

Drilled By	y Drillwell Enterpr	ises	Cuttings/	Core Description By R	RM	DH ID		RA	4V-09-0/	43
Date Cor	mpleted March 29	, 2010	Date Log	ged March 15-29, 200	)9	Locatior		Zone 10	NAD 8	3
Drilling T	ypeAR/Tri-Cone	T.D. 297.5 m	Geophys	sical Logger NA		Easting (m)	North	ing (m)	Elevation	on (m)
Hole Size	e 8"	Angle -90	Date Log	gged		366424	54839	951	74.9	
Depth (m) Drill Type Lithology Symbol		Lithology and	Water Ob	oservations			Backf and Equipr Installa	fill I nent ation		Depth (m)
										.
	2 2 2 2 2 2 2 2									100
- 110										110 -
	Sandstone: trace of m	nudstone, coarse-gra	ained, granula	ar, massive, light grey with white a	and black	-				120 -
- 130	<ul> <li>particles, weak streng</li> <li>- no mudstone noted i</li> </ul>	th, trace of carbonat	es 9.6 m							130 -
- 140	- WATER DISCHARG	SE was 15 L/min at 1	39 m							140 -
- 150	- WATER DISCHARG	6E suddenly +320 L/i	min with an E	C of +20 mS/cm and pH of 7.5 at	t 155.5 m					150 -
- 160	- medium-grained with	n trace of mudstone	below 160 m							160 -
- 170	- no mudstone noted l	below 174 m					- 2 for	rmation pac	kers to	170 -
- 180	• • • - fine-grained below 1	84.5 m					seal	upper wate	er strike if	180 -
	0	unline O	1		0		0			
5 . 30	Lor	iipliance Loa	11	Compliance Coal Corp.						
Contractor	CO a	RPORATIO	N	Hydrogeological Drilling Program, 2009						
Alger.	DBA C	Comox Joint Ventu	re	February 24, 2012	Scale	1:500 Figure D-09-04				3

Drilled By Drillwell EnterprisesCuttings/Core DescriptionDate Completed March 29, 2010Date Logged March 15-						M	DH ID		RA	V-09-04	43
Date	Con	npleted March 29	9, 2010	Date Log	gged March 15-29, 200	9	Location	n UTN	V Zone 10	NAD 83	3
Drillin	gТу	/peAR/Tri-Cone	T.D. 297.5 m	Geophy	sical Logger NA		Easting (m)	Nor	thing (m)	Elevatio	on (m)
Hole	Size	8"	Angle -90	Date Lo	gged		366424	548	3951	74.9	
Depth (m) Drill Tvoe	Lithology Symbol		Lithology and	Water Ob	oservations			Ba a Equ Inst	ckfill Ind ipment allation		Depth (m)
		I					1				L
- 190		- medium-grained an	d dark grey with thin (	coal layers b	elow 199.7 m						190 -
		- grey and white sand	d cuttings below 204.	3 m							
- 210		- fine-grained below :	216.5 m						210 -		
- 220		- medium-grained be	low 221.3 m							220 -	
- 3	2	Coal: with shale, blac	ск								
- 230	0	Sandstone: medium-	grained, grey, some r	mudstone, m	oderate strength, trace of coal						230 -
- 240		- caving in the hole b - WATER LOSS of ~ - fine-grained below ;	etween 233.5 and 23 90 L/min while drilling 240.9 m	6.6 m 9 233.5 m to	end of hole		<u></u>	fc e	ormation collap xtent uncertair	ose - 1	240 -
- 250		- medium-grained wi	th increasing amount	of mudstone	and coal with depth below 247 m						250 -
- 260 		- ground conditions c	ausing drill to shake a	at 268.0 m, li	ikely alternating hard/soft rock laye	ers					260 -
- 270		- coarse-grained with						270 -			
- 280											280 -
		Co	mnlianco Cos			Comp	liance Coal	Corp.			
2.6	Ste	00				Rave	en Coal Pro	ject			
10-0		A A CO	KPUKAIIUI	N	Hydro	geologi	cal Drilling F	Progra	am, 2009		
R.		DBA	comox Joint Ventu	ie.	February 24, 2012	Scale	1:500 Figure D-09-043				3

Drilled By Drillwell Enterprises				Cuttings/Core Description By RM	DH ID	RAV-09-043		
Date Completed March 29, 2010				Date Logged March 15-29, 2009	Locatior	UTM Zone 10	) NAD 83	3
Drilling Type AR/Tri-Cone T.D. 297.5 m				Geophysical Logger NA	Easting (m)	Northing (m)	Elevatio	on (m)
Hole Size 8" Angle -90			Angle -90	Date Logged	366424	5483951	74.9	
Depth (m)	Drill Type Lithology Symbol		Lithology and	Water Observations	Backfill and Equipment Installation		Depth (m)	
290		- some coal and muc - fine-grained below - weak strength belo	dstone particles noted 294.2 m w 296.6 m	in cuttings at 286.6 m				290 -
- 300								300 -



Compliance Coal Corp. Raven Coal Project

Hydrogeological Drilling Program, 2009