0013

Outgoing
C/025/0005

From: David Darby
To: cmccourt@altoncoal.com; Pam Grubaugh-Littig; petersen@relia.net; Pris...
Date: 11/8/2007 6:14 PM
Subject: Acid and Toxic sampling of strata at Coal Hollow.
Attachments: Acid and toxic sampling,xls.xls

This table identifies the strata that does not supply the data, as we agreed to, composite samples every 10 feet in thick strata. Data should be provided for the zones marked in red. After talking to Erik, I am unsure if there are coal samples to analyze. I would like to see another coal sample analyzed in the southern part of the permit area. Erik and I talked about sampling the outcrop if a core was not available.

I will be out of the office until November 14, 2007. I will be glad to talk to you when I get back.

Site	Feet from Top		Strata		Type of Sample	
	0-1		0-5	soil	auger	
	3				auger	
	9-10		5-14	gravel	auger	
	14			sand-silt	auger	
		Unconsolidate	14-16.5	lt. Clay		
	19				auger	
			20-34	silty clay\		
			34-48	clay		
			48-55	shale		
Box 1, CH5	50.4-60.4				core	
Box 2, CH-5	60.4-70.4		48-88.5		core	
Box 3, CH-5	70.4-80.4			shale	core	
Box 4, CH-5	80.4-90.9	Bedrock			core	
Box 5, CH-5	90.9-100.4		88.5-92.5	siltstone	core	
Box 6, CH-5	100.4-110.4			shale	core	
Box 7, CH-5	110.4-120.4		92.5-146	shale	core	
Box 8, CH-5	120.4-132.9			shale	core	
Box 9, CH-5	132.9-143.8			shale	core	
Box 10, CH-5	143.8-154.7		146-152.3	siltstone	core	
	154.7-171.5			coal		
Box 11, CH-5					core	CH-5 Below coal seam

Site	Feet from Top		Strata		Type of Sample	
	0-3				auger	
	3-6				auger	
	9		silty clay		auger	
	16				auger	
Box 13, CH-3			41-44.5	shale	core	CH-3 above overburde
CH-3	46-60	bedrock		coal	core	Coal Seam @ CH-3
Box 12, CH-3			61-63.5	shale	core	CH-3 below underburd

Site	Feet from Top		Strata		Type of Sample
	3		soil		auger
	6				auger
	9-10				auger
	12				auger
	12-13			8-40	auger
	16		Clay		auger
	30				auger
			Shale	40-55	
	50				auger
	59.2-73			Coal	
	73-76				
	75.8-80	bedrock	shale		

Site	Feet from Top		Strata		Type of Sample
	0-5		soil		auger
	5-10				auger
	10				auger
	20		clay		auger
	35-40				auger
	42-49				auger
	62.3-79.3	bedrock		Coal	core
			clay		
			shale		

Acid and toxic material data

Observations of reported data. Not necessarily deficient.

5-Nov-07 David Darb

Borehole CH-5

Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganese
0.1	0.2	230	0	230	<1	<5	264
0.19	<0.1	250	0	250	<1	<5	152
0.26	<0.1	600	0	600	<1	<5	233
1.04	0.2	190	0	190	<1	<5	87
3.57	0.4	180	0	180	<1	<5	144
		30 feet no overburden data					
36.9	0.8	220	12	210	nd	nd	195
48.1	1	210	13	200	nd	nd	143
43.1	1.4	89	13	76	nd	nd	83
33.4	1.4	100	10	95	nd	nd	74
35.8	1.4	160	9	140	nd	nd	825
48.6	1.3	100	11	91	nd	nd	64
45.3	1.1	130	11	120	nd	nd	319
52.4	2.2	60	23	37	nd	nd	94
46.9	1.9	34	21	13	nd	nd	73
41.7	1.5	23	15	8	nd	nd	68
		No coal analysis					
46.3	1.8	51	2	49	nd	nd	59

Borehole CH-3

Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganese
0.05	<0.1	160	0	160	<1	<5	152
0.09	<0.1	280	0	280	<1	<5	141
0.11	<0.1	460	0	460	<1	<5	217
0.31	<0.1	650	0	650	<1	<5	276
		No samples within this 25 foot section					
5.4	1.6	100	10	90	nd	nd	124
	100*	Some acid-toxic parameters not reported			<0.2*	<1*	12*
12.5	3	78	2	75	nd	nd	89

Borehole CH-01

*ug/g

nd-not detected at reporting level

Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganese
0.12	0.4	280	1.1	280		<5	272
0.33	0.4	300	0	300		<5	222
0.96	0.3	350	0	350		<5	225
0.8	0.2	300	0	300		<5	263
0.7	<0.1	260	0	250		<5	191
0.66	0.1	300	0	300		<5	159
		No sample for this 15 foot sequence reported					
0.79	0.4	260	0	260		<5	202
22.2	4.1	41	12	29		<5	80
		No coal analysis					

Borehole CH-6

Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganese
2.66	0.2	21	0	20	<1	<5	118
ISS	0.6	130	0	130	<1	<5	114
9.93	0.4	69	0	68	<1	<5	108
12.3	0.4	60	1.6	58	<1	<5	121
15.8	2.3	90	3.6	87	<1	<5	322
21.4	2.7	51	17	34	<1	<5	148
		No coal analysis					

›y *ug/g

nd-not detected at reporting level

mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
13500	7.9	2.22	0.19	0.15	7	17	11	47
8120	8.2	1.28	0.15	0.28	<5	8	7	25
8140	8.4	1.05	0.15	0.36	<5	7	<5	16
14500	8.3	1.5	0.21	1.51	<5	14	11	50
14600	8.1	2.67	0.27	5.85	<5	15	11	54
9820	8.6	1.01	0.32	32.9	nd	8	8	41
9000	8.8	0.37	0.18	23.6	nd	nd	9	38
8040	9.3	0.21	0.1	15.9	nd	nd	9	42
6480	9.5	0.1	0.05	8.2	nd	nd	10	32
5730	9.3	0.18	0.08	11.6	nd	nd	12	41
7990	8.8	0.42	0.24	26.8	nd	nd	7	43
9060	8.6	0.65	0.29	31.8	nd	nd	6	33
11800	9.3	0.15	0.11	16.5	nd	nd	8	38
10700	9.3	0.11	0.09	12.3	nd	nd	10	41
6720	8.3	2.24	0.46	54.2	nd	nd	8	29
5700	9	0.23	0.18	18.1	nd	nd	19	75

mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
8620	7.8	2.98	0.3	0.07	<5	7	7	28
7000	8.3	1.73	0.12	0.1	<5	7	5	19
8100	8.4	1.1	0.09	0.13	8	8	<5	14
11400	8.4	1.22	0.16	0.4	<5	7	<5	23
11600	7.8	9.16	0.86	16	12	nd	8	41
6820	8.2	1.8	0.46	15.3	nd	nd	20	122

mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
17300	8	1.42	0.37	0.14	9	24	13	63
16100	8.2	0.69	0.35	0.4	6	20	12	61
12800	8.4	0.57	0.28	1.36	6	16	11	43
14400	8.2	1.48	0.31	1.49	<5	18	11	54
9780	8.3	1.71	0.26	1.25	<5	11	9	33
11300	8.3	1.58	0.27	1.11	5	13	10	40
14100	8	16.9	1.11	3.65	6	19	11	49
10600	8.6	1.73	0.43	26	<5	15	13	43

mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
13800	8	1.33	0.08	3.17	<5	18	11	46
10000	8.5	ISS	ISS	ISS	<5	12	10	35
14200	8.2	22.7	0.93	60.8	<5	15	9	35
16600	8	26.7	1.07	61.7	<5	25	11	45
11500	8.2	19.5	0.88	60	<5	11	19	44
13500	8.3	12.3	1.07	66.4	<5	15	12	39

Acid and toxic material data

Observations of reported data. Not necessarily deficient.

5-Nov-07 David Darby

*ug/g
nd-not detected at reporting level

Borehole CH-5

Site	Feet from Top		Strata		Type of Sample		Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganes	mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
	0-1		0-5	soil	auger		0.1	0.2	230	0	230	<1	<5	264	13500	7.9	2.22	0.19	0.15	7	17	11	47
	3				auger		0.19	<0.1	250	0	250	<1	<5	152	8120	8.2	1.28	0.15	0.28	<5	8	7	25
	9-10		5-14	gravel	auger		0.26	<0.1	600	0	600	<1	<5	233	8140	8.4	1.05	0.15	0.36	<5	7	<5	16
	14			sand-silt	auger		1.04	0.2	190	0	190	<1	<5	87	14500	8.3	1.5	0.21	1.51	<5	14	11	50
		Unconsolidate	14-16.5	lt. Clay			3.57	0.4	180	0	180	<1	<5	144	14600	8.1	2.67	0.27	5.85	<5	15	11	54
	19				auger																		
			20-34	silty clay\																			
			34-48	clay																			
									30 feet no overburden data														
			48-55	shale																			
Box 1, CH5	50.4-60.4				core		36.9	0.8	220	12	210	nd	nd	195	9820	8.6	1.01	0.32	32.9	nd	8	8	41
Box 2, CH-5	60.4-70.4		48-88.5		core		48.1	1	210	13	200	nd	nd	143	9000	8.8	0.37	0.18	23.6	nd	nd	9	38
Box 3, CH-5	70.4-80.4			shale	core		43.1	1.4	89	13	76	nd	nd	83	8040	9.3	0.21	0.1	15.9	nd	nd	9	42
Box 4, CH-5	80.4-90.9	Bedrock			core		33.4	1.4	100	10	95	nd	nd	74	6480	9.5	0.1	0.05	8.2	nd	nd	10	32
Box 5, CH-5	90.9-100.4		88.5-92.5	siltstone	core		35.8	1.4	160	9	140	nd	nd	825	5730	9.3	0.18	0.08	11.6	nd	nd	12	41
Box 6, CH-5	100.4-110.4			shale	core		48.6	1.3	100	11	91	nd	nd	64	7990	8.8	0.42	0.24	26.8	nd	nd	7	43
Box 7, CH-5	110.4-120.4		92.5-146	shale	core		45.3	1.1	130	11	120	nd	nd	319	9060	8.6	0.65	0.29	31.8	nd	nd	6	33
Box 8, CH-5	120.4-132.9			shale	core		52.4	2.2	60	23	37	nd	nd	94	11800	9.3	0.15	0.11	16.5	nd	nd	8	38
Box 9, CH-5	132.9-143.8			shale	core		46.9	1.9	34	21	13	nd	nd	73	10700	9.3	0.11	0.09	12.3	nd	nd	10	41
Box 10, CH-5	143.8-154.7		146-152.3	siltstone	core		41.7	1.5	23	15	8	nd	nd	68	6720	8.3	2.24	0.46	54.2	nd	nd	8	29
	154.7-171.5			coal					No coal analysis														
Box 11, CH-5					core	CH-5 Below coal sean	46.3	1.8	51	2	49	nd	nd	59	5700	9	0.23	0.18	18.1	nd	nd	19	75

Borehole CH-3

Site	Feet from Top		Strata		Type of Sample		Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganes	mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
	0-3				auger		0.05	<0.1	160	0	160	<1	<5	152	8620	7.8	2.98	0.3	0.07	<5	7	7	28
	3-6				auger		0.09	<0.1	280	0	280	<1	<5	141	7000	8.3	1.73	0.12	0.1	<5	7	5	19
	9		silty clay		auger		0.11	<0.1	460	0	460	<1	<5	217	8100	8.4	1.1	0.09	0.13	8	8	<5	14
	16				auger		0.31	<0.1	650	0	650	<1	<5	276	11400	8.4	1.22	0.16	0.4	<5	7	<5	23
									No samples within this 25 foot section														
Box 13, CH-3			41-44.5	shale	core	CH-3 above overburde	5.4	1.6	100	10	90	nd	nd	124	11600	7.8	9.16	0.86	16	12	nd	8	41
CH-3	46-60	bedrock		coal	core	Coal Seam @ CH-3		100*	Some acid-toxic parameters not reported			<0.2*	<1*	12*									
Box 12, CH-3			61-63.5	shale	core	CH-3 below underburd	12.5	3	78	2	75	nd	nd	89	6820	8.2	1.8	0.46	15.3	nd	nd	20	122

Acid and toxic material data

Observations of reported data. Not necessarily deficient.

5-Nov-07 David Darby

*ug/g
nd-not detected at reporting level

Borehole CH-01

Site	Feet from Top	Strata		Type of Sample	Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganese	mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
	3	soil		auger	0.12	0.4	280	1.1	280		<5	272	17300	8	1.42	0.37	0.14	9	24	13	63
	6			auger	0.33	0.4	300	0	300		<5	222	16100	8.2	0.69	0.35	0.4	6	20	12	61
	9-10			auger	0.96	0.3	350	0	350		<5	225	12800	8.4	0.57	0.28	1.36	6	16	11	43
	12			auger	0.8	0.2	300	0	300		<5	263	14400	8.2	1.48	0.31	1.49	<5	18	11	54
	12-13		8-40	auger	0.7	<0.1	260	0	250		<5	191	9780	8.3	1.71	0.26	1.25	<5	11	9	33
	16	Clay		auger	0.66	0.1	300	0	300		<5	159	11300	8.3	1.58	0.27	1.11	5	13	10	40
					No sample for this 15 foot sequence reported																
	30			auger	0.79	0.4	260	0	260		<5	202	14100	8	16.9	1.11	3.65	6	19	11	49
		Shale	40-55																		
	50			auger	22.2	4.1	41	12	29		<5	80	10600	8.6	1.73	0.43	26	<5	15	13	43
	59.2-73		Coal		No coal analysis																
	73-76																				
	75.8-80	bedrock	shale																		

Borehole CH-6

Site	Feet from Top	Strata		Type of Sample	Unitless SAR	mg/kg Boron	t/kt Neutral Potent	t/kt Acid potent	t/kt Acid/Base Potential	mg/kg Cadmium	mg/kg Selenium	mg/kg Manganese	mg/kg Iron-T	pH	meq/L Calcium-T	meq/L Potassium-	meq/L Sodium-T	mg/kg Arsenic-T	mg/kg Chromium-	mg/kg Lead-T	mg/kg Zinc-T
	0-5	soil		auger	2.66	0.2	21	0	20	<1	<5	118	13800	8	1.33	0.08	3.17	<5	18	11	46
	5-10			auger	ISS	0.6	130	0	130	<1	<5	114	10000	8.5	ISS	ISS	ISS	<5	12	10	35
	10			auger	9.93	0.4	69	0	68	<1	<5	108	14200	8.2	22.7	0.93	60.8	<5	15	9	35
	20	clay		auger	12.3	0.4	60	1.6	58	<1	<5	121	16600	8	26.7	1.07	61.7	<5	25	11	45
	35-40			auger	15.8	2.3	90	3.6	87	<1	<5	322	11500	8.2	19.5	0.88	60	<5	11	19	44
	42-49			auger	21.4	2.7	51	17	34	<1	<5	148	13500	8.3	12.3	1.07	66.4	<5	15	12	39
	62.3-79.3	bedrock	Coal	core	No coal analysis																
		clay																			
		shale																			