SITE ASSESSMENT FOR PROPOSED COKE POINT DREDGED MATERIAL CONTAINMENT FACILITY AT SPARROWS POINT

BALTIMORE COUNTY, MARYLAND

APPENDIX A

Boring Logs and Field Notes

Prepared for:

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Under Contract to:

Maryland Environmental Service

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OFFSHORE INVESTIGATION PHOTOLOG

Photographic Record

Offshore at the Sparrows Point Coke Point Peninsula
Baltimore County, Maryland
February-March, 2009

Figure 1. Drill rig on barge at offshore location 08

Figure 2. Drill rig and core processing area (in front of the drill rig)

Figure 3. Drilling sediment cores

Figure 4. 2-foot sediment core sections

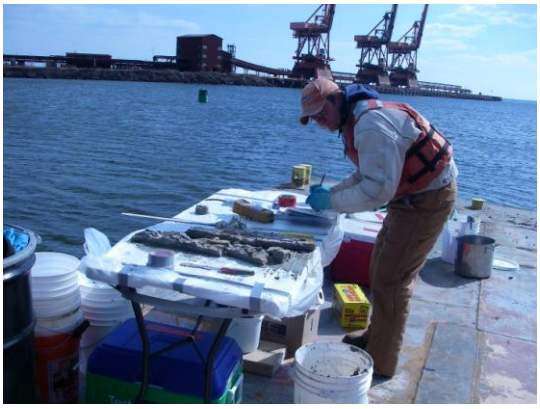


Figure 5. Logging 2-foot core sections on the barge

Photographic Record

Offshore at the Sparrows Point Coke Point Peninsula
Baltimore County, Maryland
February-March, 2009

Figure 6. Fill material (right) on top of tan/dark tan sand (left)

Figure 8. Twenty-two (22) feet below the sediment surface. Fine sands and hydrocarbon odor.

Figure 7. Fill material from offshore location 3A, 12-14 feet below the sediment surface

Figure 9. Piece of slag (center of core) in dark clay

Photographic Record

Offshore at the Sparrows Point Coke Point Peninsula
Baltimore County, Maryland
February-March, 2009

Figure 10. Sheen present in core, negative Sudan IV test for NAPL

Figure 11. Sediment sampling equipment: Terra core for VOCs (center), sediment collection bottles with preservative (right).

OFFSHORE INVESTIGATION
FIELD LOGBOOK

10 Oct 2008
Sediment field duplicate sub-sampled from CIEE-318-SED tox bucket 8 of 10.
CIEE-318-SED DUP

2 FEB 2009
14534.06 SPARROWS PT. ADDITIONAL KCRA OFFSHORE SAMPLING - SITE WATER

0935 - depart from Hanbo Hospital ramp
On board - T. Ward, R. Ballantine

Weather sunny, wind ≤ 5 knots, s/kim ice, waves flat

1053 - arrive @ BH-W-01 Depth = 22.0'

Sample	Time	Depth (FA)
BH-W-01-S	1105	Surface
-01-M	1110	~~10~~ 11
-01-D	1115	22

1126 - Wat. qual. @ BH-W-01 (WITW)

	Temp. (°C)	Sal. (g/L)	DO mg/L	pH	Turb
Surf.	3.~~66~~ 58	9.71	12.10	8.44	6.6
Mid	1.84	12.97	12.17	8.36	5.3
Btm	2.10	13.34	11.99	7.95	4.8

2 FEB. 2009 Spanaway Lk. Site Water (Slag on btm.)

1146 - anchor @ BH-W-02 D = 8.1 ft

BH-W-02-S	Surf.		1150
-M	4 ft		1155
-D	8 ft		1200

1203 - wat. qual. @ BH-W-02

	Temp	Sal	DO	pH	Turb.
Surf	3.07	9.53	14.0	8.38	5.3
Mid	2.67	9.75	14.1	8.41	6.7
Btm	2.~~50~~ 41 TW	11.36	14.0	8.38	7.5

1322 - anchored @ BH-W-03A

D = ~~4.5~~ 4.3 ft ~~Target coordinate~~ TW

~~on-shore offset 605 ft W~~ TW

~~Sampling coord. N 562857.6 ft~~ TW

~~HD NAD 83 E 1453854.0 ft~~ TW

BH-W-03A-S	Surf.		1225
-M	TW 1.5		1230
-D	3.0		1235

1236 - wat. qual. @ BH-W-03A

	Temp.	Sal.	DO	pH	Turb.
Surf.	3.26	9.53	14.4	8.40	~~7.7~~ TW 8.0
Mid	3.00	9.65	14.5	8.38	~~7.7~~ TW 6.7
Btm	2.46	10.01	14.8	8.44	4.0

2 FEB. 2009

1326 - anchor @ BH-W-03B D = 11.5 ft

BH-W-03B-S	Surf.		1330
BH-W-03B-M	5.8 ft		1335
-03B-D	11.5 ft		1340

1336 - wat. qual. @ BH-W-03B

	Temp.	Sal.	D.O.	pH	Turb.
Surf.	2.65	9.28	14.3	8.43	4.3
Mid	~~2.62~~ TW 2.62	9.41	14.26	8.47	3.8
Btm	2.14	10.98	14.13	8.37	7.9

1355 - anchored @ BH-W-03C D = 14.0 ft

BH-W-03C-S	Surf		1400
-M	7 ft		1405
-D	14 ft		1410

1405 - wat. qual. @ BH-W-03C

	Temp	Sal.	DO	pH	Turb.
Surf	2.66	9.35	13.9	8.52	5.0
Mid	2.28	10.50	13.9	8.47	4.5
Btm	1.91	11.34	13.8	8.41	5.0

Sparrows Pt.
Site Water

2 FEB 2009

1430 - anchor @ BH-W-04
D = 10 ft

BH-W-04-S Surface 1440
↳ DUP-1

BH-W-04-M 5 ft 1445
↳ DUP-2

BH-W-04-D 10 ft 1450
↳ DUP 3

1443 - wat. qual @ BH-W-04

	Temp.	Sal.	DO	pH	Turb.
Surf.	2.78	9.34	14.0	8.43	4.5
Mid	2.60	9.45	13.7	8.56	4.8
Btm	2.18	10.28	13.6	8.60	8.0

1516 - anchor @ BH-W-05 D = 4.0 ft

BH-W-05-S Surf. 1510
BH-W-05-S-MS 1510
-S-MSD 1510
BH-W-05-M 2.0 ft 1515
-05-M MS 1515
-05-M MSD 1515
BH-W-05-D 4.0 ft 1520
-05-D MS 1520
-05-D MSD 1520

2 FEB. 2009

1555 - W.Q. qual @ BH-W-05

	Temp.	Sal.	DO	pH	Turb.
Surf	2.8	9.39	14.3	8.57	7.1
Mid	2.82	9.38	13.8	8.61	7.1
Btm	2.74	9.44	13.8	8.61	6.7

1630 - head back to dock
1730 - dock @ Bald. Yacht Basin

3 Feb 2009 - Site water sampling
On board - T. Ward, R. Bellantini, E. Maddox
Weather - overcast, snow, wind N 5-10 knots, waves 1-2 ft
0915 - depart dock @ 0915

0953 - anchor @ BH-W-06 D = ~~14~~ 13.5 ft

BH-W-06-S Surface 1000
-M 6 1005
-D 13.5 1010

3 Feb. 2009

1007 - wat. qual. @ BH-W-06

	Temp	Sal.	DO	pH	Turb.
Surf.	2.11	10.9	12.8	8.39	5.8
Mid.	2.10	10.97	12.8	8.45	5.9
Btm	2.21	13.22	12.4	8.26	7.5

1024 - anchor @ BH-W-07 D = 13.6'

BH-W-07-S	Surface	1030
BH-W-07-M	6.5	1035
BH-W-07-D	13	1040

1035 - wat qual. @ BH-W-07

	Temp.	Sal.	DO	pH	Turb.
Surf.	2.09	10.93	13.2	8.41	6.0
Mid	2.08	10.99	13.1	8.44	6.5
Btm.	2.11	11.29	12.9	8.39	7.3

1054 - anchor @ BH-W-08
D = 13.2'

BH-W-08-S	Surface	1100
-M		1105
-D		1110

3 FEB. 2009

1108 - wat. qual @ BH-W-08

	Temp	Sal	DO	pH	Turb
Surf.	2.18	10.78	13.1	8.43	6.2
Mid	2.19	10.97	13.0	8.43	8.6
Btm	2.18	11.11	13.2	8.44	9.1

1125 - anchor @ BH-W-09 D = 10ft

BH-W-09-S	1130	Surface
↳ DUP-4		
BH-W-09-M	1135	5 ft
↳ DUP-5		
BH-W-09-D	1140	10 ft
↳ DUP-6		

1141 - wat. qual. @ BH-W-09

	Temp.	Sal.	DO	pH	Turb.
Surf.	2.2	11.06	12.9	8.39	7.2
Mid	2.2	11.12	12.9	8.44	7.1
Btm	2.19	11.28	12.8	8.46	9.0

1217 - anchor @ BH-W-10 D = 8.0ft

BH-W-10-S	Surf		1225
BH-W-10-M	4		1230
BH-W-10-D	8		1235

Spar Cove Pt.
3 FEB. 2009 Site Water

1232 - wat. qual. @ BH-W-10

	Temp	Sal	DO	pH	Turb.
Surf	2.12	10.44	13.1	8.41	5.5
Mid	2.11	10.46	13.1	8.5	5.4
Btm	2.13	10.67	13.0	8.5	6.0

1250 - anchored @ BH-W-11
Depth = 13.5 ft

BH-W-11-S	Surf.	1300
BH-W-11-M	6	1305
BH-W-11-D	13.5	1310

1300 - wat. qual. @ BH-W-11

	Temp.	Sal.	DO	pH	Turb.
Surf	2.17	10.46	13.8	8.41	5.0
Mid	2.22	10.83	13.7	8.44	5.5
Btm	2.28	11.25	13.5	8.41	6.3

1313 - anchor @ BH-W-12 D = 19 ft

BH-W-12-S	Surf.	1320
BH-W-12-M	9.5	1325
BH-W-12-D	19	1330

3 FEB. 2009

1325 - wat. qual. @ BH-W-12

	Temp	Sal	DO	pH	Turb.
Surf	2.21	10.80	13.6	8.37	11.1
Mid	2.17	10.95	13.6	8.48	7.0
Btm	2.18	13.08	13.1	8.23	6.3

1336 - anchored @ BH-W-13A D = 6.8'

BH-W-13A-S	Surf	1345
BH-W-13A-M	3.4	1350
BH-W-13A-D	6.8	1355

1349 - wat. qual. @ BH-W-13A

	Temp	Sal.	DO	pH	Turb.
Surf	2.25	10.91	13.8	8.31	10.0
Mid	2.19	10.91	13.7	8.52	6.8
Btm	2.17	10.92	13.7	8.55	8.8

1401 - anchor @ BH-W-13B D = 20 ft

BH-W-13B-S	Surface	1405
BH-W-13B-M	10 ft	1410
BH-W-13B-D	20 ft	1415

Spanaway Pk.
Site Water

3 FEB. 2009

1419 - wat. qual. @ BH-W-13B

	Temp.	Sal.	DO	pH	Turb.
Surf	2.17	10.87	13.7	8.41	5.7
Mid	2.14	11.52	13.4	8.32	5.6
Btm	2.19	13.10	12.6	8.08	5.7

1435 - anchor @ BH-W-13C D = 32.5'

BH-W-13C-S	Surf.		1445
	-M	16 ft	1450
	-D	32.5 ft	1455

1446 - wat. qual. @ BH-W-13C

	Temp	Sal.	DO	pH	Turb.
Surf.	2.18	10.97	13.1	8.53	14.2
Mid	2.10	13.59	12.9	8.24	5.4
Btm	2.62	15.07	10.5	7.73	8.1

1500 - anchor @ BH-W-14 D = 24.5'

BH-W-14-S	Surface	1510
BH-W-14-M	12'	1515
BH-W-14-D	24.5'	1520

3 FEB. 2009

1515 - wat. qual. @ BH-W-14

	Temp.	Sal.	DO	pH	Turb.
Surf	2.26	10.95	13.4	8.55	6.4
Mid	2.15	11.74	13.2	8.34	5.8
Btm	2.27	14.03	12.8	8.01	6.9

1615 - dock @ B/B

4 FEB. + 5 FEB. - NO SAMPLING DUE TO HIGH WINDS

6 FEB. 2009 SURFACE SEDIMENT

0915 - depart from marina
On board - R. Ballantine, E. Meadows, T. Ward
Weather - sunny, wind S 5 kts, waves < 1 ft.

0956 - anchor @ BH-SED-01
1015 - BH-SED-01-00
N 563445.1 ft MD NAD83
E 1455268.7 ft
D = 23 ft
1 32 oz jar, 1 8 oz jar, 1 4 oz jar
2 40ml vials w DI H_2O, 1 40ml vial w methanol for VOCs

6 FEB. 2009 Sparrows Pt. Surface Sed.

1050 - wat qual. @ BH-SED-01

	Temp	Sal	DO	pH	Turb
Surf	3.07	12.46	13.9	8.03	7.3
Mid	2.08	14.90	13.3	7.88	9.2
Btm	2.21	15.60	11.8	7.74	42.8

1110 - anchor @ BH-SED-02
N 563027.4 ft
E 1454157.2 ft
D = 8.0 ft
Slight hydrocarbon odor

1115 - BH-SED-02-00

1123 - wat. qual. @ BH-SED-02

	Temp	Sal	DO	pH	Turb
Surf	1.86	13.74	13.1	7.90	6.0
Mid	1.66	14.71	12.9	8.04	7.1
Btm	1.66	14.88	12.9	8.03	7.1

1155 - anchor @ BH-SED-03A
N 562254.0 ft
E 1453742.3 ft
D = 2.2 ft
Abandon location, cobble/debris on bottom
1200 - BH-SED-03A-00
+ 4 oz jar for Meta-PAH Encapsulating

6 FEB. 2009

1221 - re-position @ BH-SED-03A
N 562236.4 ft
E 1453695.3 ft
D = 10 ft
Strong hydrocarbon odor + sheen

1226 - wat. qual. @ BH-SED-03A

	Temp	Sal.	DO	pH	Turb
Surf	1.55	14.64	13.4	7.99	6.3
Mid	1.49	14.56	13.3	8.06	6.9
Btm	1.41	14.52	13.2	8.07	6.9

1250 - anchor near BH-SED-03B
N 562235.9 ft
E 1453617.7 ft
D = 13.8 ft
Strong hydrocarbon odor + sheen
1300 - BH-SED-03B-00 + DUP-1

1258 - wat. qual @ BH-SED-03B

	Temp	Sal	DO	pH	Turb
Surf	1.60	14.57	13.6	8.21	6.7
Mid	1.49	14.69	13.6	8.21	7.0
Btm	1.44	14.86	13.5	8.13	7.3

6 FEB. 2009 Sparrows Pt. Surf. Sed

1325 - anchor @ BH-SED-03C
N 562184.3 ft
E 1453486.8 ft
D: 15.0 ft

1330 - BH-SED-03C-00

1334 - wat. qual @ BH-SED-03C

	Temp	Sal	DO	pH	Turb
Surf	1.75	14.76	13.9	8.3	6.7
Mid	1.58	14.55	13.8	8.19	7.3
Btm	1.57	14.56	13.4	8.19	7.2

1351 - anchor @ BH-SED-04
N 561559.6 ft
E 1454108.6 ft
D: 9.4 ft

Strong hydrocarbon odor

1400 - BH-SED-04-00
BH-SED-04-00 MS
BH-SED-04-00 MSD

1402 - wat. qual @ BH-SED-04

	Temp	Sal	DO	pH	Turb
Surf	1.85	14.78	14.2	8.27	7.3
Mid	1.82	14.62	14.1	8.26	8.5
Btm	1.72	14.94	13.8	8.14	9.7

6 FEB. 2009

1430 - anchor @ BH-SED-05
N 561518.1 ft
E 1454980.1 ft
D: 5.7 ft

1430 - BH-SED-05-00

1434 - wat. qual @ BH-SED-05

	Temp	Sal.	DO	pH	Turb
Surf	1.65	14.65	14.3	8.28	8.9
Mid	1.59	14.74	14.1	8.32	8.5
Btm	1.48	14.69	14.1	8.32	8.5

1521 - dock @ marina

9 FEB. 2009
0930 - depart from dock
On board - T. Ward, R. Ballantine, Allison ~~Bruce~~ Jacobs
Weather - sunny, wind 5 kts, waves < 1 ft

1010 - anchor @ BH-SED-06

9 FEB. 2009 Sparrows Pt Surface Sed

1015 - Sample loc. @ BH-SED-06
N 560632.0 ft
E 1454363.6 ft
D 12.2 ft

1015 - BH-SED-06-00

1023 - wat. qual @ BH-SED-06

	Temp	Sal.	D.O	pH	Turb
Surf	2.00	9.70	14.2	8.42	5.2
Mid	2.00	11.18	14.6	8.41	5.4
Btm	2.04	11.38	14.2	8.41	7.5

1043 - anchor @ BH-SED-07
N 560004.5 ft
E 1454829.1 ft
D 10.4 ft

1045 - BH-SED-07-00

1049 - wat. qual @ BH-SED-07

	Temp	Sal.	DO	pH	Turb
Surf	2.17	9.57	14.2	8.42	5.3
Mid	2.09	10.26	14.2	8.50	5.4
Btm	2.19	13.32	14.0	8.33	8.1

9 FEB. 2009

1102 - anchored @ BH-SED-08
N 559372.0 ft
E 1455401.4 ft
D 12.0 ft

1110 - BH-SED-08-00

1112 - wat. qual. @ BH-SED-08

	Temp	Sal.	D.O	pH	Turb.
Surf	2.08	9.00	14.2	8.56	4.7
Mid	2.03	9.56	14.2	8.61	5.4
Btm	2.08	11.02	14.1	8.74	7.5

1140 - anchor @ BH-SED-09
N 559658.9 ft
E 1456424.0 ft
D 9.2 ft

1155 - BH-SED-09-00

1153 - Wat. qual. @ BH-SED-09

	Temp	Sal	DO	pH	Turb.
Surf	2.26	8.88	14.5	8.66	4.5
Mid	2.08	9.97	14.7	8.55	6.3
Btm	2.01	10.56	14.8	8.54	7.3

Sparrows Pt. Surf. Sed.

9 FEB. 2009

1211 - anchor @ BH-SED-10

N 559620.3 Ft

E 1457565.3 Ft Slight hydrocarbon odor

D 7.4 Ft

1215 - BH-SED-10-00

1217 - wat. qual @ BH-SED-10

	Temp	Sal.	DO	pH	Turb.
Surf	2.45	9.14	14.4	8.76	5.0
Mid	2.06	9.86	14.4	8.60	5.4
Btm	2.02	10.08	14.4	8.58	6.4

1232 - anchor @ BH-SED-11

N 560114.5 Ft

E 1458360.9 Ft Hydrocarbon odor

D 12.1 Ft

1240 - BH-SED-11-00

1243 - wat. qual @ BH-SED-11

	Temp	Sal.	DO	pH	Turb.
Surf	2.27	8.80	14.4	8.59	4.4
Mid	2.13	9.12	14.4	8.59	4.9
Btm	2.04	14.21	14.0	8.17	10.5

FEB. 2009

1258 - anchor @ BH-SED-12

N 561204.2 Ft

E 1458361.3 Ft Hydrocarbon odor

D 15.7 Ft

1305 - BH-SED-12-00

1305 - wat. qual @ BH-SED-12

	Temp	Sal	DO	pH	Turb
Surf	2.33	8.74	14.4	8.55	4.5
Mid	1.98	10.97	14.4	8.56	5.9
Btm	1.94	14.12	13.5	8.19	9.1

1349 - anchor @ BH-SED-13A

N 562009.0 Ft

E ~~85~~ TW 1458142.9 Ft Gravel, cobble, bricks, clam shells

D 10.1 Ft

1355 - BH-SED-13A-00 Hydrocarbon odor

~~+ Dup #1~~ TW

1421 - wat. qual @ BH-SED-13A

	Temp	Sal.	DO	pH	Turb.
Surf	2.95	8.87	14.6	8.62	4.3
Mid	2.67	9.01	14.8	8.57	4.5
Btm	1.93	11.63	14.7	8.51	8.2

9 FEB. 2009 Sparrows Pt. Surf. Sed.

1431 - anchor @ BH-SED-13B

N 562048.0 ft

E 1458214.7 ft

D 22.2 ft

Black soft silt

1440 - BH-SED-13B-00 + DUP-2

1438 - wat. qual. @ BH-SED-13B

	Temp	Sal.	DO	pH	Turb
Surf	2.71	8.84	14.6	8.60	4.5
Mid	1.91	13.87	14.3	8.36	6.2
Btm	2.07	15.25	13.0	7.89	9.0

1456 - anchor @ BH-SED-13C

N 562094.9 ft

E 1458372.3 ft

D 29.2 ft

1505 - BH-SED-13C-00

1503 - wat. qual. @ BH-SED-13C

	Temp.	Sal.	DO	pH	Turb.
Surf	2.81	8.84	14.6	8.58	4.5
Mid	2.03	14.35	13.6	8.05	9.6
Btm	2.38	16.08	10.3	7.60	14.5

9 FEB. 2009

520 - anchored @ BH-SED-14

N 562730.4 ft

E 1458318.0 ft

D 24.7 ft

525 - BH-SED-14-00

530 - wat. qual. @ BH-SED-14

	Temp	Sal.	DO	pH	Turb
Surf	2.85	9.03	14.5	8.58	4.9
Mid	2.38	10.88	14.5	8.43	7.4
Btm	2.07	14.80	~~13.0~~ TW 12.3	8.02	10.6

1600 - anchor @ reference location near Key Bridge, south side of bridge

Collect 1 PAH fingerprint sample for Meta Lab

1610 - REFERENCE

1602 - wat. qual. @ Reference

	Temp.	Sal	DO	pH	Turb.
Surf	3.11	10.88	14.3	8.51	3.7
Mid	2.88	13.41	14.6	8.45	4.9
Btm	2.47	14.80	13.7	7.06	16.2

N 565840.7 ft

E 1448015.6 ft

D 17.5 ft

Dock @ 1640

Ft. McHenry Tidal Datum
MLLW = 0 ft
MLW = 0.22 ft

13 FEBRUARY 2009
0700 - meet Findling drill crew and Capt. Kevin Smith @ Smith's Shipyard

0814 - conducted safety meeting with Findling crew.
Findling - Tony Olszczyk
John Amiet
Blake Stratema
EA - T. Ward, L. Ballantine

0825 - depart from Smith's

1010 - spud @ BH-SED-12
N 561186.0 ft MD NAD83, feet
E 1458355.7 ft
Depth = 14.5' - 0.6 ft tide MLLW
Corrected Depth = 13.9' MLLW

13 FEB. 2009
1020 - start drilling. 2' depth intervals. T. Ward will devcar become on boring log.

Weather - wind WNW 15-20 kts, waves 2 ft in Patapsco River

1312 - 84 ft Gauge to second boring
N 561185.0 ft
E 1458364.3 ft
Depth = 14.7' Tide = -0.1' MLLW
Corrected depth = 14.8' MLLW

Analytical sample will be taken 4-6 ft below sed. surface

BH-SED-12-4 = 1410 Sample time
Sample collected @ 4-6 ft. interval

1337 - wat. qual. @ BH-SED-12

	Temp.	Sal.	DO	pH	Turb.
Surf	4.26	12.27	13.4	8.35	7.6
Mid	4.10	12.35	13.5	8.34	7.0
Btm	3.88	12.57	13.3	8.24	7.2
	°C	ppt	mg/L		NTU

Sparrows Pt.
Sub-Surface Sed.

13 FEB. 2009

1343 - shift to 3rd boring hole
N 563184.03 ft
E 1458372.08 ft
D = 15.3' Tide = -0.1 ft MLLW
Corrected depth = 15.4' MLLW

1420
1405 EW head for dock

1615 - dock @ Smith's

16 FEB. 2009

0900 - depart from shipyard
Weather - sunny, cool, wind N 10 kts

1030 - spud @ BH-SED-01
N 563423.1 ft
E 1455326.4 ft
Depth = 22.5 Tide = 0.8' MLLW
Corrected depth = 21.7 ft MLLW

1036 - start drilling

16 FEB. 2009

1015 - wat qual @ BH-SED-01

	Temp	Sal	DO	pH	Turb
1 ft	10.18	12.07	12.7	8.37	7.0
mid	4.58	13.25	13.7	8.27	5.9
bot	4.26	13.26	13.5	8.11	15.0

1609 - shift ft bridge + 5 ft north for second boring

1630 - BH-SED-01-B
Sample @ 8' - 10' below sed. surface

1800 - dock @ Smith's

17 FEB. 2009

0725 - depart from shipyard
Weather - sunny, cold, wind N 5-10 kts, waves < 1 ft

0815 - spud @ BH-SED-03C
N 562223.30
E 1453531.6 ft
Depth = 14.75 ft Tide = 0.1 ft MLLW
Corrected depth = 14.65 ft MLLW

17 FEB. 2009

0820 - start drilling

0955 - stop drilling

Offset to collect extra sed.

1030 - BH-SED-03C-02

Sample taken from upper 2 ft. of borings

1015 - wat. quality @ BH-SED-03C

	Temp	Sal	DO	pH	Turb.
Surf	4.72	12.92	14.1	8.44	6.6
Mid	4.13	13.22	14.2	8.45	7.3
Btm	4.13	13.52	14.0	8.37	8.1

1054 - spud @ BH-SED-03B

N 562217.2 ft

E 1453680.5 ft

D = 11.5 ft Tide = 0.8 ft MLLW

Corrected depth = 10.7 ft MLLW

1100 - start drilling

1220 - stop drilling

Offset to collect extra sed.

1250 - BH-SED-03B-2

Sample collected @ 2-4 ft interval.

17 FEB. 2009

1238 - wat. qual @ BH-SED-03B

	Temp	Sal	DO	pH	Turb.
Surf	6.20	12.99	13.4	8.41	6.0
Mid	4.34	13.28	13.9	8.40	8.7
Btm	4.22	13.18	13.9	8.38	7.9

1327 - spud @ BH-SED-06

N 562619.9 ft

E 1454343.1 ft

Depth = 15.5 Tide = 1.1' MLLW

Corrected depth = 14.4 ft MLLW

1330 - start drilling

1510 - stop drilling

1450 - BH-SED-06-6

Sample taken from 6-8' interval

1458 - wat. qual @ BH-SED-06

	Temp.	Sal.	DO	pH	Turb.
Surf	5.24	9.93	~~15.3~~ TW	8.62	3.4
Mid	5.18	10.03	~~15.3~~ TW	8.60	3.3
Btm	4.56	13.02	~~15.0~~ TW	8.49	5.1
			14.6		
			14.7		
			14.7		

17 FEB. 2009
1532 - head back to shipyard

~~18~~ 19 FEB. 2009
0700 - load barge
fuel tug

0820 - depart from shipyard
Weather - overcast, drizzle,
wind W 10-15 kts, waves 1 ft

0945 - spud @ BH-SED-02
N ~~563024~~ 563017.7 ft
E 1454165.9 ft
D: 8.75 ft Tide = 0.6 ft ↓
Corrected depth = 8.15 ft MLLW
~~7.43~~ ft MLW
8.37

0950 - start drilling
1150 - end drilling

1150 - BH-SED-02-4 4'-6' interval
Metals, cyanide, total solid, PAHs, Grain Size
1155 - BH-SED-02-Tac
22'-24' interval

19 FEB. 2009
1200 - no wat. equal @ BH-SED-02
High winds/waves (3 ~~ft~~)
Pull off station, head to shipyard

1415 - dock @ shipyard

~~NO~~ STANDING ON 20 & 23 FEB. HIGH WINDS

24 FEB. 2009 (Tuesday)
0708 - arrived shipyard
0940 - depart, Blount on barge
need to be repaired, corrosion on
battery connections
Weather = sunny, cold, wind NW
15-20 knots, waves 1-2 ft.

1123 - spud @ BH-SED-10
N 559629.1 ft
E 1457583.5 ft
Depth = 7.0 ft Tide = -1.9 ft MLLW
Corrected depth = 8.9 ft MLLW

1130 - start drilling
1325 - stop drilling

24 FEB. 2009

1300 - BH-SED-1C - TOC 24'-26' interval

1320 - BH-SED-1C-2 2'-4' interval
include 2-4oz jars for PAH
fingerprinting

1324 - wat. quality @ BH-SED-1C

	Temp.	Sal.	DO	pH	Turb.
Surf	2.97	13.69	15.6	8.67	11.1
Mid	2.94	14.16	15.7	8.68	11.7
Btm	2.90	13.77	15.7	8.65	10.9

1405 - spud @ BH-SED-11
N 560166.7 ft
E 1458348.4 ft
Depth: ~~12.0 ft~~ 11.6 ft Tide: -1.9 ft MLLW
Corrected depth = 12.9 ft MLLW

1409 - start drilling
1600 - stop drilling

1515 - BH-SED-11-TOC ~~16-18~~ 20-22 ft interval

1600 - BH-SED-11-2 2-4' interval

24 FEB. 2009

1555 - wat. quality @ BH-SED-11

	Temp.	Sal.	DO	pH	Turb.
Surf	2.97	13.39	15.6	8.53	13.2
Mid	2.92	13.75	15.6	8.48	22.8
Btm	2.68	13.83	15.3	8.33	15.4

1730 - dock @ shipyard

25 FEB. 2009

0720 - depart from shipyard
Weather - partly cloudy, cool, wind ≤ 5 kts, waves < 1 ft

0855 - spud @ BH-SED-03A
N 562223.9 ft
E 1453743.6 ft
Depth = 5.5 ft Tide = 0.2 ft MLLW
Corrected depth = 5.3 ft MLLW

0900 - start drilling
1115 - stop drilling

1100 - BH-SED-03A-12 (12'-14' interval)
+ PAH fingerprint sample

1105 - BH-SED-03A-TOC
16'-18' interval

25 FEB. 2009

1120 - wat. qual. @ BH-SED-03A

	Temp	Sal	DO	pH	Turb.
Surf	2.66	9.91	15.6	8.58	6.2
Btm	2.75	11.40	15.7	8.59	9.8

1215 - Spud @ BH-SED-13A
N 562005.3
E 1458136.3
Depth = 9 ft Tide = -0.2 ft MLLW
Corrected depth = 9.2 ft MLLW

1221 - start drilling
1421 - stop drilling

1346 - BH-SED-13A - TOC 24'-26' interval

1415 - BH-SED-13A-6 6'-8' interval

1415 - wat. quality @ BH-SED-13A

	Temp	Sal.	DO	pH	Turb.
Surf	2.96	5.82	15.5	8.83	8.7
Mid	2.47	6.32	15.3	8.78	7.9
Btm	2.66	13.5	15.0	8.54	9.4

1620 - dock @ Smith's

26 FEB. 2009

0730 - depart from Sm. Hbr.
Weather - overcast, S 10 kts, waves 2-1 ft

0905 - spud @ BH-SED-13B
N 562022.9 ft
E 1458169.3 ft
Depth = 19 ft Tide = 1.3 ft MLLW
Corrected depth = 17.7 ft MLLW

0912 - start drilling
1100 - stop drilling

1105 - BH-SED-13B-8 8'-10' interval
1110 - BH-SED-13B-TOC 24'-26' interval

1111 - wat. quality @ BH-SED-13B

	Temp.	Sal.	DO	pH	Turb.
Surf	2.59	5.81	17.4	8.77	8.4
Mid	2.75	10.25	14.6	8.44	8.6
Btm	2.97	13.77	13.5	8.00	9.6

26 FEB. 2009

1142 Spud @ BH-SED-14

N 562720.8 ft

E 1458291.8 ft

Depth = 25 ft Tide = 0.7 ft MLLW

Corrected depth = 24.3 ft MLLW

1149 - start drilling

1317 - stop drilling

1310 - BH-SED-14-8 8'-10' interval

1315 - BH-SED-14-TOC 16'-18' interval

1318 - wat. quality @ BH-SED-14

	Temp.	Sal.	DO	pH	Turb.
Surf	3.12	5.74	15.7	8.75	6.6
Mid	3.15	13.42	15.2	8.32	5.9
Btm	3.00	13.50	13.8	7.87	10.7

1402 - spud @ BH-SED-09

N 559693.4 ft

E 1456419.9 ft

Depth = 11 ft Tide = 0.4 ft MLLW

Corrected depth = 10.6 ft MLLW

26 FEB. 2009

1405 - start drilling

1557 - stop drilling

1530 - BH-SED-09-12 12'-14' interval

1550 - BH-SED-09-TOC 28'-30' interval

1555 - wat. quality @ BH-SED-09

	Temp.	Sal.	DO	pH	Turb.
Surf	3.59	5.59	15.7	8.82	7.0
Mid	3.65	5.61	15.7	8.83	7.4
Btm	3.05	8.61	15.3	8.59	10.9

~~27~~ FEB, 2 March, 3 March -
no work, high winds, snow

4 March 2009

0730 - depart from shipyard
T. Ward, Joe Savick.
Weather - cold, sunny, wind WNW 10 kt
waves < 1 ft

0914 - spud @ BH-SED-09 TOC

N 562169.2 ft

E 1458141.2 ft

Depth = 12.5 ft Tide = 0.1 ft

Corrected depth = 12.4 ft MLLW

4 March 2009

0920 - start drilling @ BH-SED-13C

1041 - stop drilling

1113 - wat. quality @ BH-SED-13C

	Temp.	Sal.	DO	pH	Turb.
Surf	2.72	13.51	—	8.36	10.0
Mid	2.20	11.48	—	8.37	13.1
Btm	2.45	11.65		8.35	10.6

Samples

1045 - BH-SED-13C-6 (6-8' interval)
PAH fingerprint (1 4oz jar)
[DUP-1]

1050 - BH-SED-13C-TOC (20'-22' int.)
DUP-1 for TOC
BH-SED-13C-MS for TOC
BH-SED-13C-MSD for TOC

1150 - spud @ BH-SED-05
N 561501.4 ft
E 1454974.8 ft
Depth = 7.5 ft Tide = 0.8 ft MLLW
Corrected depth = 6.7 ft MLLW

4 March 2009

1154 - start drilling
1323 - stop drilling

Samples ~~Samples taken in 4'-6' interval~~ ERROR

1340 - BH-SED-05-6 ~~(6'-8' interval)~~ Dup
BH-SED-05-MS for VOC (3) + 8 oz jar
BH-SED-05-6 MSD for VOC (3) + 8 oz jar
PAH fingerprint (2 4oz jars)

1345 - BH-SED-05-TOC 24'-26' interval

1354 - wat. quality @ BH-SED-05

	Temp.	Sal.	DO	pH	Turb.
Surf	2.95	11.16	13.9	8.32	14.4
Mid	2.42	11.55	13.4	8.20	8.6
Btm	2.41	11.54	13.0	8.16	8.3

1521 - spud @ BH-SED-04
N 561520.1 ft
E 1454086.0 ft
Depth = 12.5 ft Tide = 0.7 ft MLLW
Corrected depth = 11.8 ft MLLW

1425 - start drilling
1615 - stop drilling

4 March 2009

1605 - wat. qual. @ BH-SED-04

	Temp.	Sal.	DO	pH	Turb.
Surf	3.48	11.28	12.8	8.59	6.7
Mid	2.57	11.38	12.9	8.59	10.2
Btm	2.39	11.50	12.1	8.41	9.5

1555 - BH-SED-04-8 8'-10' int.

1600 - BH-SED-04-TOC 22'-24' int.

5 March 2009

0730 - depart from shipyard

T. Ward and V. Sawicki

Weather = sunny, cold,

wind S 3.5kts, wave flat

0750 - EQBLINER (5 bkts) water

0805 - EQBSPLIT (5 bkts) water

0852 - spud @ BH-SED-07

N 559977.6 ft

E 1454829.4 ft

Depth = 13.5 ft Tide = 0.3 ft MLLW

Corrected depth = 13.2 ft MLLW

5 March 2009

0858 - start drilling

1025 - stop drilling

1025 - BH-SED-07-6 6'-8' interval

1030 - BH-SED-07-TOC 18'-20' interval

1035 - wat. qual. @ BH-SED-07

	Temp.	Sal.	DO	pH	Turb.
Surf	2.10	7.60	14.5	8.46	6.3
Mid	2.57	10.23	13.7	8.40	6.5
Btm	2.56	10.56	13.5	8.39	7.5

1105 - spud @ BH-SED-08

N 559401.1 ft

E 1455394.6 ft

Depth = 10.5 ft Tide = 1.0 ft MLLW

Corrected depth = 9.5 ft MLLW

1110 - start drilling

1250 - stop drilling due to wave/wind condition. Barge moving making drilling difficult

No water quality @ BH-SED-08.

5 March 2009
Samples @ BH-SED-08

1300 - BH-SED-08-10 10'-12' interval.
1305 - BH-SED-08-Toc 18-20' interval.
DUP-2 for both.

6 March 2009 - no sampling

9 March 2009 | ADDITIONAL 6 BORING LOCATION

0745 - depart from shipyard 14534.06
T. Ward, J. Sawicki 0002 0007A
Weather - cool, sunny, wind NW 5 kts
waves flat

0902 - spud @ BH-SED-03E
N 562068.6 ft
E 1452779.2 ft
Depth = 18 ft Tide = 0.6 ft MLLW
Corrected depth = 17.4 ft MLLW

0907 - start drilling
0950 - wind speed increasing from WNW 15-20 kts. White caps.
1020 - stop drilling. Wind 20-25 kts

9 March 2009

1050 - wat qual @ BH-SED-03E

	Temp.	Sal	DO	pH	Turb.
surf	5.46	4.45	9.9	8.73	4.8
mid	4.98	7.02	10.1	8.71	4.5
btm.	4.56	8.76	9.3	8.47	5.0

Samples
1030 - BH-SED-03E-2 2'-4' interval
Methyl 2-4 oz jar for PAH fingerprint analysis
1035 - BH-SED-03E - Toc 18'-20' interval

1100 - Head back to shipyard. Winds increasing, waves 2-3 ft.

10 March 2009
0729 - depart from shipyard
T. Ward, J. Sawicki
Weather - overcast, cool, wind NE 5 kts
waves < 1 ft.

0831 - spud @ BH-SED-17
N 562900.1 ft
E 1452711.1 ft
Depth = 17.5 ft Tide = 1.1 ft MLLW
Corrected depth = 16.4 ft MLLW

10 March 2009

0836 - start drilling @ BH-SED-17

1160 - stop drilling

Samples

1020 - BH-SED-17-0 0'-2' interval

Note => 2 4oz jars for PAH fingerprint

1030 - BH-SED-17-TOC 24'-26' interval

1045 - wat. qual. @ BH-SED-17

	Temp.	Sal.	DO	pH	Turb.
Surf	5.42	8.28	9.0	8.54	5.9
Mid	5.05	8.60	8.8	8.47	5.6
Btm	4.39	9.76	7.9	8.22	7.6

1126 - spud @ BH-SED-18

N 560876.8 ft

E 1453193.8 ft

Depth = 18.5 ft Tide = 0.5 ft MLLW

Corrected depth = 18.0 ft MLLW

1130 - start drilling

1315 - stop drilling

10 March 2009

1233 - wat. qual. @ BH-SED-18

	Temp.	Sal.	DO	pH	Turb.
Surf	5.34	8.02	9.8	8.63	5.5
Mid	5.26	8.22	9.5	8.61	5.5
Btm	4.26	10.15	8.3	8.22	44.2 TW 8.5

Samples

1250 - BH-SED-18-0 0'-2' interval

1305 - BH-SED-18-TOC 24'-26' interval

11 March 2009

0740 - depart from shipyard

T. Ward, J. Sawicki, Melissa Whitehe

Weather - overcast, cool, wind SE 5-10 kt

waves < 1 ft

0845 - spud @ BH-SED-15

N 561632.1 ft

E 1458222.3 ft

Depth = 22 ft Tide = 2.1 ft MLLW

Corrected depth = 19.9 ft MLLW

0851 - start drilling

1050 - stop drilling

11 March 2009

Samples @ BH-SED-15

1100 - BH-SED-15-2 5 cont. ~~TWL~~ 2'-4' interval

BH-SED-15-2MS 4 cont.

BH-SED-15-2MSD 4 cont.

1105 - BH-SED-15-TOC, MS, and MSD (1 each) 22'-24' int.

1056 - wat. qual. @ BH-SED-15

	Temp.	Sal.	DO	pH	Turb.
Surf	5.75	6.42	9.1	8.76	7.3
Mid	5.38	7.58	9.0	8.72	6.9
Btm	3.40	13.08	5.9	7.80	15.6

1135 - spud @ BH-~~TWO~~SED-03D

N 562168.5 ft

E 1453293.3 ft

Depth = 17 ft Tide = 1.4 ft MLLW

Corrected depth = 15.6 ft MLLW

1140 - start drilling

1303 - stop drilling

(1230 - wind speed increasing, barge moved, stop drilling down due to auger shifts)

Samples:

1300 BH-SED-03D-2 5 cont. 2'-4' int.

DUP-1 5 cont. +

1305 - BH-SED-03D-TOC 1 cont.

DUP-1 1 cont.

TBC @ 20'-22' int.

11 March 2009

1305 - wat. qual. @ BH-SED-03D

	Temp.	Sal.	DO	pH	Turb.
Surf	5.93	7.25	9.5	8.65	4.9
Mid	5.72	7.73	9.3	8.58	4.7
Btm	5.26	8.54	7.7	8.26	6.7

1600 - EQBGRAB] equipment blanks

1615 - EQBWAT]

12 March 2009

0755 - depart from shipyard.

T. Ward, R. Ballantine

Weather - partly sunny, cold, wind NW 15-20 kts, waves 1 ft

0855 - spud @ BH-SED-16

N 562957.6 ft

E 1453211.1 ft

Depth: 16.5 ft Tide = 0.8 ft MLLW

Corrected depth = 15.7 ft MLLW

0900 - start drilling

1002 - stop drilling

12 March 2009

BH-SED-16

Samples

1005- BH-SED-16-0 0'-2' int.

1010-BH-SED-16-Toc 4'-6' int

1020- wat. grab @ BH-SED-16

	Temp.	Sal.	DO	pH	Turb.
Surf	5.68	8.33	8.1	8.53	18.1
M.d	5.24	9.22	7.9	8.32	14.5
Btm	4.93	9.82	7.1	8.07	13.0

1030- head back to shipyard.
Wind/waves too hazardous
for safe drilling.

CURVE TABLES

HOW TO USE CURVE TABLES

Table I. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table I.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

EXAMPLE

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = 23° 20′ to the R. at Station 542+72.

Ext. in Tab. I opposite 23° 20′ = 120.87
120.87 ÷ 12 = 10.07. Say a 10° Curve.

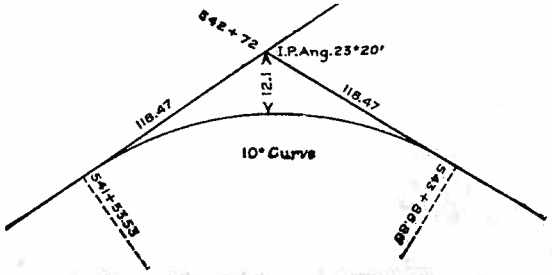
Tan. in Tab. I opp. 23° 20′ = 1183.1
1183.1 ÷ 10 = 118.31.

Correction for A. 23° 20′ for a 10° Cur. = 0.16
118.31+0.16 = 118.47 = corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′ = 23.33° ÷ 10 = 2.3333 = L. C.

2° 19½′	= def. for sta.	542	I. P. = sta.	542+72
4° 49½′	= " " "	+50	Tan. =	1 .18.47
7° 19½′	= " " "	543	B. C. = sta.	541+53.53
9° 49½′	= " " "	+50	L. C. =	2 .33.33
11° 40′	= " " "	543+		
		86.86	E. C. = Sta.	543+86.86

100 − 53.53 = 46.47 × 3′ (def. for 1 ft. of 10° Cur.) = 139.41′ =
2° 19½′ = def. for sta. 542.
Def. for 50 ft. = 2° 30′ for a 10° Curve.
Def. for 36.86 ft. = 1° 50½′ for a 10° Curve.



OFFSHORE INVESTIGATION
BORING LOGS

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula			Location: Sparrow's Point. MD	
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer				Boring No. BH-SED-01	
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners				Sheet 1 of 2	
				Drilling	
Water Level	22.5	0.8 ft	21.7 ft	Start	Finish
Time	1030	MLLW	MLLW	16-Feb-09	16-Feb-09
Date	02/16/09	tide	elev	1036	1600
Reference	N/A				

Coordinates: 563445.1 N 1455268.7 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit

Surface Conditions:
Offset: 1 offset to collect sample volume at 8-10 ft (below sed surface) interval
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination
					--	0	Water column
				--	--	21.9	WC
					WOR		Black, wet silt with fine-grained sand
					WOR	22.9	Slight hydrocarbon odor
	24/7				WOR		No plasticity
	29.2%			0.4	WOR	23.9	RBS
					WOR		Black, wet silt with fine-grained sand
					WOR	24.9	Slight hydrocarbon odor
	24/12				WOR		No plasticity
	50%			0.0	WOR	25.9	Sample taken at 1630
					WOH		Black, wet silt with fine-grained sand
					WOH	26.9	Small slag at bottom with slight hydrocarbon odor
	24/24				WOH		
	100%			0.0	WOH	27.9	
					4		Black, wet silt on top
					5	28.9	Black coal sludge with very slight hydrocarbon odor
	24/13				6		
	54.2%		positive	0.0	10	29.9	Sudan IV = Red globular
					6		Black, wet coal slag with silt
					10	30.9	Hydrocarbon odor
	24/20	BH-SED			12		Small sheer observed
Comp.	83.3%	-01-8		0.0	6	31.9	1 offset to collect sample volume at 8-10 ft (below sed surface) interval at 1630
					8		Black, wet coal slag
					10	32.9	Hydrocarbon odor
	24/23				14		Small sheer observed
	95.8%		positive	0.0	15	33.9	Sudan IV = Red globular
					20		Black, wet coal slag (0-5"), dark gray firm-grained sand (5-7.5")
					35	34.9	Dark tan fine sand (7.5-10"), light gray fine sand (10-24")
	24/24				38		Slight hydrocarbon odor in slag
	100%			0.0	50/3"	35.9	
					10		Light gray fine-grained sand with dark gray sand lenses
					12	36.9	
	24/20				20		
	83.3%			0.0	52	37.9	
					25		Light gray fine-grained sand
					34	38.9	
	24/15				41		
	62.5%			0.0	50/4"	39.9	
					39		Light to medium gray fine-grained sand
					50/4"	40.9	
	24/24						
	100%			0.0		41.9	

Logged by: Todd Ward (EA) Date: 16-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 563445.1 N 1455268.7 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Depos

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter
CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-01

Sampling Method: Continuous split spoon sampling
with 3 in. diameter spoons with acetate liners

Sheet 2 of 2

Drilling

				Start	Finish
Water Level	22.5	0.8 ft	21.7 ft		
Time	1030	MLLW	MLLW	16-Feb-09	16-Feb-09
Date	02/16/09	tide	elev	1036	1600
Reference	N/A				

Surface Conditions:
Offset: 1 offset to collect sample volume at 8-10 ft (below sed surface) interval
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					8			Medium gray fine-to-medium grain sand
					14	42.9		
	24/24				50/3"			
	100%			0.0		43.9		
					82			Medium gray fine-to-medium grain sand
					50/4"	44.9		
	24/24							
	100%			0.0		45.9		
					12			Dark gray medium-to-coarse sand
					10	46.9	PLD	Coal tar odor
	24/10				6			
	41.7%			0.0	7	47.9		
					10			Dark gray medium-to-coarse sand
					16	48.9		Coal tar odor
	24/23				24			
	95.8%			0.0	50/2"	49.9		
					23			No recovery
					50/2"	50.9		
	24/0							
	0%			--		51.9		

Logged by: Todd Ward (EA) Date: 16-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula			Location: Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer				Boring No. BH-SED-02
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners				Sheet 1 of 2
				Drilling

Coordinates: 563027.4 N 1454157.2 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

Water Level	8.75 ft	0.6 ft	8.15 ft	Start	Finish
Time	0945	MLLW	MLLW	19-Feb-09	19-Feb-09
Date	02/19/09	tide	elev.	0950	1150
Reference	N/A				

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					--	0		Water column
					--	8.37	WC	
					4			Black, wet slag (fill) material. Coarse-grain sand in slag.
					4	9.37		Slight hydrocarbon odor.
	24/3				3			
	12.5%			3.6	3	10.37		
					WOH			No recovery
					WOH	11.37		
	24/0				WOH			
	0%			--	WOH	12.37		
					6			Black, wet coarse fill material
					8	13.37		Strong hydrocarbon odor and sheen visible in fill material
	24/13	BH-SED			9			to tan/dark tan medium-to-coarse grain sand
Comp.	54.2%	02-4	positive	8.4	11	14.37		Sample interval at 1150. Grain size sample from 12.37-16.37 interval
					12			Dark tan medium-to-coarse sand
					26	15.37		Slight hydrocarbon odor; small sheen spots at top of interval
	24/19				35		SF	
	79.2%		positive	14.2	31	16.37		
					21			Top 8": Rundown of fill material (sheen/ hydrocarbon odor)
					25	17.37		Dark tan medium-to-coarse sand
	24/22				41			
	91.7%			24.0	50	18.37		PID measured in sand
					45			Top 2" = Rundown of fill material (sheen/hydrocarbon odor)
					50/3"	19.37		Dark tan, moist coarse sand
	24/9							
	37.5%			21.8		20.37		PID measured in sand
					9			Core liner shattered
					12	21.37		Coarse sand mixed with black, wet fil material
	24/24				23			Hydrocarbon odor and sheen (4" sand at bottom of interval)
	100%			20.0	28	22.37		PID measured in sand
					5			Small amount of black fill rundown
					7	23.37		Dark gray, wet coarse sand --> tan medium-to-coarse sand -->
	24/10				8			light gray lens, moist sandy clay
	41.7%			2.6	6	24.37		PID measured in sand
					9			Small amount of rundown. Tan medium-to-coarse sand -->
					12	25.37	PLD	medium gray coarse sand --> lens light tan sandy clay -->
	24/15				14			medium gray fine sand with small lens gray clay
	62.5%			57.0	17	26.37		
					9			Dark gray, wet coarse sand with sheen, hydrocarbon odor -->
					7	27.37		light gray fine sandy clay --> medium gray, wet coarse sand -->
					7			light gray, wet fine sand
			positive	112.0	12	28.37		PID measured at bottom

Logged by: Todd Ward (EA) Date: 19-Feb-2006

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula			Location: Sparrow's Point. MD	
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer				Boring No. BH-SED-02	
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners				Sheet 2 of 2	
				Drilling	
Water Level	8.75 ft	0.6 ft	8.15 ft	Start	Finish
Time	0945	MLLW	MLLW	19-Feb-09	19-Feb-09
Date	02/19/09	tide	elev.	0950	1150
Reference	N/A				

Coordinates: 563027.4 N 1454157.2 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit

Surface Conditions:
NO OFFSET
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					10			Light gray, moist coarse sand --> light gray, moist sandy clay
					10	29.37		hydrocarbon odor
	24/14				9			
	58.3%			30.2	9	30.37	PLD	
					9			Dark gray fine sand --> light gray fine sandy clay -->
					12	31.37		pink/gray hard clay, high plasticity, hydrocarbon odor
	24/24	BH-SED			14			TOC Sample at 1155
Comp.	100%	-02-TOC		13.0	14	32.37		PID measurement at bottom
							SF	

Logged by: Todd Ward (EA) Date: 19-Feb-2006

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates: 562236.4 N 1453695.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter
CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-03A

Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners

Sheet 1 of 2

Drilling

				Start	Finish
Water Level	5.5 ft	0.2 ft	5.3 ft		
Time	0855	MLLW	MLLW	25-Feb-09	25-Feb-09
Date	02/25/09	tide	elev.	0900	1115
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: concrete slabs, iron slabs gravel, cobble on sediment surface Offset: none
						0		Water column
						5.5	WC	
					17			No recovery
					18	6.5		Augers having difficulty drilling into bottom
	24/0				10			
	0%			--	5	7.5		
					4			Dark brown medium-to-coarse sand, gravel, pieces of slag
					3	8.5		Coal tar odor (naphthalene?)
	24/8				4			
	33.3%			0.0	8	9.5		
					10			Black slag, gravel, coarse sand
					12	10.5		Coal tar/naphthalene odor
	24/23				17			
	95.8%		negative	0.0	20	11.5		
					2			Dark brown medium-to-coarse sand, large pieces of slag
					2	12.5		Hard gray clay at bottom of spoon
	24/3				2		SF	Coal tar/naphthalene odor
	12.5%			0.0	7	13.5		
					7			Dark gray slag with clay --> Dark gray, dry stiff clay with peat lens
					6	14.5		High plasticity
	24/24				7			Strong odor at top of clay
	100%			0.0	9	15.5		
					2			Dark gray, wet soft clay with fine grain sand, gravel -->
					1	16.5		medium gray, moist clay, slight plasticity
	24/18				2			Slight coal tar/naphthalene odor
	75%			0.0	16	17.5		
					26			Dark gray fill material (gravel, coarse sand), hard, tightly packed
					50/3"	18.5		with gray clay
	24/18	BH-SED						Coal tar/naphthalene odor
Comp.	75%	-03A-12		0.0		19.5		PAH fingerprint sample at BH-SED-03A-12 (12 - 14 ft interval) taken at 1100
					2			Dark gray gravel/coarse sand with clay
					2	20.5		Slight odor
	24/10				2			
	41.7%			0.0	2	21.5		
					2			Medium gray, moist clay with shell hash near bottom
					2	22.5		Medium plasticity
	24/23	BH-SED			3		RBS	No odor
Comp.	95.8%	-03A-TOC		0.0	3	23.5		Sample taken at 1105
					3			Medium gray, moist clay, slight plasticity -->
					4	24.5		medium gray, moist clay with coarse sand
	24/15				6		PLD	Slight odor
	62.5%			0.0	9	25.5		

Logged by: Todd Ward (EA) Date: 25-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula			Location: Sparrow's Point. MD	
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer				Boring No. BH-SED-03A	
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners				Sheet 2 of 2	
				Drilling	
Water Level	8.75 ft	0.6 ft	8.15 ft	Start	Finish
Time	0945	MLLW	MLLW	19-Feb-09 0950	19-Feb-09 1150
Date	02/19/09		elev.		
Reference	N/A				

Coordinates: 562236.4 N 1453695.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit

Surface Conditions: concrete slabs, iron slabs gravel, cobble on sediment surface
Offset: none

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					4			Medium gray, moist clay with gravel, shell hash
					4	26.5		Slight odor
	24/24				4			Medium plasticity
	100%			0.0	4	27.5		
					6		PLD	Medium gray, moist soft clay with medium sand, shell, gravel
					4	28.5		Slight odor
	24/24				6			Slight plasticity
	100%			0.0	6	29.5		

Logged by: Todd Ward (EA) Date: 25-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562235.9 N 1453617.7 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-03B
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level	11.5 ft	0.8 ft	10.7 ft	Start	Finish
Time	1100	MLLW	MLLW	17-Feb-09	17-Feb-09
Date	02/17/09	tide	elev.	1100	1220
Reference	N/A				

Surface Conditions:
Offset: 1 offset to collect sample volume at 2-4 ft (below sed. surface) interval
KEY: WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		10.9	WC	
					WOH			Black, wet fine grain sandy silt (0-5") with shell material
					WOH	11.9	SF	Black, moist silty clay, slight plasticity (5-13")
	24/13				WOH			Coal tar odor
	54.2%			8.6	WOH	12.9		
					WOH/12"			Dark gray, moist clay with very fine grain sand. Slight plasticity
					1	13.9		Coal tar odor
	24/20	BH-SED			1			Sudan IV = red globular
Comp.	83.3%	-03B-2	positive	0.4		14.9		Sample taken at 1250
					WOH			Dark gray, moist clay
					WOH	15.9		Slight plasticity
	24/20				WOH			Coal tar odor
	83.3%			11.0	WOH	16.9		
					WOH		RBS	Dark gray, moist clay with very fine grain sand. Slight plasticity
					WOH	17.9		Coal tar odor
	24/23				WOH			
	95.8%			1.5	WOH	18.9		
					WOH			Dark gray to medium gray, moist clay, shell material
					WOH	19.9		Slight/medium plasticity
	24/21				WOH			Coal tar odor
	87.5%			1.0	WOH	20.9		
					WOH			Medium gray soft clay with some shells
					WOH	21.9		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	22.9		
					WOH/12"			Dark gray, wet clayey fine sand, shell material
					3	23.9		No odor
	24/11				4			
	45.8%			0.8		24.9		
					3			Dark gray, medium grain sand, shell material, 1 large rock
					3	25.9		Dark gray, medium grain clayey sand at bottom
	24/19				3			
	79.2%			0.0	3	26.9		
					6		PLD	Dark gray, medium grain sand
					7	27.9		
	24/21				7			
	87.5%			0.0	8	28.9		
					7			Dark gray/dark tan medium-to-coarse grain sand
					8	29.9		
	24/14				8			
	58.3%			0.0	9	30.9		

Logged by: Todd Ward (EA) Date: 17-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562184.3 N 1453486.8 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-03C
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level	14.75 ft	0.1 ft	14.65 ft	Start	Finish
Time	0815	MLLW	MLLW	17-Feb-09	17-Feb-09
Date	02/17/09	tide	elev.	0820	0955
Reference	N/A				

Surface Conditions:
Offset: 1 offset to collect sample volume at 0-2 ft (below sed. surface) interval
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
						14.87	WC	
					WOR			Black, wet silt with fine grain sand
					WOR	15.87		Coal tar odor
	24/7	BH-SED			WOR			Sheen visible
Comp.	29.2%	-03C-02		5.0	WOR	16.87		Sample taken at 1030
					WOH			Black, wet silt with fine grain sand
					WOH	17.87		Coal tar odor
	24/6				WOH		SF	Sheen visible
	25%			0.0	WOH	18.87		
					WOH			Black, wet silt with fine grain sand
					WOH	19.87		Coal tar odor
	24/9				WOH			No sheen
	37.5%			0.0	WOH	20.87		
					WOH			Black, wet silt. Coal tar odor (0-13")
					WOH	21.87		Medium gray soft silty clay. Slight plasticity (13-18")
	24/18				WOH			
	75%			0.0	WOH	22.87		
					WOH			Medium gray, moist silty clay, shell material
					WOH	23.87		Slight plasticity
	24/24				WOH			Slight coal tar odor at top of interval
	100%			0.0	WOH	24.87		
					WOH		RBS	Medium gray, moist soft silty clay
					WOH	25.87		Slight plasticity
	24/24				WOH			1 small rock in bottom of interval
	100%			0.0	WOH	26.87		
					WOH/12"			Medium gray, moist soft silty clay
					2	27.87		Slight plasticity
	24/24				2			
	100%			0.0		28.87		
					7			Dark gray to tan medium sand
					8	29.87		Shell layer
	24/16				8			Very slight coal tar odor
	66.7%			0.0	9	30.87		
					2			Dark gray, wet medium-to-coarse sand, shell material
					2	31.87	PLD	
	24/6				2			
	25%			0.0	9	32.87		
					7			Dark gray to dark tan medium-to-coarse sand, gravel and cobble
					8	33.87		
	24/13				9			
	54.2%			0.0	16	34.87		

Logged by: Todd Ward (EA) Date: 17-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula		Location: Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer			Boring No. BH-SED-03D
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners			Sheet 1 of 2
			Drilling

Coordinates: 562168.5 N 1453293.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

Water Level	17.0 ft	1.4 ft	15.6 ft	Start	Finish
Time	1135	MLLW	MLLW	11-Mar-09	11-Mar-09
Date	02/17/09	tide	elev.	1140	1303
Reference	N/A				

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
						15.8	WC	
		DUP-1			WOR		SF	Black, wet very fine sandy silt
					WOR	16.8		Hydrocarbon odor
	24/24	BH-SED			WOR			Small sheen observed mid-sample
	100%	-03D-2		0.0	WOR	17.8		Sample taken at 1300
					WOR			Black, wet very fine sandy silt
					WOR	18.8		Hydrocarbon odor
	24/24				WOR			Small sheens
	100%		negative	0.0	WOR	19.8		
					WOR		RBS	Black, wet soft clay, no plasticity -->
					WOR	20.8		dark gray, moist soft clay, very slight plastcity
	24/21				WOR			Hydrocarbon odor
	87.5%			0.0	WOR	21.8		
					WOR			Medium gray, moist soft clay, very slight plasticity
					WOR	22.8		Hydrocarbon odor
	24/22				WOR			
	91.7%			0.0	WOR	23.8		
					WOR			Medium gray, wet soft clay
					WOR	24.8		No plasticity
	24/24				WOR			Very slight hydrocarbon odor
	100%			0.0	WOR	25.8		
					WOH			Medium gray, moist clay
					WOH	26.8		Slight plasticity
	24/24				WOH			Few shells at bottom
	100%			0.0	WOH	27.8		No odor
					WOH			Medium gray, moist soft clay, no plasticity -->
					WOH	28.8		medium gray moist stiff clay, slight plasticity
	24/24				WOH			Few shells at bottom
	100%			0.0	WOH	29.8		No odor
					WOH			Medium gray, moist soft clay
					WOH	30.8		Very slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	31.8		
					WOH			Medium gray, moist stiff clay
					WOH	32.8		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	33.8		
					1			Medium gray, moist soft clay, very slight plasticity -->
					5	34.8		medium gray clayey sand (fine/medium grain)
	24/24				4		PLD	No odor
	100%			0.0	3	35.8		

Logged by: Todd Ward (EA) Date: 11-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula		Location: Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer			Boring No. BH-SED-03D
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners			Sheet 2 of 2
			Drilling

Coordinates: 562168.5 N 1453293.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

Water Level	17.0 ft	1.4 ft	15.6 ft	Start	Finish
Time	1135	MLLW	MLLW	11-Mar-09	11-Mar-09
Date	02/17/09	tide	elev.	1140	1303
Reference	N/A				

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
		DUP-1			3			Medium gray, wet soft clay, very slight plasticity -->
					6	36.8	PLD	medium gray, wet medium grain sand, shells
	24/24	BH-SED			5			No odor
	100%	03D-TOC		0.0	3	37.8		TOC Sample taken at 1305

Logged by: Todd Ward (EA) Date: 11-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562068.6 N 1452779.2 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-03E

Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners

Sheet 1 of 1

Drilling

				Start	Finish
Water Level	18.0 ft	0.6 ft	17.4 ft		
Time	0902	MLLW	MLLW	9-Mar-09	9-Mar-09
Date	03/09/09	tide	elev.	1140	1303
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		17.6	WC	
					WOR			Black, wet silt --> dark gray, moist soft silty clay, very slight plasticity
					WOR	18.6	RBS	No odor
	24/24				WOR			
	100%			0.0	WOR	19.6		
		PAH			WOR			Dark gray, moist soft silty clay --> 1 large piece of coal -->
		fingerprint			WOR	20.6	SF	Black, moist soft clay, very slight plasticity
	24/24	BH-SED			WOR			
Comp.	100%	-03E-2	negative	0.0	WOR	21.6		Sample taken at 1030. PAH fingerprint sample.
					WOR			Medium gray, wet soft clay, very slight plasticity
					WOR	22.6		No odor
	24/19				WOR			
	79.2%			0.0	WOR	23.6		
					WOR			Medium gray, moist soft clay
					WOR	24.6		Very slight plasticity
	24/24				WOR			No odor
	100%			0.0	WOR	25.6		
					WOR			Medium gray, moist soft clay
					WOR	26.6		Very slight plasticity
	24/24				WOR			No odor
	100%			0.0	WOR	27.6		
					WOR			Medium gray, moist soft clay
					WOR	28.6		Very slight plasticity
	24/24				WOR			No odor
	100%			0.0	WOR	29.6	RBS	
					WOH			Medium gray, moist soft clay
					WOH	30.6		Slight plasticity
	24/24				WOH			Some shell material near bottom
	100%			0.0	WOH	31.6		No odor
					WOH			Medium gray, moist soft clay
					WOH	32.6		Slight plasticity
	24/24				WOH			Some shell material near bottom
	100%			0.0	WOH	33.6		No odor
					WOH			Medium gray, moist soft clay
					WOH	34.6		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	35.6		
					WOH			Medium gray, moist soft clay
					WOH	36.6		Slight plasticity
	24/24	BH-SED			WOH			No odor
Comp.	100%	03E-TOC		0.0	WOH	37.6		Sample taken at 1035

Logged by: Todd Ward (EA) Date: 9-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Coordinates: 561559.6 N 1454108.6 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-04
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	12.5 ft	0.7 ft	11.8 ft	Start	Finish
Time	1521	MLLW	MLLW	4-Mar-09	4-Mar-09
Date	03/04/09	tide	elev.	1425	1615
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		12.0	WC	
					WOR			Black, wet silty sand
					WOR	13.0		Few shells
	24/17				WOR			Slight naphthalene odor
	70.8%			0.0	WOR	14.0		
					WOR			No recovery
					WOR	15.0		
	24/0				WOR			
	0%			--	WOR	16.0		
					WOR			Black, wet sandy silt
					WOR	17.0		Naphthalene odor
	24/1				WOR			
	4.2%			0.0	WOR	18.0	RBS	
					WOH			Black, wet sandy silt
					WOH	19.0		Naphthalene odor
	24/4				WOH			
	16.7%			0.0	WOH	20.0		
					WOH			Black, wet sandy silt
					WOH	21.0		Naphthalene odor
	24/24	BH-SED			WOH			
Comp.	100%	-04-8	negative	0.0	WOH	22.0		Sample taken at 1555
					WOH			Medium gray, moist soft clay
					WOH	23.0		Slight plasticity
	24/7				WOH			Slight naphthalene odor
	29.2%			0.0	WOH	24.0		
					3			Black, wet soft sandy clay, very slight plasticity -->
					5	25.0		medium gray, moist soft clay, slight plasticity, shells
	24/24				1			
	100%			0.0	1	26.0		
					2			Dark gray, moist soft clay, slight plasticity -->
					3	27.0		Dark tan, moist sandy clay, moderate plasticity, slight naphthalene odor
	24/23				4			
	95.8%			0.0	10	28.0	PLD	
					10			Dark gray, wet sandy clay with shells -->
					12	29.0		tan medium-to-coarse sand
	24/23				12			No odor
	95.8%			0.0	12	30.0		
					10			Dark gray/ tan medium-to-coarse sand
					10	31.0		No odor
	24/7				10			
	29.2%			0.0	12	32.0		

Logged by: Todd Ward (EA) Date: 4-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula		Location: Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer			Boring No. BH-SED-04
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners			Sheet 2 of 2
			Drilling

Coordinates: 561559.6 N 1454108.6 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

Water Level	12.5 ft	0.7 ft	11.8 ft	Start	Finish
Time	1521	MLLW	MLLW	4-Mar-09	4-Mar-09
Date	03/04/09	tide	elev.	1425	1615
Reference	N/A				

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR (weight of rod); WOH (weight of hammer)
					12			Rundown (graysilty, sandy clay) -->
					14	33.0		Dark tan coarse sand
	24/23				14			No odor
	95.8%			0.0	10	34.0	PLD	
					23			Tan coarse sand and gravel
					21	35.0		No odor
	24/10	BH-SED			18			
Comp.	41.7%	-04-TOC		0.0	20	36.0		Sample taken at 1600

Logged by: Todd Ward (EA) Date: 4-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula			Location: Sparrow's Point. MD	
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer				Boring No. BH-SED-05	
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners				Sheet 1 of 2	
				Drilling	
Coordinates: 561518.1 N 1454980.1 E	Water Level	7.5 ft	0.8 ft	6.7 ft	Start	Finish
Surface Elevation: 0 ft MLW	Time	1150	MLLW	MLLW	4-Mar-09	4-Mar-09
Casing Below Surface: N/A	Date	03/04/09	tide	elev.	1154	1323
Reference Elevation: N/A	Reference	N/A				
Reference Desc: N/A						

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR (weight of rod); WOH (weight of hammer)
						0		Water column
				--		6.9	WC	
					WOR			No recovery
					WOR	7.9		
	24/0				WOR			
	0%			--	WOR	8.9		
					WOR			Black, wet very fine sandy silt
					WOR	9.9	RBS	Sandy hydrocarbon odor
	24/4				WOR			
	16.7%			0.0	WOR	10.9		
		*BH-SED			WOR			Black, wet sandy silt --> medium gray silty, wet soft clay, no plasticity
		-05-6 MS			WOR	11.9		Naphthalene odor
	24/6	*BH-SED			WOR			Sheen visible
Comp.	25%	-05-6 MSD	negative	0.0	WOR	12.9		*Sample mislabeled: Sample interval starts at 4ft. PAH fingerprint sampl
					WOH/12"			Medium gray, moist soft clay with very fine sand -->
					2	13.9		dark brown, dry, hard crumbly clay, high plasticity
	24/24				2			Slight naphthalene odor
	100%			0.0		14.9		
					3			Dark brown, dry, hard crumbly clay, high plasticity
					4	15.9		Slight naphthalene odor
	24/24				5			
	100%			0.0	7	16.9		
					3			Soft, wet gray clay rundown -->
					4	17.9		dark brown, dry, hard, crumbly clay, high plasticity
	24/24				3			Slight naphthalene odor
	100%			0.0	4	18.9		
					2			Dark brown, dry, hard, crumbly clay, high plasticity
					1	19.9		Strong naphthalene odor/sheen (from rundown?)
	24/10				1		PLD	
	41.7%			0.0	1	20.9		
					1			Rundown (black silt)
					2	21.9		6" of dark brown, moist, soft clay, moderate plasticity
	24/23				3			Naphthalene odor/sheen in rundown
	95.8%			0.0	4	22.9		
					4			Medium gray, moist soft clay
					5	23.9		Slight plasticity
	24/24				5			Strong naphthalene odor
	100%			0.0	5	24.9		
					5			Dark brown, stiff clay
					5	25.9		Moderate plasticity
	24/24				5			Some shell material
	100%			0.0	5	26.9		Slight naphthalene odor

Logged by: Todd Ward (EA) Date: 4-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Coordinates: 561518.1 N 1454980.1 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BH-SED-05
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	7.5 ft	0.8 ft	6.7 ft	Start	Finish
Time	1150	MLLW	MLLW	4-Mar-09	4-Mar-09
Date	03/04/09	tide	elev.	1154	1323
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					5			Medium brown, moist stiff clay
					4	27.9		Moderate plasticity
	24/16				4			Slight naphthalene odor
	66.7%			0.0	4	28.9		
					4			Brown, moist stiff clay --> Brown, hard clay
					3	29.9	PLD	High plasticity
	24/24				4			Slight naphthalene odor
	100%			0.0	5	30.9		
					5			Dark gray, moist medium-to-coarse sandy clay
					5	31.9		Slight naphthalene odor
	24/4	BH-SED			4			
Comp.	16.7%	-05-TOC		0.0	4	32.9		Sample taken at 1345

Logged by: Todd Ward (EA) Date: 4-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Coordinates: 560632.0 N 1454363.6 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BH-SED-06
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level	15.5 ft	1.1 ft	14.4 ft	Start	Finish
Time	1327	MLLW	MLLW	17-Feb-09	17-Feb-09
Date	02/17/09	tide	elev.	1330	1510
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		14.6	WC	
					WOH			Black, moist silty clay with very fine sand
					WOH	15.6		Slight plasticity
	24/16				WOH			Coal tar odor
	66.7%			7.1	WOH	16.6		
					WOR			Black, moist silty clay to medium gray, moist clay
					WOR	17.6		Slight plasticity
	24/13				WOR			Coal tar odor
	54.2%			9.0	WOR	18.6	RBS	
					WOR/12"			Medium gray, moist clay
					WOH/12'	19.6		Slight plasticity
	24/17							Coal tar odor
	70.8%			14.2		20.6		
					WOH			Black, moist silty clay with very fine sand
					WOH	21.6		Medium gray, moist clay at bottom
	24/24	BH-SED			WOH			Slight plasticity
Comp.	100%	-06-6	negative	220.0	WOH	22.6		Sample taken at 1450
					6			Dark gray, moist silty clay
					6	23.6		medium gray medium-to-coarse grain sand with shell hash (bottom 4")
	24/24				7			
	100%			2.5	3	24.6		
					1			Dark gray, moist silty clay --> dark gray, moist medium-to-coarse sand -->
					3	25.6		light gray hard clay with organic material, high plasticity
	24/24				3			
	100%			0.2	4	26.6		
					4		PLD	Medium gray, soft moist lay with fine sand -->
					4	27.6		medium gray, hard clay with organic material, high plasticity
	24/24				5			
	100%			0.0	4	28.6		
					6			Dark gray, moist coarse sand with shells
					5	29.6		
	24/10				3			
	41.7%			1.7	2	30.6		
					9			Dark tan, coarse sand and gravel
					11	31.6		
	24/14				7			
	58.3%			0.0	6	32.6		
					4			Dark tan, coarse sand and gravel
					6	33.6		
	24/11				9			
	45.8%			0.0	11	34.6		

Logged by: Todd Ward (EA) Date: 17-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Coordinates: 560004.5 N 1454829.1 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-07
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level	13.5 ft	0.3 ft	13.2 ft	Start	Finish
Time	0852	MLLW	MLLW	5-Mar-09	5-Mar-09
Date	03/05/09	tide	elev.	0858	1025
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		13.4	WC	
					WOR			Black, wet sandy clay
					WOR	14.4		Very slight plasticity
	24/11				WOR			No odor
	45.8%			0.0	WOR	15.4		
					WOR			Black, wet very fine sandy clay
					WOR	16.4		Very slight plasticity
	24/6				WOR			Very slight naphthalene odor
	25%			0.0	WOR	17.4	RBS	
					WOH			Dark gray, wet silty clay
					WOH	18.4		Very slight plasticity
	24/6				WOH			Very slight naphthalene odor
	25%			0.0	WOH	19.4		
					WOH			Medium gray, wet silty clay with shell material
					WOH	20.4		Very slight plasticity
	24/23	BH-SED			WOH			No odor
Comp.	95.8%	-07-6	negative	0.0	WOH	21.4		Sample taken at 1025
					7			Shell layer with medium gray clayey coarse sand
					8	22.4		No odor
	24/8				2			
	33.3%			0.0	1	23.4		
					6			Medium gray, wet medium-to-coarse grain sand with shell material
					5	24.4		No odor
	24/9				3			
	37.5%			0.0	2	25.4		
					2			Shell layer with medium gray medium-to-coarse sand
					1	26.4		No odor
	24/4				1			
	16.7%			0.0	4	27.4	PLD	
					5			Medium gray, wet medium-to-coarse sand -->
					6	28.4		medium gray, moist sandy clay lens, very slight plasticity -->
	24/12				11			medium gray, moist medium-to-coarse sand
	50%			0.0	12	29.4		
					15			Dark tan, moist medium-to-coarse sand
					15	30.4		No odor
	24/17				29			
	70.8%			0.0	30	31.4		
					24			Light tan, coarse sand with few shells
					26	32.4		No odor
	24/24	BH-SED			29			
Comp.	100%	-07-TOC		0.0	28	33.4		Sample taken at 1030

Logged by: Todd Ward (EA) Date: 5-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Coordinates: 559372.0 N 1455401.4 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-08
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level	10.5 ft	1.0 ft	9.5	Start	Finish
Time	1105	MLLW	MLLW	5-Mar-09	5-Mar-09
Date	03/05/09	tide	elev.	1110	1250
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: / Offset: none / **KEY:** WOH (weight of hammer)
						0		Water column
				--		9.7	WC	
					6			Black fill material with silt and coarse sand
					5	10.7		Few shells at top
	24/7				6			No odor
	29.2%			0.0	4	11.7		
					6			Black fill material, coarse sand, gravel cobble
					8	12.7		No odor
	24/5				10			
	20.8%			0.0	0	13.7	SF	
					8			Black fill material, gravel, cobble, coarse sand, silt
					9	14.7		No odor
	24/12				10			
	50%			0.0	10	15.7		
					14			Black/dark gray coarse sand on tip of spoon
					15	16.7		
	24/0				16			
	0%			--	16	17.7		
					WOH			Black fine-to-coarse sand
					WOH	18.7		Naphthalene odor
	24/3				WOH			
	12.5%			0.0	WOH	19.7	RBS	
		DUP-2			1			Black fill material, coarse sand -->
					1	20.7		medium gray, moist soft clay, slight plasticity
	24/13	BH-SED			1			Slight naphthalene odor
Comp.	54.2%	-08-10	negative	0.0	1	21.7		Sample taken at 1300
					6			Dark gray, moist soft clay, slight plasticity -->
					7	22.7		crushed shell layer, 1 large piece of slag
	24/15				8			Slight naphthalene odor
	62.5%			0.0	9	23.7		
					4			Gray crushed shell layer
					6	24.7		No odor
	24/7				8			
	29.2%			0.0	8	25.7	PLD	
					9			Gray crushed shell layer, gravel, coarse sand
					8	26.7		Very faint naphthalene odor
	24/8				5			
	33.3%			0.0	5	27.7		
		DUP-2			8			Gray crushed shell material -->
					8	28.7		Light gray coarse sand, shells
	24/16	BH-SED			15			Very faint naphthalene odor
Comp.	66.7%	-08-TOC		0.0	11	29.7		Sample taken at 1305

Logged by: Todd Ward (EA) Date: 5-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 559658.9 N 1456424.0 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-09

Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners

Sheet 1 of 2

Drilling

Water Level	11.0 ft	0.4 ft	10.6 ft	Start	Finish
Time	1402	MLLW	MLLW	26-Feb-09	26-Feb-09
Date	02/26/09	tide	elev.	1405	1557
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR (weight of rod); WHO (weight of hammer)
						0		Water column
				--		10.8	WC	
					WOR			No recovery
					WOR	11.8		Trace of black silt on tip of core liner
	24/0				WOR			
	0%			--	WOR	12.8		
					WOH/12"			Black, wet very fine grain sandy silt with shells
					2	13.8		No odor
	24/2				2			
	8.3%			0.0		14.8		
					2			No recovery
					1	15.8		
	24/0				1			
	0%			--	1	16.8		
					1			Black/gray silty clay with very fine sand, shells
					2	17.8		No odor
	24/2				1			
	8.3%			0.0	2	18.8		
					2			Black, wet silt, very soft gray clay, shells
					1	19.8		No odor
	24/3				1			
	12.5%			0.0	1	20.8		
					1			Medium gray, moist soft clay with shells in upper 6"
					1	21.8	RBS	Slight plasticity
	24/12				1			No odor
	50%			0.0	1	22.8		
					1			Medium gray, wet soft clay with very fine sand, shells
					1	23.8		Slight plasticity
	24/24	BH-SED			1			No odor
	100%	-09-12		0.0	1	24.8		Sample taken at 1530
					WOH			Dark gray, moist soft clay with very fine sand, shells
					WOH	25.8		Slight plasticity
	24/8				WOH			No odor
	33.3%			0.0	WOH	26.8		
					2			Dark gray, moist soft clay with very fine sand, shells
					2	27.8		Slight plasticity
	24/24				1			No odor
	100%			0.0	2	28.8		
					2			Medium gray, moist soft clay, shells
					2	29.8		Slight plasticity
	24/24				2			No odor
	100%			0.0	2	30.8		

Logged by: Todd Ward (EA) Date: 26-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates:	559658.9 N 1456424.0 E
Surface Elevation:	0 ft MLW
Casing Below Surface:	N/A
Reference Elevation:	N/A
Reference Desc:	N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-09
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level	11.0 ft	0.4 ft	10.6 ft	Start	Finish
Time	1402	MLLW	MLLW	26-Feb-09	26-Feb-09
Date	02/26/09	tide	elev.	1405	1557
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: / Offset: none / **KEY:** WOR (weight of rod); WHO (weight of hammer)
					WOH			Medium gray, wet, soft clay, shells
					WOH	31.8		No odor
	24/1				WOH			
	4.2%			0.0	WOH	32.8	RBS	
					WOH/18"			Medium gray, moist, soft clay
					7	33.8		Slight plasticity
	24/23					34.2		No odor
	95.8%			0.0		34.8		
					6			Medium gray, moist soft clay
					5	35.8		Slight plasticity
	24/24				6			4" shell layer at bottom
	100%			0.0	6	36.8		No odor
					4			Medium gray, moist soft clay
					5	37.8	PLD	Slight plasticity
	24/24				7			No odor
	100%			0.0	9	38.8		
					12			Medium gray, fine-to-medium grain sand, shells
					12	39.8		No odor
	24/18	BH-SED			12			
Comp.	75%	-09-TOC		0.0	12	40.8		Sample taken at 1550

Logged by: Todd Ward (EA) Date: 26-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates: 559620.3 N 1457565.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-10
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	7.0 ft	-1.9 ft	8.9 ft	Start	Finish
Time	1128	MLLW	MLLW	24-Feb-09	24-Feb-09
Date	02/24/09	tide	elev.	1130	1325
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: / Offset: none / **KEY:** WOH (weight of hammer)
						0		Water column
				--		9.1	WC	
					WOH			Black, moist, very fine grain sandy silt
					WOH	10.1		Slight hydrocarbon odor
	24/24				WOH			
	100%			0.0	WOH	11.1		
					WOH			Black, moist, very fine grain sandy silt
					WOH	12.1		Slight hydrocarbon odor
	24/24	BH-SED	incon-		WOH			
Comp.	100%	-10-2	clusive	0.0	WOH	13.1		PAH fingerprint at 2-4' interval
					WOH			Black/dark gray silty clay
					WOH	14.1		Slight plasticity
	24/19				WOH			No odor
	79.2%			0.0	WOH	15.1		
					WOH			Medium gray clay,
					WOH	16.1		Medium plasticity
	24/18				WOH			Slight hydrocarbon odor
	75.0%			0.0	WOH	17.1		
					WOH			Dark gray, moist clay
					WOH	18.1		Slight plasticity
	24/24				WOH			Very few shell pieces
	100%			0.0	WOH	19.1	RBS	No odor
					WOH			Medium gray clay
					WOH	20.1		Medium plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	21.1		
					WOH			Medium gray clay, medium plasticity -->
					WOH	22.1		black, moist, very fine grain sandy clay
	24/24				WOH			Slight hydrocarbon odor
	100%			0.0	WOH	23.1		
					WOH			Medium/dark gray, moist silty clay
					WOH	24.1		Slight plasticity
	24/23				WOH			Slight hydrocarbon odor
	95.8%			0.0	WOH	25.1		
					WOH			Medium gray clay
					WOH	26.1		Medium plasticity
	24/24				WOH			Slight hydrocarbon odor
	100%			0.0	WOH	27.1		
					WOH			Medium gray, moist soft clay
					WOH	28.1		Very slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	29.1		

Logged by: Todd Ward (EA) Date: 24-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 559620.3 N 1457565.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BH-SED-10
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level	7.0 ft	-1.9 ft	8.9 ft	Start	Finish
Time	1128	MLLW	MLLW	24-Feb-09	24-Feb-09
Date	02/24/09	tide	elev.	1130	1325
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOH (weight of hammer)
					WOH			Medium gray, moist soft clay
					WOH	30.1		Very slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	31.1		
					WOH			Medium gray, moist soft clay
					WOH	32.1		Very slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	33.1		
					WOH			Medium gray, moist soft clay
					WOH	34.1	RBS	Medium plasticity
	24/24	BH-SED			WOH			No odor
Comp.	100%	-10-TOC		0.0	WOH	35.1		Sample taken at 1300
					WOH			Medium gray, moist stiff clay
					WOH	36.1		High plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	37.1		
					WOH			Medium gray, moist soft clay
					WOH	38.1		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	39.1		

Logged by: Todd Ward (EA) Date: 24-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates: 560114.5 N 1458360.9 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-11
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	11.0 ft	-1.9 ft	12.9 ft	Start	Finish
Time	1405	MLLW	MLLW	24-Feb-09	24-Feb-09
Date	02/24/09	tide	elev.	1409	1600
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		13.1	WC	
					WOH			Black, wet sandy silt with medium gray, moist soft clay
					WOH	14.1		No plasticity
	24/6				WOH			No odor
	25%			0.0	WOH	15.1		
					WOH			Medium gray clay, medium plasticity -->
					WOH	16.1		black, moist silty clay with very fine grain sand
	24/18	BH-SED			WOH			Naphthalene odor at bottom
Comp.	75%	-11-2	negative	0.0	WOH	17.1		Sample taken at 1600
					WOR			Black, moist silty clay with very fine grain sand
					WOR	18.1		Slight plasticity
	24/10				WOR			Slight hydrocarbon odor
	41.7%			0.0	WOR	19.1		
					WOH			Dark gray, moist silty clay with very fine grain sand
					WOH	20.1		Slight naphthalene odor
	24/24				WOH			
	100%			0.0	WOH	21.1		
					WOH			Dark gray, moist silty clay with very fine grain sand -->
					WOH	22.1		medium gray soft clay, slight plasticity
	24/24				WOH			Slight naphthalene odor at top
	100%			0.0	WOH	23.1	RBS	
					WOR			Medium gray soft clay
					WOR	24.1		Slight plasticity
	24/12				WOR			No odor
	50%			0.0	WOR	25.1		
					WOR			Medium gray soft clay
					WOR	26.1		Slight plasticity
	24/20				WOR			No odor
	83.3%			0.0	WOR	27.1		
					WOH			Medium gray, moist soft clay
					WOH	28.1		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	29.1		
					WOH			Medium gray, moist soft clay
					WOH	30.1		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	31.1		
					WOH			Medium gray, moist clay
					WOH	32.1		Medium plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	33.1		

Logged by: Todd Ward (EA) Date: 24-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates:	560114.5 N 1458360.9 E
Surface Elevation:	0 ft MLW
Casing Below Surface:	N/A
Reference Elevation:	N/A
Reference Desc:	N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter
CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-11

Sampling Method: Continuous split spoon sampling
with 3 in. diameter spoons with acetate liners

Sheet 2 of 2

Drilling

Water Level	11.0 ft	-1.9 ft	12.9 ft	Start	Finish
Time	1405	MLLW	MLLW	24-Feb-09	24-Feb-09
Date	02/24/09	tide	elev.	1409	1600
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					WOH			Medium gray, moist clay
					WOH	34.1		Medium plasticity
	24/24	BH-SED			WOH			No odor
Comp.	100%	-11-TOC	negative	0.0	WOH	35.1		Sample taken at 1515
					WOH			Medium gray, moist clay
					WOH	36.1		Medium plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	37.1		
					WOR			Medium gray, moist clay
					WOR	38.1	RBS	Medium plasticity
	24/24				WOR			No odor
	100%			0.0	WOR	39.1		
					WOH			Medium gray, moist clay
					WOH	40.1		Medium plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	41.1		
					WOH			Medium gray, moist clay
					WOH	42.1		Medium plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	43.1		

Logged by: Todd Ward (EA) Date: 24-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates: 561204.2 N 1458361.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-12
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	14.5 ft	0.6 ft	13.9 ft	Start	Finish
Time	1010	MLLW	MLLW	13-Feb-09	13-Feb-09
Date	02/13/09	tide	elev.	1020	1300
Reference	N/A				

Surface Conditions:
Offset: 2 offsets to collect sample volume at 4-6 ft (below sed. surface) interval
KEY: WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		14.1	WC	
					WOH			Black, wet sandy silt
					WOH	15.1		No plasticity
	24/2				WOH			Shells and pebbles present
	8.3%			0.0	WOH	16.1		
					WOH			Dark gray, wet, sandy clay with fine grained sand
					WOH	17.1		Soft consistency
	24/2				WOH			
	8.3%			0.0	WOH	18.1	RBS	
					WOH			Medium gray, wet fine grained sand clay
					WOH	19.1		No plasticity
	24/7.75	BH-SED			WOH			Shell material
Comp.	32.3%	-12-4		0.0	3	20.1		Sample taken at 1410
					WOH			Medium gray, wet fine grained sandy clay
					WOH	21.1		No plasticity
	24/7				WOH			Shell material
	29.2%			0.0	WOH	22.1		
					3			Medium gray, wet soft clay (upper 10")
					4	23.1		Shell layer to medium gray, wet silty fine grained sand with shell material (10-18")
	24/18				5			
	75%			0.0	6	24.1		
					8			Medium gray, wet fine grained sandy clay with shells (0-9")
					9	25.1		Medium gray, wet silty fine grain sand with few small shells (9-24")
	24/24				9			
	100%			0.0	10	26.1		
					11			Medium gray, wet fine grained sand clay
					11	27.1		Shells
	24/24				16			No plasticity
	100%			0.0	16	28.1		
					6		PLD	Tan, wet fine-to-medium grained sand -->
					4	29.1		light gray hard clay, high plasticity (bottom 9")
	24/18				3			
	75%			0.0	2	30.1		
					11			Tan, wet medium grained sand
					10	31.1		Shell fragments
	24/5				6			
	20.8%			0.0	6	32.1		
					WOH			Medium gray, wet clay with black streaks
					WOH	33.1		Shells, small piece of wood
	24/24				2			Clay medium hard to hard, medium plasticity
	100%			0.0	2	34.1		

Logged by: Todd Ward (EA) Date: 13-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:	561204.2 N 1458361.3 E
Surface Elevation:	0 ft MLW
Casing Below Surface:	N/A
Reference Elevation:	N/A
Reference Desc:	N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-12
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level	14.5 ft	0.6 ft	13.9 ft	Start	Finish
Time	1010	MLLW	MLLW	13-Feb-09	13-Feb-09
Date	02/13/09	tide	elev.	1020	1300
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: / Offset: 2 offsets to collect sample volume at 4-6 ft (below sed. surface) interval / **KEY:** WOH (weight of hammer)
					1			Medium gray, wet clay with small pieces of organic material at bottom
					2	35.1		High plasticity
	24/24				4			
	100%			0.0	5	36.1		
					3			Gray/pink gray, dry clay
					4	37.1	PLD	High plasticity
	24/22				9			
	91.7%			0.0	10	38.1		
					--			Pink/gray, dry clay, with traces of dark tan medium sand
					--	39.1		High plasticity
	24/22				--			
	91.7%			0.0	--	40.1		

Logged by: Todd Ward (EA) Date: 13-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562009.0 N 1458142.9 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter
CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-13A

Sampling Method: Continuous split spoon sampling
with 3 in. diameter spoons with acetate liners

Sheet 1 of 2

Drilling

				Start	Finish
Water Level	9.0 ft	-0.2 ft	9.2 ft		
Time	1215	MLLW	MLLW	25-Feb-09	25-Feb-09
Date	02/25/09	tide	elev.	1221	1421
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Surface Conditions:
								Offset: none
								KEY: WOH (weight of hammer)
						0		Water column
				--		9.4	WC	
					1			Black, wet silty fine grain sand
					6	10.4		Fill material
	24/5				1			Naphthalene odor
	20.8%			0.0	2	11.4		
					WOH			No recovery
					WOH	12.4		
	24/0				WOH			
	0%			--	WOH	13.4		
					10			Black, silty fine grain sand --> Gray, medium grain sand and gravel -->
					6	14.4		tan coarse sand and gravel --> light gray medium grain sand
	24/11				5			Naphthalene odor
	45.8%		negative	0.0	5	15.4		
					6			Black, coarse sand and gravel --> tan coarse sand -->
					6	16.4		medium gray fine grain sand
	24/15	BH-SED			5			Naphthalene odor
Comp.	62.5%	-13A-6		0.0	2	17.4	SF	Sample taken at 1415
					1			Dark gray medium-to-coarse sand and gravel
					1	18.4		Naphthalene odor
	24/6				1			
	25%			0.0	1	19.4		
					1			Poor recovery of material
					1	20.4		Black silty sand
	24/2				1			Naphthalene odor
	8.3%			0.0	1	21.4		Sheen visible
					1			Dark tan clayey fine grain sand --> medium gray, wet soft sandy clay -->
					2	22.4		medium gray, moist clayey fine grain sand
	24/16				2			Shell lens above bottom of clayey sand
	66.7%			0.0	1	23.4		Slight naphthalene odor
					1			Black coarse sand (rundown?)
					1	24.4		Slight naphthalene odor
	24/3				1			
	12.5%			0.0	1	25.4		
					WOH			No recovery
					WOH	26.4		
	24/0				WOH			
	0%			--	WOH	27.4	RBS	
					WOH/12"			Medium gray, wet clay
					2	28.4		Medium plasticity
	24/18				1			Very slight naphthalene odor
	75%			0.0		29.4		

Logged by: Todd Ward (EA) Date: 25-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:	562009.0 N 1458142.9 E
Surface Elevation:	0 ft MLW
Casing Below Surface:	N/A
Reference Elevation:	N/A
Reference Desc:	N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-13A
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level	9.0 ft	-0.2 ft	9.2 ft	Start	Finish
Time	1215	MLLW	MLLW	25-Feb-09	25-Feb-09
Date	02/25/09	tide	elev.	1221	1421
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					1			Surface Conditions:
					1	30.4		Offset: none
	24/24				2			**KEY:** WOH (weight of hammer)
	100%			0.0	1	31.4		
					3			Medium gray, moist stiff clay
					3	32.4		Moderate plasticity
	24/22				2			No odor
	91.7%			0.0	3	33.4		
					WOH			Medium gray, moist soft clay
					WOH	34.4	RBS	Slight plasticity
	24/24	BH-SED			WOH			Slight naphthalene odor
Comp.	100%	-13A-TOC		0.0	WOH	35.4		
					WOH			Medium gray, moist stiff clay
					WOH	36.4		Moderate plasticity
	24/17				WOH			
	70.8%			0.0	WOH	37.4		Sample taken at 1346
					--			Medium gray, wet sandy clay -->
					--	38.4		medium gray, moist sandy clay, slight plasticity
	24/24				--			No odor
	100%			0.0	--	39.4		

Logged by: Todd Ward (EA) Date: 25-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562048.0 N 1458214.7 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter
CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-13B

Sampling Method: Continuous split spoon sampling
with 3 in. diameter spoons with acetate liners

Sheet 1 of 2

Drilling

Water Level	19.0 ft	1.3 ft	17.7 ft	Start	Finish
Time	0905	MLLW	MLLW	26-Feb-09	26-Feb-09
Date	02/26/09	tide	elev.	0912	1100
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		17.9	WC	
					WOH			Black, moist very fine grain sandy silty
					WOH	18.9	SF	Pieces of fill/slag material
	24/24				WOH			No odor
	100%			0.0	WOH	19.9		
					WOH			Medium gray, moist soft clay
					WOH	20.9		Slight plasticity
	24/23				WOH			Root fragment at bottom of interval
	95.8%			0.0	WOH	21.9		No odor
					WOH			Medium gray, moist soft clay
					WOH	22.9		Slight plasticity
	24/24				WOH			Shell fragments
	100%			0.0	WOH	23.9		No odor
					1			Medium gray, moist soft clay
					1	24.9		Slight plasticity
	24/24				1			No odor
	100%			0.0	1	25.9		
					WOH			Medium gray, moist stiff clay. Moderate plasticity
					WOH	26.9		Oyster shell at bottom
	24/24	BH-SED			WOH			No odor
Comp.	100%	-13-8		0.0	WOH	27.9	RBS	Sample taken at 1105
					1			Medium gray, moist stiff clay
					1	28.9		Moderate plasticity
	24/24				1			Shell fragments
	100%			0.0	1	29.9		No odor
					2			Medium gray, moist stiff clay
					1	30.9		Slight plasticity
	24/24				1			No odor
	100%			0.0	1	31.9		
					1			Medium gray, moist stiff clay
					1	32.9		Slight plasticity
	24/24				1			Oyster shell
	100%			0.0	1	33.9		No odor
					WOH			Medium gray, moist stiff clay, slight plasticity -->
					WOH	34.9		medium gray, stiff clay, moderate plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	35.9		
					2			Medium gray, stiff clay
					2	36.9		Moderate plasticity
	24/24				2			Shell fragments
	100%			0.0	2	37.9		No odor

Logged by: Todd Ward (EA) Date: 26-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula			Location: Sparrow's Point. MD	
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer				Boring No. BH-SED-13B	
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners				Sheet 2 of 2	
				Drilling	
Water Level	19.0 ft	1.3 ft	17.7 ft	Start	Finish
Time	0905	MLLW	MLLW	26-Feb-09	26-Feb-09
Date	02/26/09	tide	elev.	0912	1100
Reference	N/A				

Coordinates: 562048.0 N 1458214.7 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Surface Conditions:
Offset: none
KEY: WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
					2			Olive gray, stiff clay
					2	38.9		Moderate plasticity
	24/24				1			No odor
	100%			0.0	1	39.9		
					1			Medium gray soft --> stiff clay
					1	40.9	RBS	Stiff clay has high plasticity
	24/24				2			No odor
	100%			0.0	2	41.9		
					1			Medium gray, stiff clay
					1	42.9		Moderate plasticity
	24/24	BH-SED			2			No odor
Comp.	100%	-13B-TOC		0.0	1	43.9		Sample taken at 1110

Logged by: Todd Ward (EA) Date: 26-Feb-2006

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

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LOG OF SOIL/ROCK BORING

Coordinates: 562094.9 N 1458372.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-13C
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	12.5 ft	0.1 ft	12.4 ft	Start	Finish
Time	0914	MLLW	MLLW	4-Mar-09	4-Mar-09
Date	03/04/09	tide	elev.	0920	1041
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		12.6	WC	
					WOH			No recovery
					WOH	13.6		Shell, coarse sand on tip of liner
	24/0				WOH			
	0%			0.0	WOH	14.6		
					2			Black, wet silty coarse sand
					1	15.6		Naphthalene odor
	24/4				2			
	16.7%			0.0	1	16.6		
					1			Black, wet silty medium-to-coarse sand
					1	17.6		Small amount of gray, wet soft clay
	24/9				2			Shells
	37.5%			0.0	2	18.6	SF	Slight naphthalene odor
		DUP-1			2			Black, wet silty coarse sand -->
					1	19.6		medium gray, moist soft clay, very slight plasticity
	24/17	BH-SED			1			Naphthalene odor
Comp.	70.8%	-13C-6		0.0	1	20.6		Sample taken at 1045. PAH fingerprint sample
					2			Black, wet coarse clayey sand
					4	21.6		Slight naphthalene odor
	24/9				5			Small sheen in pure water
	37.5%		negative	0.0	2	22.6		Photo taken
					1			Dark gray, wet clayey coarse sand
					1	23.6		Slight naphthalene odor
	24/5				1			
	20.8%			0.0	1	24.6		
					1			Black, wet coarse silty sand -->
					1	25.6		medium gray, moist soft clay, very slight plasticity
	24/24				1			No odor
	100%			0.0	1	26.6		
					WOH			Medium gray, moist soft clay
					WOH	27.6		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	28.6	RBS	
					1			Medium gray, moist soft clay, slight plasticity -->
					1	29.6		dark gray, stiff clay, moderate plasticity
	24/24				1			No odor
	100%			0.0	1	30.6		
					2			Medium gray, moist soft clay
					2	31.6		Slight plasticity
	24/24				2			No odor
	100%			0.0	2	32.6		

Logged by: Todd Ward (EA) Date: 4-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562094.9 N 1458372.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BH-SED-13C
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level	12.5 ft	0.1 ft	12.4 ft	Start	Finish
Time	0914	MLLW	MLLW	4-Mar-09	4-Mar-09
Date	03/04/09	tide	elev.	0920	1041
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOH (weight of hammer)
					1			Medium gray, moist stiff clay, slight plasticity
		*			2	33.6	RBS	No odor
	24/24	BH-SED			2			Sample taken at 1050
Comp.	100%	13C-TOC		0.0	1	34.6		*DUP-1, BH-SED-13C-MS, BH-SED-13C-MSD

Logged by: Todd Ward (EA) Date: 4-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula		Location: Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer			Boring No. BH-SED-14
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners			Sheet 1 of 1
			Drilling

Coordinates: 562730.4 N 1458318.0 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

Water Level	25 ft	0.7 ft	24.3 ft	Start	Finish
Time	1142	MLLW	MLLW	26-Feb-09	26-Feb-09
Date	02/26/09	tide	elev.	1149	1317
Reference	N/A				

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR (weight of rod)
						0		Water column
				--		24.5	WC	
					WOR			No recovery
					WOR	25.5		Very soft black silt on tip of core liner
	24/0				WOR			
	0%			--	WOR	26.5		
					WOR			No recovery
					WOR	27.5		Very soft black silt with fine grain sand on tip of core liner
	24/0				WOR			
	0%			--	WOR	28.5		
					WOR			No recovery
					WOR	29.5		Very soft black silt on tip of core liner
	24/0				WOR		RBS	
	0%			--	WOR	30.5		
					WOR			Black, wet silt with very fine sand and medium gray clay balls
					WOR	31.5		No odor
	24/4				WOR			
	16.7%			0.0	WOR	32.5		
					WOR			Black, wet silt, no odor -->
					WOR	33.5		Black, wet silty clay
	24/23	BH-SED			WOR			Coal tar odor in silty clay
Comp.	9.5%	-14-8		0.0	WOR	34.5		Sample taken at 1310
					WOR			Black, wet silty clay with very fine sand
					WOR	35.5		Slight coal tar odor
	24/12				WOR			
	50%			0.0	WOR	36.5		
					2			Blue/gray, dry stiff clay, high plasticity -->
					3	37.5		Dark tan, dry crumbly clay, high plasticity
	24/24				3			No odor
	100%			0.0	3	38.5		
					3			Blue/gray, dry stiff lay, high plasticity -->
					4	39.5		tan, dry stiff clay, high plasticity -->
	24/24				4			Blue/gray, dry stiff lay, high plasticity
	100%			0.0	5	40.5	PLD	No odor
					4			Blue/gray, dry stiff clay
					5	41.5		High plasticity
	24/24	BH-SED			6			No odor
Comp.	100%	-14-TOC		0.0	6	42.5		Sample taken at 1315
					7			Blue/gray, dry stiff clay
					7	43.5		High plasticity
	24/24				7			No odor
	100%			0.0	7	44.5		

Logged by: Todd Ward (EA) Date: 26-Feb-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 561632.1 N 1458222.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-15
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	22 ft	2.1 ft	19.9 ft	Start	Finish
Time	0845	MLLW	MLLW	11-Mar-09	11-Mar-09
Date	03/11/09	tide	elev.	0851	1050
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR =(weight of rod)
						0		Water column
				--		20.1	WC	
					WOR		RBS	Black, wet silt
					WOR	21.1		No odor
	24/20				WOR			
	83.3%			0.0	WOR	22.1		
					1/12"			Black, wet silt with fill material -->
		*			1/12"	23.1		Black, wet clayey silty with fill material and shells
	24/24	BH-SED						Very slight hydrocarbon odor
Comp.	100%	-15-2	negative	0.0		24.1		Sample taken at 1100. *BH-SED-15-2-MS and BH-SED-15-2-MSD
					1			Black, wet very fine grain sandy silt with fill material, shells -->
					1	25.1		medium gray, moist stiff clay, moderate plasticity
	24/15				2		PLD	Very slight odor
	62.5%			0.0	3	26.1		
					3			Dark gray, wet silty sand with shell material -->
					3	27.1		medium gray, moist stiff clay, moderate plasticity, shells
	24/24				5			Very slight odor
	100%			0.0	6	28.1		
					4			Dark gray, wet medium grain sand -->
					3	29.1		medium gray, moist stiff clay, moderate plasticity, shells
	24/24				3			No odor
	100%			0.0	4	30.1		
					2			Medium gray silty clay with very fine sand, shell material -->
					1	31.1		medium gray, moist stiff clay, moderate plasticity
	24/24				1			Very slight hydrocarbon odor
	100%			0.0	2	32.1		
					2			Medium gray, moist soft clay, slight plasticity
					4	33.1		Shells
	24/24				4			No odor
	100%			0.0	3	34.1		
					5			Medium gray, moist sof clay
					5	35.1		Slight plasticity
	24/24				5			No odor
	100%			0.0	5	36.1		
					4			Medium gray, moist soft clay, slight plasticity -->
					5	37.1		medium gray, stiff clay, moderate plasticity
	24/24				5			No odor
	100%			0.0	7	38.1		
					25			Medium gray, stiff clay, moderate plasticity -->
					23	39.1		light gray medium-to-coarse sand
	24/24				26			No odor
	100%			0.0	24	40.1		

Logged by: Todd Ward (EA) Date: 11-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Job. No. 14534.06	Client: Sparrow's Point Peninsula		Location: Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer			Boring No. BH-SED-15
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners			Sheet 2 of 2
			Drilling

Coordinates: 561632.1 N 1458222.3 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A

KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

				Start	Finish
Water Level	22 ft	2.1 ft	19.9 ft		
Time	0845	MLLW	MLLW	11-Mar-09	11-Mar-09
Date	03/11/09	tide	elev.	0851	1050
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR =(weight of rod)
					11			Medium gray, wet fine-to-medium grain sand
					12	41.1		No odor
	24/18				14			
	75%			0.0	14	42.1	PLD	
					25			Dark gray, fine-to-medium, wet sand -->
		*			40	43.1		pink/white clayey fine sand
	24/24	BH-SED			25			No odor
Comp.	100%	-15-TOC		0.0	30	44.1		Sample taken at 1105. *BH-SED-15-TOC-MS and BH-SED-15-MSD

Logged by: Todd Ward (EA) Date: 11-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562957.6 N 1453211.1 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD

Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter
CME-75 with 14 lbs. auto hammer

Boring No. BH-SED-16

Sampling Method: Continuous split spoon sampling
with 3 in. diameter spoons with acetate liners

Sheet 1 of 1

Drilling

Water Level	16.5 ft	0.8 ft	15.7 ft	Start	Finish
Time	0855	MLLW	MLLW	12-Mar-09	12-Mar-09
Date	03/12/09	tide	elev.	0900	1002
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: / Offset: none / **KEY:** WOH (weight of hammer)
						0		Water column
				--		15.9	WC	
					WOH			Black, wet very fine grain sandy silt -->
					WOH	16.9		dark gray, wet very fine grain sandy clay, no plasticity
	24/22	BH-SED			WOH		RBS	No odor
Comp.	91.7%	-16-0	negative	0.0	WOH	17.9		Sample taken at 1005
					WOH/12"			Medium gray, wet coarse grain sandy clay, shell material -->
					2	18.9		pink/white, dry hard clay, high plasticity
	24/9				3			No odor
	37.5%			0.0		19.9		
					17			Pink/white, dry hard clay, high plasticity -->
					16	20.9		red, dry hard clay, high plasticity
	24/24	BH-SED			20			No odor
Comp.	100%	-16-TOC		0.0	20	21.9	PLD	Sample taken at 1010
					6			Pink/white, dry hard clay, high plasticity -->
					8	22.9		red, dry hard clay, high plasticity
	24/7				10			No odor
	29.2%			0.0	10	23.9		
					10			Red, dry hard clay -->
					25	24.9		pink/white, dry hard clay
	24/24				26			No odor
	100%			0.0	40	25.9		

Logged by: Todd Ward (EA) Date: 12-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562700.1 N 1452711.1 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-17
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	17.5 ft	1.1 ft	16.4 ft	Start	Finish
Time	0831	MLLW	MLLW	10-Mar-09	10-Mar-09
Date	03/10/09	tide	elev.	0836	1100
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		16.6	WC	
					WOR			Black, moist very fine grain sandy silt -->
		*			WOR	17.6		Dark gray, moist silty clay, very slight plasticity. Shell material at bottom
	24/20	BH-SED			WOR			No odor
Comp.	83.3%	-17-0	negative	0.0	WOR	18.6	RBS	Sample taken at 1020. *PAH fingerprint sample
					WOR			No recovery
					WOR	19.6		
	24/0				WOR			
	0%			--	WOR	20.6		
					4			Medium gray, moist silty sand
					9	21.6		Shell fragments
	24/13				9			No odor
	54.2%			0.0	5	22.6		
					5			Medium gray, moist silty sand
					4	23.6		Shell material
	24/10				4			No odor
	41.7%			0.0	4	24.6		
					4			Shell material, medium gray, moist silty sand -->
					4	25.6		dark gray, moist stiff clay, moderate plasticity
	24/16				3			No odor
	66.7%			0.0	3	26.6		
					2			Dark gray, moist sandy clay
					2	27.6		Moderate plasticity
	24/3				1			No odor
	12.5%			0.0	1	28.6	PLD	
					3			Dark gray, moist clay
					4	29.6		Moderate plasticity
	24/24				4			No odor
	100%			0.0	5	30.6		
					5			Medium gray fine-to-medium grain sand with shells -->
					5	31.6		medium gray, wet sandy clay, shell fragments, slight plasticity
	24/24				5			No odor
	100%			0.0	6	32.6		
					15			Medium gray, wet silty sand
					15	33.6		Shell fragments
	24/15				8			No odor
	63%			0.0	7	34.6		
					7			Medium gray, wet sandy clay, shell fragments, slight plasticity -->
					7	35.6		dark gray, moist stiff clay, moderate plasticity
	24/24				7			No odor
	100%			0.0	8	36.6		

Logged by: Todd Ward (EA) Date: 10-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 562700.1 N 1452711.1 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BH-SED-17
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level	17.5 ft	1.1 ft	16.4 ft	Start	Finish
Time	0831	MLLW	MLLW	10-Mar-09	10-Mar-09
Date	03/10/09	tide	elev.	0836	1100
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: Offset: none **KEY:** WOR (weight of rod)
					7			Medium gray, clayey sand, shell fragments -->
					5	37.6		dark gray moist soft clay, moderate plasticity
	24/24				6			No odor
	100%			0.0	6	38.6		
					5			Medium gray, moist clay
					6	39.6		Moderate plasticity
	24/24				6			No odor
	100%			0.0	6	40.6		
					4			Medium gray, moist clay
					5	41.6	PLD	Moderate plasticity
	24/24	BH-SED			6			No odor
Comp.	100%	-17-TOC		0.0	5	42.6		Sample taken at 1030
					6			Medium gray, moist clay, moderate plasticity -->
					8	43.6		brown peat (bottom 6")
	24/24				12			No odor
	100%			0.0	15	44.6		
					15			Brown peat (0-6") -->
					16	45.6		medium gray, stiff clay, high plasticity
	24/20				16			No odor
	83.3%			0.0	18	46.6		

Logged by: Todd Ward (EA) Date: 10-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 560876.8 N 1453193.8 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BH-SED-18
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level	18.5 ft	0.5 ft	18.0 ft	Start	Finish
Time	1126	MLLW	MLLW	10-Mar-09	10-Mar-09
Date	03/10/09	tide	elev.	1130	1315
Reference	N/A				

Surface Conditions:
Offset: none
KEY: WOR (weight of rod); WOH (weight of hammer)

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	
						0		Water column
				--		18.2	WC	
					WOR			Black, wet clayey silt
					WOR	19.2		Slight hydrocarbon odor
	24/24	BH-SED			WOR			
Comp.	100%	-18-0	negative	0.0	WOR	20.2		Sample taken at 1250
					WOR			No recovery
					WOR	21.2		
	24/0				WOR			
	0%			--	WOR	22.2		
					WOR			Medium gray, moist silty clay
					WOR	23.2		Slight plasticity
	24/15				WOR			Very slight hydrocarbon odor
	62.5%			0.0	WOR	24.2		
					WOH			Dark gray, wet silty clay
					WOH	25.2		Slight hydrocarbon odor
	24/1				WOH			
	4.2%			0.0	WOH	26.2		
					WOH			Medium gray, moist soft clay
					WOH	27.2		Slight plasticity
	24/22				WOH			No odor
	91.7%			0.0	WOH	28.2	RBS	
					WOR			No recovery
					WOR	29.2		Medium gray silty clay with very fine sand on tip of liner
	24/0				WOR			
	0%			0.0	WOR	30.2		
					WOH			Light gray, moist soft clay
					WOH	31.2		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	32.2		
					WOH			Medium gray, moist soft clay
					WOH	33.2		Slight plasticity
	24/4				WOH			No odor
	16.7%			0.0	WOH	34.2		
					WOH			Medium gray, moist soft clay
					WOH	35.2		Slight plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	36.2		
					WOH			Medium gray, moist soft clay
					WOH	37.2		Slight plasticity
	24/4				WOH			No odor
	16.7%			0.0	WOH	38.2		

Logged by: Todd Ward (EA) Date: 10-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: 560876.8 N 1453193.8 E
Surface Elevation: 0 ft MLW
Casing Below Surface: N/A
Reference Elevation: N/A
Reference Desc: N/A
KEY: RBS (River Bottom Sed.); SF (Slag/Fill Mat.); PLD (Pleistocene Lowland Deposit)

Job. No.	Client:	Location:
14534.06	Sparrow's Point Peninsula	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BH-SED-18
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 2 of 2

Water Level	18.5 ft	0.5 ft	18.0 ft	Drilling Start	Drilling Finish
Time	1126	MLLW	MLLW	10-Mar-09	10-Mar-09
Date	03/10/09	tide	elev.	1130	1315
Reference	N/A				

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet (MLW)	Stratigraphic Determination	Surface Conditions: / Offset: none / **KEY:** WOR (weight of rod); WOH (weight of hammer)
					WOH			Medium gray, moist soft clay, slight plasticity-->
					WOH	39.2		dark gray, moist stiff clay, moderate plasticity
	24/24				WOH			No odor
	100%			0.0	WOH	40.2	RBS	
					WOH			Dark gray, moist stiff clay
					WOH	41.2		Moderate plasticity
	24/9				WOH			No odor
	37.5%			0.0	WOH	42.2		
					1			Medium gray, moist soft clay
					1	43.2		Moderate plasticity
	24/24	BH-SED			1			No odor
Comp.	100%	-18-TOC		0.0	1	44.2	PLD	Sample taken at 1305
					1			
					1	45.2		Medium gray, moist soft clay, moderate plasticity -->
	24/18				6			medium gray, sandy clay (bottom 2")
	75%			0.0	8	46.2		No odor

Logged by: Todd Ward (EA) Date: 10-Mar-2009

Drilling Contractor: Findling Drilling Driller: Tony Oleszczyk

ONSHORE INVESTIGATION PHOTOLOG

EA Engineering, Science, and Technology, Inc.

Photographic Record

Onshore at the Sparrows Point Coke Point Peninsula
Baltimore County, Maryland
May-June, 2009

Figure 1. Drill rig setup with hollow stem auger

Figure 2. Benzol Processing Area with monitoring wells BP-MW-05 and BP-MW-07

Figure 3. Hollow Stem Augers

Figure 4. Decontamination pad for drilling components

Figure 5. Soil core with fill/native contact

Figure 6. Soil core which tested positive for NAPL with Sudan IV test.

Photographic Record

Onshore at the Sparrows Point Coke Point Peninsula
Baltimore County, Maryland
May-June, 2009

Figure 7. NAPL in soil core liner

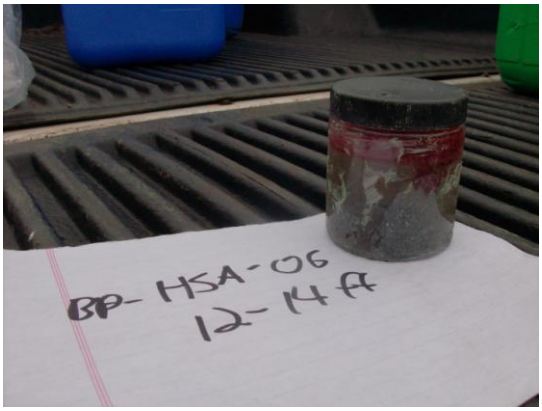


Figure 8. Positive Sudan IV test for NAPL

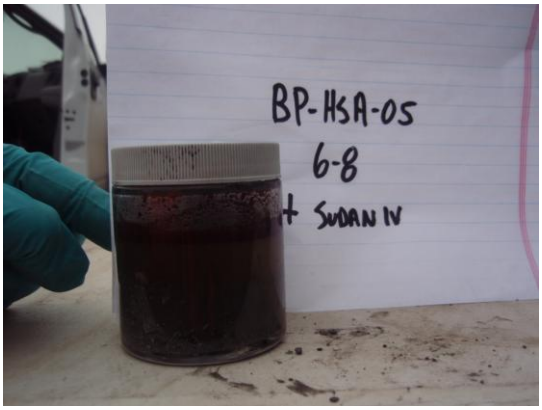


Figure 9. Negative Sudan IV test for NAPL

Figure 10. Monitoring well BP-MW-08

ONSHORE INVESTIGATION
FIELD LOGBOOK

CONTENTS

PAGE	REFERENCE	DATE

Location Name Abbreviations Date ——

Project / Client ——

Name	Abbreviation	Affiliation
Steven Yankay	SCY	EA
Joe Sawicki	JS	EA
Frank Barranco	FB	EA
Karin Olsen	KO	EA
Russ Becker	RB	Severstal
Dan Fincham	DF	Findlay

Location Sparrows Point, MD Date 18 MAY 09

Project / Client Lake Erie Area Sampling - Mobilization

Am. Cloudy 40° pm Raining 60°

0515 - SCH departs York, PA

0600 - loaded table and picked up P-100 respirator cartridges

0704 - SCH @ Sparrows Point Police Station

0725 - PID calibration - MINIRAE 3 VRAE VS7402X 100ppm isobutylene

initial zero	0.0 ppm
initial span	97.1 ppm
final zero	0.0 ppm
final span	99.3 ppm

LEL calibration - VRAE 170-103360 50% methane

initial zero	0%
initial span	49%
final zero	0%
final span	51%

0750 - JS onsite - signed health and safety plan

0757 - FB onsite

0800 - at Police Station for pass badge

0829 - FB reviewing well installation information

0849 - onsite at benzol processing area to mark locations

Location Sparrows Point, MD Date

Project / Client

- Soil Sampling Log -

Sample ID	Soil Description	Date / Time	VISIBLE VAPOR?	Color (Munsell)
BP-SO-B03-4	SAG/FILL - M-C SAND - MOIST - PSC - <5% GRAVEL - RDLY FRIAB?	5/19/09 1410	No	VD BROWN 10YR 2/2
BP-SO-B03-12	SAG/FILL - M-C SAND - SAT - PSC - <1% GRAVEL	5/19/09 1520	No	VD BROWN 10YR 2/2
BP-SO-B03-32 (BP-SO-DUP1)	SAG/FILL - POORLY GRADED M-C SAND - SUBANGULAR - <20% SUBANGULAR COARSE GRAVEL - ~5% SILTY NONPLASTIC FINES - RDLY FRIAB	5/20/09 930	NO	VD BROWN 10YR 2/2
BP-SO-B01-8	SAG/FILL - POORLY GRADED M-C SAND - SUBANGULAR - SAT - ~25% SILTY NONPLASTIC FINES - OV ODOR	5/20/09 1530	No	BLACK 10YR 2/1
BP-SO-B01-14 (MS/MSD)	SAG/FILL - POORLY GRADED M-C SAND - SUBANGULAR - SAT - <10% SILTY NONPLASTIC FINES - OV ODOR	5/21/09 0900	No	BLACK 10YR 2/1

Location Sparrows Point, MD Date 18 MAY 09

Project / Client

- Maryland State Plane, NAD83 using TRIMBLE PROXRS

1040 - back to Police Station to meet drillers and get site access
1042 - SCY reached up GBS
1055 - to Russ Beckers office for safety training

1103 - Miss Utility / One call onsite
- all utilities for boring locations are private and electrical is overhead

1120 - Safety briefing in main building

Police 410-388-7761
Fire 410-388-7774
Medical 410-388-7777
} on intercom from inside phone

410-388-4765 Glen Adam - Health and Safety for site

410-388-6632 Mike Vogler - site utility location

1150 - completed H&S briefing, got all signatures from Findling

Location Sparrows Point, MD Date 18 MAY 09

Project / Client

1204 - Findling has no acetate liners for 3 inch split spoons - No well completion materials

1231 - began unloading concrete/cement at decon site

1256 - Mike Vogler onsite to check utility locations and boring locations
- FB showed Mike Vogler locations

1319 - set drill rig at BP-HSA-03
* Findling has more acetate liners and will begin drilling 19 MAY a.m.
- offset location ~25 ft SE due to soft soil

1409 - FB offsite
1411 - JS offsite
- SCY remaining onsite to help Findling unload material

1429 - unloaded sand at decon pad
1500 - SCY offsite

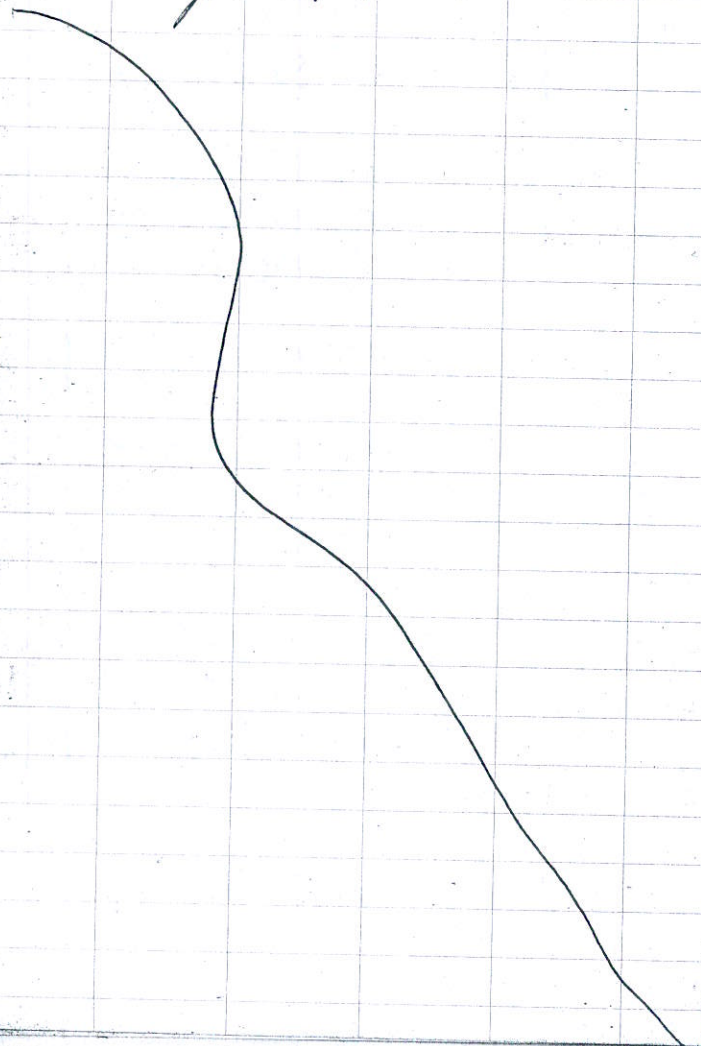
8

Location Sparrows Point, MD Date 18 MAY 09

Project / Client

1540 - SCY picked up extra respirator (P100/ov) cartridges at the warehouse

1645 - SCY in York (11.5)



9

Location Sparrows Point, MD Date 19 MAY 09

Project / Client Soil boring BP-HSA-03

AM 45° sunny PM 71° sunny

0608 - SCY leaves York

0717 - SCY onsite - begins setting up equipment at BP-HSA-03

0721 - PID calibration 051402K 100 ppm isobutylene

initial zero	0.0 ppm
initial span	100.4 ppm
final zero	0.0 ppm
final span	100.0 ppm

GEM calibration 170-10336 50% methane

initial zero	0%
initial span	50%
final span	—
final zero	—

0736 - JS onsite

0828 - Findling onsite

0839 - began setting up rig on BP-HSA-03

0855 - began drilling BP-HSA03

0910 - refusal @ 1' - drill to advance auger past obstacles

0914 - refusal @ 2.5' - ~~[illegible]~~ - attempt to drive 2 inch spoon to determine diff in penetration

0921 - FB onsite

Location Sparrows Point Date 19 MAY 09

Project / Client ———

☆ continue with 3 inch spoons and auger through hard areas

1111 - per FB, collect 3 samples from BP-HSA-03 (including Meta fingerprint sample)

1113 - BP-HSA-01 and BP-HSA-04 clear to drill

1226 - rig down to repair auto hammer

Per FB,

- 3 samples per borehole based on PID/sudan IV

Fingerprinting

5 total samples

- 1 background (BP-HSA-03)
- 2 benzol processing borehole } dirty/contaminated
- 2 coal tar storage area

(2) 4-oz jar/sample

Analyses - Meta Environmental

- GC/FID fingerprinting (EPA 8100m)
- PAHs, alkylated PAHs, biomarkers (EPA 8270m)
- Carbon isotopes (EPA 8270m)

- STANDARD TAT

Location Sparrows Point MD Date 19 MAY 09

Project / Client BP-HSA-03 - air monitoring

	TIME	BZ?	PID (ppm)	GC (%)
5/19	0841 BACKGROUND	Y	0.0	0/20.9
	0913	Y	0.0	0/21.3
	0943	Y	0.0	0/21.4
	1013	Y	0.0	0/21.3
	1015	N	0.0	—
	1049	Y	0.0	0/21.4
	1120	Y	0.0	0/21.4
	1126	N	0.0	0/21.4
	1150	Y	0.0	0/21.4
	1220	Y	0.0	0/21.5
	- RIG DOWN -	—	—	—
	1343	Y	0.0	0/21.6
	1415	Y	0.0	0/21.6
	1445	Y	0.0	0/21.6
5/20	0738 BACKGROUND	Y	0.0	0/20.9
	0829	Y	0.0	0/20.9
	0836	N	0.0	—
	0914	Y	0.0	0/21.4
	0942	Y	0.0	0/21.5
	1013	Y	0.0	0/21.6
	1044	Y	0.0	0/21.6
	1103	N	0.0	0/21.6
	1111	Y	0.0	0/21.6

Location Sparrows Point, MD Date 19 MAY 09

Project / Client

NAPL Analyses
- 4 samples for fluid properties
- 2 samples for wettability index

for wettability:
- (1) 2"x6" core of clay → No hold time (2 cores total)
- 2 liters of GW per sample
- 2 liters of product per sample

for fluid properties:
- 250 ml of GW
- 250 ml of product

1335 - rig repaired - resumed drilling (69 min)
1341 - JS onsite w/ bladder to open cores

1450 - rig down to repair auto-hammer (21 min)

1519 - ended drilling at 24 feet
- per FB - drillers can use mud to keep material from upwelling

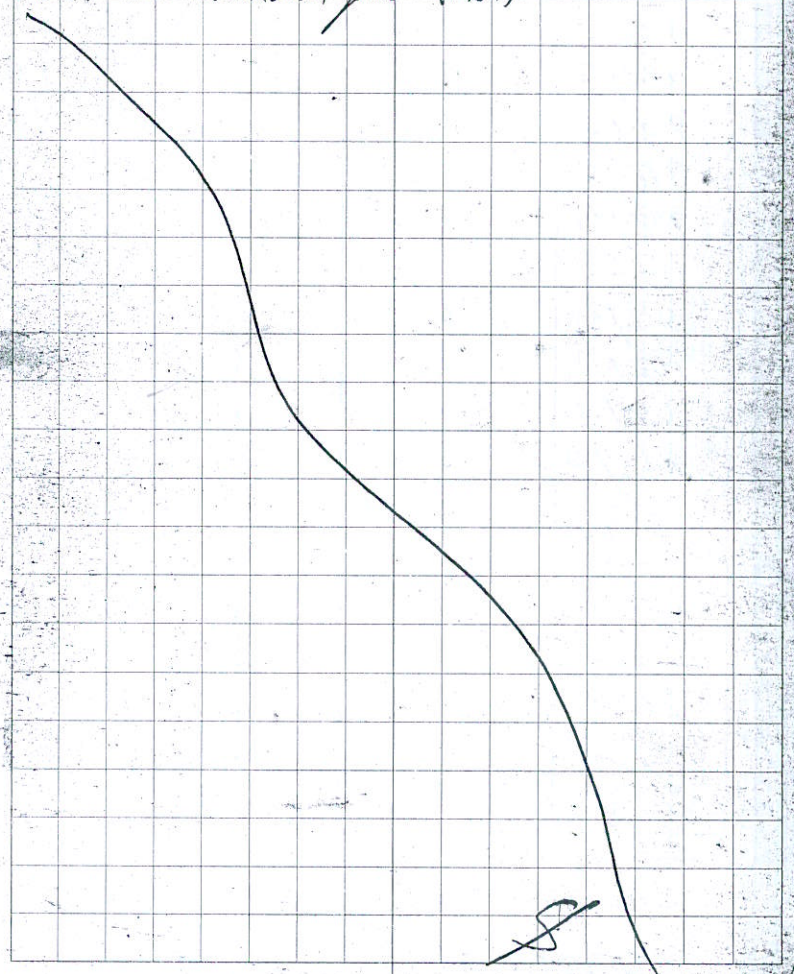
1541 - Findley offsite
- SCI/JS packing coolers

1625 - JS offsite to fed-ex

Location Sparrows Point Date 19 MAY 09

Project / Client

1631 - SCI offsite
1732 - SCI at location to pick up additional coolers
1839 - SCI arrived in York (12th)



Location Sparrows Point, MD Date 20 MAY 09

Project / Client Boring BP-HSA-03 cont

AM. 45° SUNNY PM

0600 - SCY depart York

0720 - SCY onsite

0731 - JS onsite

0740 - PID calibration UV5140Z 100 ppm isobutylene

initial zero	0.0	ppm
initial span	97.4	ppm
final zero	0.0	ppm
final span	99.2	ppm

CGI calibration 170-103360 50% methane

initial span	50%
final span	49%
initial zero	0%
final zero	0%

0741 - Findley onsite

0751 - mixing drilling mud to reduce upwelling of material in augers

0809 - resumed drilling BP-HSA-03

0837 - additional Findley helper onsite

0916 - will collect BP-SO-DUP1 (grout sample: BP-SO-B03-32)

Location Sparrows Point, MD Date 20 MAY 09

Project / Client

0928 - JS took site pictures

1104 - encountered native Talbot Formation - Black silty clay - slightly laminated - terminated boring at 36 feet. NS NAPL visible

1120 - Collected BP-SO-B03-32 and BP-SO-DUP1

1131 - driller began grouting borehole (Portland / bentonite grout per workplan SOP)

1355 - Findley Drillers (Dan Fincher) expressed concerns about constant methane gas monitoring
- SCY explained the borehole was sealed and monitors were placed down wind away from work zone ~ 20 feet
- EA will place monitor close to work zone however will increase trip hazard

1229 - Findley mobilized to dozer - constructed poly lined dozer pad
- SCY, JS surveyed BP-HSA-01 for access to avoid being in traffic

1230 - Lunch onsite

16

Location Sparrows Point, MD Date 20 MAY 09

Project / Client

1248 - waiting for pressure washer (Finding)
1308 - pressure washer onsite (20 min down time)
* pressure washer was onsite 5/19/09 - not sure why it was removed

1321 - began pressure washing augers and bit
1337 - began pressure washing spoons and other equipment
1359 - completed decontamination

1404 - began mobilizing to BP-HSA-01
1420 - setup on BP-HSA-01

1429 - began BP-HSA-01

1508 - PID readings at wellhead (auger) are 50.7 ppm - BZ readings are 0.0 ppm - likely due to steady SE wind at 5-10 mph

1529 - end drilling at 10ft - collected BP-SO-B01-S from CW contact
- began securing rig
1550 - JS offsite to Fed Ex
1551 - Finally offsite
1600 - SCY offsite 1745 - SCY in York (11.45 HR)

17

Location Sparrows Point, MD Date 20 MAY 09

Project / Client BP-HSA-01 air monitoring

	Time	BZ?	PID (ppm)	CGI (%)
	1424 (background)	Y	0.0	0 / 21.5
	1447 (CHK IN CUTTINGS	Y	0.0	0 / 21.6
	1500	Y	0.0	0 / 21.5
	1508 (50.7 at wellhead)	Y	0.0	0 / 21.5
	1517	Y	0.0	0 / 21.6
	1524	Y	0.0	0 / 21.5
5/21	0744	Y	0.0	0 / 21.5
	0753	Y	0.0	0 / 21.0
	0801 (20.4 at wellhead)	Y	1.8	0 / 21.5
	0814	Y	0.0	0 / 21.6
	0827	Y	1.3	0 / 21.6
	0836	Y	0.0	0 / 21.6
	0844	Y	0.0	0 / 21.5
	0857	Y	3.2	0 / 21.5
	0923	Y	0.0	0 / 21.6
	0926	Y	0.0	0 / 21.6
	0931	Y	0.0	0 / 21.5
	0954	Y	0.0	0 / 14.4
	1013	Y	0.0	0 / 21.5

Location Sparrows Point Date 21 MAY 09

Project / Client Boring BP-HSA-01

0549 - SCY depart. York
0657 - SCY onsite

0700 - PID Calibration U51407X 100ppm isobutylene
initial zero 0.0 ppm
initial span 97.6 ppm
final zero 0.0 ppm
final span 99.4 ppm

LEL Calibration 170-103360 50% methane
initial zero 0%
initial span 51%
final zero 0%
final span 52%

0720 - Fieldlab onsite
0739 - JS onsite
0745 - resumed drilling BP-HSA-01

★ PID readings at 80.7 ppm sustained at +3 in BGS at borehole and 0.0 ppm at +6 in
→ instructed helper and driller to not work within +12 in of borehole/surface

Location Sparrows Point Date —

Project / Client

Soil Sampling Log

Sample ID	Soil Description	Date/Time	Visible NAPL	Color (Munsell)
BP-SO-B01-20	SLAG/FILL - POORLY GRADED M-C SAND (0-3 INCHES) - SILTY CLAY - MED PLASTICITY WITH LIMESTONE SAND BEDS (1-3 INCHES)	5/21/09 930	N	VD BRN (10YR 2/2)
BP-SO-B04-10	SLAG/FILL - MODERATELY GRADED M-C SAND - SUBANGULAR - <10% NONPLASTIC SILTY FINES - TR. ASPHALTIC DEBRIS - SAT	5/21/09 1230	N	BLACK (10YR 2/1)
BP-SO-B04-16	SLAG/FILL - POORLY GRADED M-C SAND - SUBANGULAR - SAT - ~20% NONPLASTIC SILTY FINES - ODOR	5/21/09 1510	N	VD BRN (10YR 2/2)
BP-SO-B04-24	SLAG/FILL: Poorly graded m-f sand - Subangular - wet ~15% nonplastic silt fines	5/22/09 0830	N	VD BRN (10YR 2/2)

Location Sparrows Point, MD Date 21 MAY 09

Project / Client

0926 - encountered silty clay native soil at 21 ft bgs
- contacted FB
- No well, however, can revisit hope to set well in high PID zone from 12-19 ft.

0930 - collected sample from 20-22 - BP-SO-BOR-20

0947 - grouted up BP-HSA-01 and broke down equipment

1007 - mobilized to clean augers and equipment

1037 - completed clean - mobilized to BP-HSA-04
1048 - set up on BP-HSA-04
1051 - began drilling BP-HSA-04

1120 - SLY met with Doug to check locations BP-HSA-02 and 05 - both clear, but will offset BP-HSA-02 ~12 ft W to clear overhead utilities
Doug cellphone: 443-695-1440

Location Sparrows Point Date 21 MAY 09

Project / Client BP-HSA-04 air monitoring

TIME	BZ?	PID (ppm)	LEL (%)
1050	Y	0.0	0/21.5
1100	Y	0.0	0/21.5
1109	Y	0.0	0/21.5
1111	N	0.0	—
1126 (cuttings at wellhead)	Y	0.0	0/21.6
1139	Y	0.0	0/21.5
1146	Y	0.0	0/21.6
1159	Y	0.0	0/21.6
1240 (24.7 at wellhead)	Y	0.0	0/21.6
1250	Y	0.0	0/21.6
1259	Y	0.0	0/21.6
1316	Y	0.0	0/21.6
1330	Y	0.0	0/21.6
NO DRILLING	- OFFSET		
1356	Y	0.0	0/21.6
1410	Y	0.0	0/21.6
1425	Y	0.0	0/21.6
1431	Y	0.0	0/21.6
1446	Y	0.0	0/21.6
1459	Y	0.0	0/21.6
1515	Y	0.0	0/21.6

Location Sparrows Point, MD Date 21MAY09

Project / Client Boring BP-HSA-04

*PID reading at opening/surface 6.8 ppm at borehole
- advised driller/helper to avoid going <12 inches to opening of auger

1159 - rig down to fix a loose bolt on the mast
1300 - refusal @ 15.3
- per FB, offset 10 ft and drill down to 14 ft and resume split spoons - abandon original borehole

1309 - began removing augers
1343 - began setup on offset BP-HSA-04
1348 - began drilling BP-HSA-04
1440 - resumed sampling
1530 - ended sampling/drilling at 22 ft

1540 - Finding offsite
1600 - SG + JS off-site

Location Sparrows Point, MD Date 22 May 09

Project / Client Boring BP-HSA-04

0720 JCS on site + Findling on-site.

PID Calibration MS1402x 100 ppm isobutylene

initial zero	0.0 ppm
initial span	114 ppm
final zero	0.0 ppm
final span	102 ppm

CGI Calibration 170-103360 50% methane

initial zero	0%
initial span	72%
final zero	0%
final span	50%

0730 Resume drilling at BP-HSA-04
0755 Native soil reached at 24-26 ft bgs. Frank Barranco request one more interval to confirm native soil. Then set well ~~from~~ at 26 ft bgs, 10 ft screen 16-26 ft bgs.
0810 Sandy clay/native soil confirmed from 26-28 ft bgs.
0825 Findling begin setting well with screen at 16-26 ft bgs.

Location Sparrows Point, MD Date 22 May 09

Project / Client

0930 Findling continue to set well Sand 2ft above well screen to 14ft bgs. Bentonite seal from 14-14 ft bgs.

0940 Findling begin mixing concrete to complete well installation and abandon initial hole.

1015 Findling allowing concrete to set up before installing well casing. depart to decon augers + spoons.

1055 Well casing + Concrete pad set around well # BP-HSA-04. Findling Clean up around location and continue deconing augers + rods

1127 Move to BP-HSA-02 and begin drilling.

1245 Sample taken at 8-10ft bgs.

1330 BP-HSA-02 drilling complete Native soil reached at approx 23 ft bgs. Drillers leave auser in ground over weekend while well construction is determined.

1410 Findling depart site.

1445 JS depart site.

Location Sparrow Point, MD Date 22 May 09

Project / Client BP-HSA-04. air monitoring

Time	BZ?	PID (ppm)	LEL (%)
0737	Y	0.0	0/20.9
0748	Y	0.0	0/20.9
0759	Y	0.0	0/20.9
0810	Y	0.0	0/20.9
0815 (163 ppm at borehole)	Y	0.0	0/20.9
0830	Y	0.0	0/20.9
0845	Y	0.0	0/20.9
0901	Y	0.0	0/21.3
0917	Y	0.0	0/21.2
0927 (209 at borehole)	Y	0.0	0/21.2
0946	Y	0.0	0/21.3
1001	Y	0.0	0/21.4
BP-HSA-02	Air monitoring		
1126 (Background)	N	0.0	0/21.3
1135	Y	0.0	0/21.3
1145	Y	0.0	0/21.4
1157 (4.6 ppm at borehole)	Y	0.0	0/21.4
1210	Y	0.0	0/21.4
1224 (54 ppm in augers)	Y	0.0	0/21.4
1236	Y	0.0	0/21.4
1245	Y	0.0	0/21.4
1257	Y	0.0	0/21.3

Location: Sparrows Pt. Date:

Project / Client: Air Monitoring
BP-HSA-02

Time	BZ (?)	PID (ppm)	CGI (%)
1305	Y	0.0	0/21.4
1315	Y	0.0	0/21.4
1324	Y	0.0	0/21.4
1335	Y	0.0	0/21.4
1341	Y	0.0	0/21.4
5/26/09			
0805 (back ground)	N	0.0	0/20.9
0820	Y	0.0	0/20.9
0830	Y	0.0	0/20.9
0845	Y	0.0	0/20.9
0901	Y	0.0	0/20.9
0917	Y	0.0	0/20.9
0930	Y	0.0	0/20.9
0940	Y	0.0	0/20.9
0952 (30 min @ borehole)	Y	0.0	0/20.9
1003	Y	0.0	0/20.9
1012	Y	0.0	0/20.9
1023	Y	0.0	0/20.9

Location: Sparrows Point, MD Date:

Project / Client:

Soil Sampling Log

Sample ID	Soil Description	Date/Time	Visible NAPL	Color (Munsell)
BPSO-B02-08	Slag/fill - Moderately graded md-crs SAND subangular, non plastic	5/22/09 1245	No	Black (10YR 2/1)
BP-SO-B03-14	Slag/fill poorly graded md-crs SAND, subangular ~10% fines low plasticity silt + clay.	5/22/09 1345	No	VD Brown (10 YR 2/2)
BP-SO-B03-20	Slag/fill moderately graded md-crs SAND, subangular ~20% medium plasticity silt + clay	5/22/09 1410	No	VD Brown (10 YR 2/2)
BP-SO-B05-8	Slag/Fill - GRAVEL-COAL FRAG - POORLY SORTED - ANGULAR - <5% FINE SAND AND NONPLASTIC FINES	5/27/09 0915	YES	GREENISH BLACK 6GY1 1/6Y

Location Sparrows Point, MD Date 5/26/09

Project / Client Boring, BP-HSA-02 well installation

0800 JS arrive on-site, Findling on-site EA determined that 2 wells would be installed at this location. One well, shallow, at 5-15 ft bgs and one deep well with screen at 14-24 ft bgs.

0815 Findling begin setting deep well.

PID Calibration 451402X 100 ppm isobutylene

initial zero	0.0 ppm
initial span	94.6 ppm
final zero	0.0 ppm
final span	102 ppm

CGI Calibration 170-103360 50% methane

initial zero	0%
initial span	48%
final zero	0%
final span	50%

0930 Deep well set. Findling offset 5 ft west and begin drilling shallow well.

1040 Refusal of augers at 9.5 ft bgs. Findling abandon hole and offset.

1130 Findling finishing deep well and abandon shallow hole.

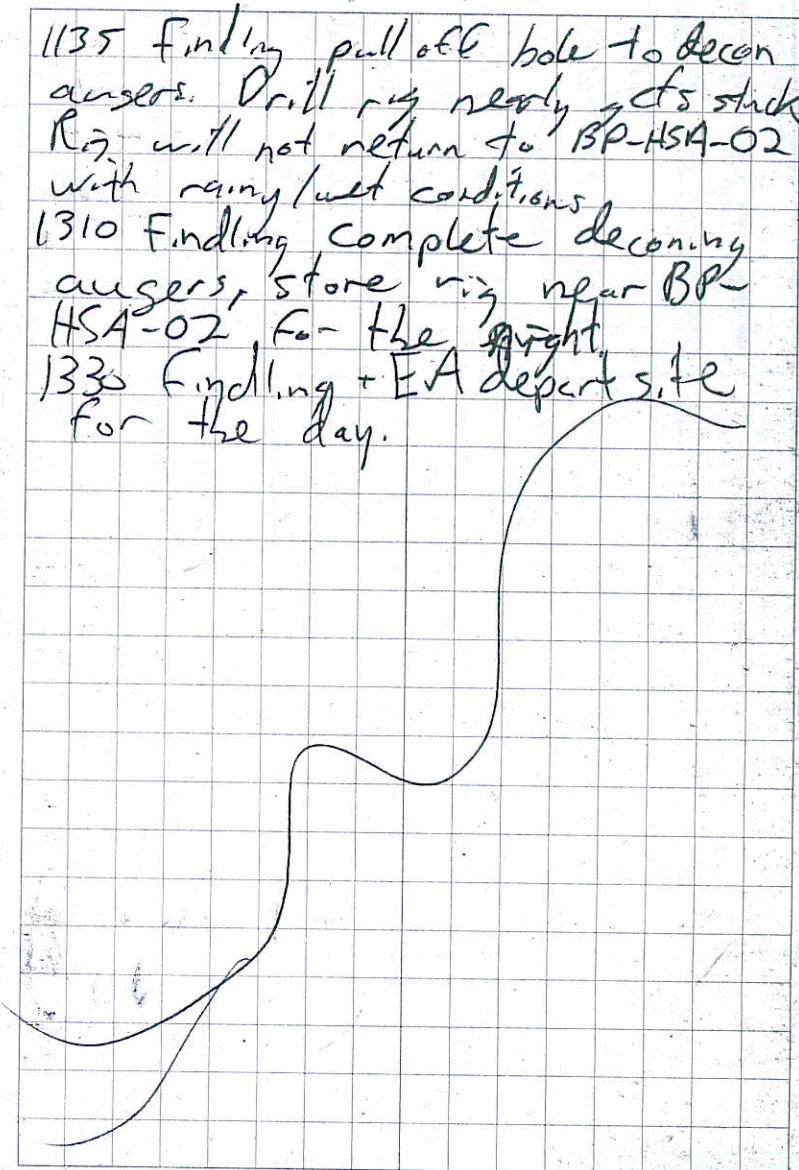
Location Sparrows Point, MD Date 5/26/09

Project / Client

1135 Findling pull off hole to decon augers. Drill rig nearly 4 cfs stuck. Rig will not return to BP-HSA-02 with rainy/wet conditions

1310 Findling complete deconing augers, store rig near BP-HSA-02 for the night.

1330 Findling + EA depart site for the day.



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Location Sparrows Point, MD Date 27 MAY 09

Project / Client Boring BP-HSA-05

0730 - SCY, JS, Fred by onsite

0740 - began moving to BP-HSA-05

0755 - PID calibration V51402X 100 ppm isobutylene

initial zero	0.0 ppm
initial span	98 ppm
final zero	0.0 ppm
final span	102 ppm

CGI calibration 170-103360 50% methane

initial zero	0%
initial span	48%
final zero	0%
final span	50%

0800 - began drilling BP-HSA-05

0839 - PID kick at 10.7 ppm at 2 ft from borehole during augering - advised workers to avoid bkg dose - 5.4 ppm at borehole

0840 - Visible NAPL on core liner and pocket of NAPL in liner - collected 6-8 (BP-SO-BOS-6) for META fingerprint

Location Sparrows Point, MD Date 27 MAY 09 31

Project / Client Air Monitoring
BP-HSA-05

Time	BZ?	PID (ppm)	CGI (%)
0800 (Back.)	~~Y~~	0	0/20.9
0802	Y	0	0/20.9
0811	Y	0	0/20.9
0823 (44.6' bgs borehole)	Y	1.8	0/20.9
0830	Y	0.7	0/20.9
0839	Y	0.9	0/20.9
0848	Y	0.0	0/20.9
0850	N	0.0	0/20.9
0901	Y	2.0	0/20.9
0914	Y	2.6	0/20.9
0921	Y	2.4	0/20.9
0937	Y	1.6	0/20.9
0951	Y	1.0	0/20.9
1011	Y	5.4 *	0/20.9
1026	Y	2.3	0/20.9
1050	Y	1.4	0/20.9
1100	Y	0.0	0/20.9
1212	Y	0.0	0/20.9
1236	Y	0.0	0/20.9
1309	Y	36.7 *	0/20.9
1307	Y	3.6	0/20.9
1313	Y	1.6	0/20.9
1320	Y	3.4	0/20.9

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Location Sparrows Point Date 27 MAY 09

Project / Client

* told driller to begin drawing cuttings

945 - collected TA sample BP-50-B05-8 at 945

1040 - collected TA sample BP-50-B05-20 at 945
- collected TA sample BP-50-B05-14 at 1050

1104 - per FB - will abandon BP-50-B05 and redrill shallow hole from 4-14

1120 - began grouting up original BP-50-B05
1204 - offsite to backfill shallow hole
1212 - began drilling shallow BP-HSA-05

1240 - rig down for 20 min to retool auger keyways
1301 - resumed drilling

1332 - began setting shallow well in BP-HSA-05
- screen from 4-14 ft 20-slot

1409 - completed installing BP-HSA-05 shallow well
1506 - JS offsite to labs
* per KO - No trip blanks until TA sends more to EA

Location Sparrows Point, MD Date

Project / Client Soil Sampling L06

Sample ID	Soil Description	Date/Time	Visible NAPL	Color
BP-50-B05-14	VC SAND AND GRAVEL-MOD SORTED-SUBANGULAR	5/27/09 1050	N	BLUISH GRAY 5GY 5/1
BP-50-B05-20	VC SAND AND GRAVEL-POORLY SORTED-SUBANGULAR-10% NONPLASTIC SILTY FINES	5/27/09 1045	N	BLUISH GRAY 5GY 5/1
BP-50-B05-8	VC SAND AND GRAVEL-POORLY SORTED-15% NONPLASTIC SILTY FINES-SLIGHT BZ ODOR-NO STAINING	5/28/09 0930	N	VD BROWN 10YR 2/2
CT-50-B03-10	POORLY SORTED-M-C SAND AND GRAVEL-SUBANGULAR-5% ANGULAR GRAVEL-MODOR-NO STAINING	5/29/09 1300	N	VD BRN 10YR 2/2
CT-50-B03-20 (CT-50-B04-0911)	MOD. SORTED-VC-C SAND-SUBANGULAR-<1% GRAVEL-<1% NONPLASTIC SILTY FINES-NAPODR-NO STAINING-SHEEN ON LINER	5/29/09 1430	N	VD BRN 10YR 2/2

Location Sparrows Point, MD Date 27MAY09

Project / Client BP-HSA-05
BP-MW-025 installation

TIME		BZ	PID (PPM)	LEL (%)
1330		Y	44.6 *	0/20.9
1339		Y	4.7	0/20.9
1350		Y	5.6 *	0/20.9
1401		Y	6.9 *	0/20.9
1409		X	4.2	0/20.9
1419		X	1.6	0/20.9
0820	BP-MW-025	Y	0.0	0/20.9
0830		Y	0.0	0/20.9
0841		Y	0.0	0/20.9
0856		Y	0.3	0/20.9
0908		Y	1.4	0/20.9
0929		Y	1.6	0/20.9
0948	(34.8' tracks)	Y	2.4	0/20.9
1040		Y	0.0	0/20.9
1050		Y	0.0	0/20.9
1104		Y	0.0	0/20.9
1115		Y	0.0	0/20.9
1127		Y	10.4*	0/20.9
1132		Y	0.0	0/20.9
1144		Y	0.0	0/20.9
1157		Y	0.0	0/20.9

Location Sparrows Point Date 27MAY09

Project / Client

* driller will decon rods on 28 MAY09 morning

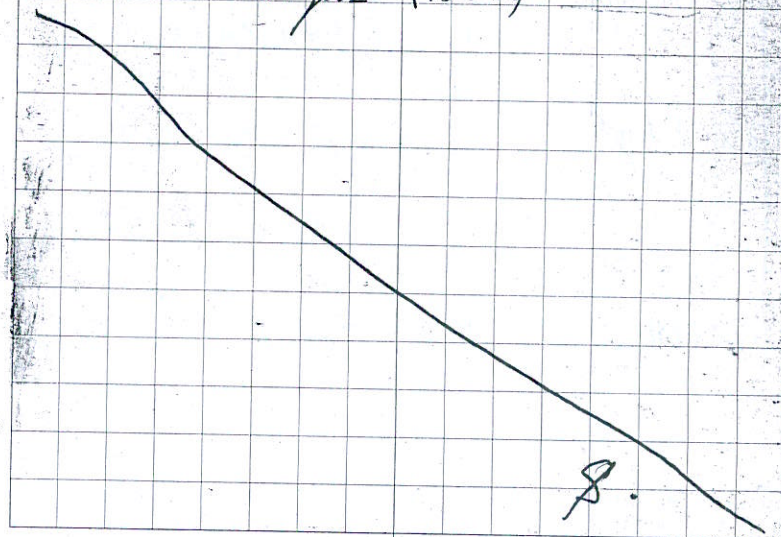
* per Beversdorf (Doug) - Coke Oven area locations are clear - will drop off signed permit to SCI onsite

1532 - SCI, Ending offsite

1629 - SCI at Canton for coolers

1804 - SCI departs Canton

1836 - SCI arrival on Yard (13.5 HRS)



Location Sparrows Point, MD Date 28 MAY 09

Project / Client Installation of BP-MW-02S

0537- SCY depart York
0712- SCY onsite
0720- Findley onsite
0734- JS onsite
0735- Findley decoming augers from 27/MAY drilling

* per FB- collect META from BP-MW-02S at 8-10 feet and sleeve
- set well screen 4-14

0820- began drilling BP-MW-02S

0850- PID calibration UV5140ZX 100 ppm isobutylene
initial zero 0.0 ppm
initial span 97 ppm
final zero 0.0 ppm
final span 102 ppm

0930- collected BP-SO-B02S-8 for META fingerprint sample

0949- Refusal @ 10.2 ft in BP-~~SB~~MW-02
- Rig down to repair cutting head

Location Sparrows Point, MD Date 28 MAY 09

Project / Client

1010- began abandoning first attempt at BP-MW-02S

1040- began offset redrill of BP-MW-02S

1136- began installing BP-MW-02S - screen from 4-14 ft

1251- completed installing BP-MW-02S

1253- Doug Fort onsite to drop off signed dig permit for coke oven area

1259- began decon of auger after BP-MW-02S

1342- completed decanning augers and downhole tools

1353- began mobilizing to CO-HSA-03

1419- per DF- No drilling due to bad cutter head
1434- JS offsite
1444- Findley offsite
1451- SCY offsite
1609- SCY depart Loveton
1706- SCY arrive York (12.5 H)

Location Sparrows Point, MD Date 29 MAY 09

Project / Client

0750 - SCY depart York
0908 - SCY onsite

0927 - NAPL well gauging

ID	DTN (FTBGS)	DTW (FTBGS)	NAPL THICKNESS (FT)
~~BP-MW-01~~	NOT INSTALLED		
BP-MW-04	ND	9.97	ND
BP-MW-02D	ND	9.46	ND
BP-MW-02S	ND	9.46	ND
BP-MW-05	6.74	10.61	3.87

* install 4 delineation wells around BP-MW-05

1040 - JS, Findley onsite

PID calibration U51402X
Initial zero 0.0 100 ppm Isobutylene
Initial span 102
Final zero 0.0
Final span 103

CGI calibration 107-105360
Initial zero 0% 50% Methane
Initial span 48%
Final zero 0%
Final span 50%

Location Sparrows Point, MD Date —

Project / Client Air Monitoring

CT-HSA-03

Time		BZ (?)	PID (ppm)	CGI (%)
1111		~~X~~	0	0/20.9
1127		Y	0	0/20.9
1142		Y	0	0/20.9
1154		Y	0	0/20.9
1203		Y	0	0/20.9
1212		Y	0	0/20.9
1215		N	0	0/20.9
1222		X	0	0/20.9
1240		Y	0	0/20.9
1300		Y	0	0/20.9
1313	(0.07 Xylene)	Y	0	0/20.9
1319		Y	0	0/20.9
1331		Y	0	0/20.9
1342		Y	0	0/20.9
1357		Y	0	0/20.9
1410		Y	0	0/20.9
1421		Y	0	0/20.9
1444		Y	0	0/20.9
1129	CT-HSA-01 BACKGROUND	Y	0	0/20.9
1151		Y	0	0/20.9
1204		Y	0	0/21.4
1220		Y	0	0/21.4
1236		Y	0	0/21.4

Location Sparrows Point, MD Date 29 MAY 09

Project / Client

1111 - beggyn drilling CT-HSA-03
1130 - driller on phone - No drilling
1139 - resumed drilling
1227 - rig down to tighten bolt on mast and rig
1238 - resumed drilling

1300 - Collect sample from GW interface CT-SO-B03-10

1430 - collected sample CT-SO-B03-20 and CT-SO-DUP1

1500 - Collect CT-SO-B03-22

1520 - Finding office / JS office

1531 - SCY office

Location Sparrows Point, MD Date 29 MAY 09

Project / Client Soil Sample Log

SAMPLE ID	SOIL DESCRIPTION	DATE/TIME	VISIBLE NAPL	COLOR
CT-SO-B03-22	MED. GRADED M-C SAND - <5% GRAVEL - SUBANGULAR - 5% NONPLASTIC SILTY FINES	5/29/09 1500	N	VA BRN 10YR 2/2
CT-SO-B01-10	P. GRADED M-C SAND - ANGULAR - <5% SILTY FINES - SAT - <5% GRAVEL - SUBANGULAR - NO ODOR - NO STAINING	6/2/09 915	N	VD BRN 10YR 2/2
CT-SO-B01-18 (MS/MSD)	P. GRADED M-C SAND - ANGULAR - 5% SILTY FINES - ~~HEAVY~~ NO STAINING - NAPL ODOR	6/2/09 1030	N	VD BRN 10YR 2/2
CT-SO-B01-14	P. GRADED M-C SAND - ANGULAR - TRACE GRAVEL - <5% NONPLASTIC SILTY FINES - SLIGHT BLK STAINING AND NAP ODOR	6/2/09 1100	N	VA BRN 10YR 2/2

Location Sparrows Point, MD Date 01 JUNE 09

Project / Client

0710 - SCY onsite
0810 - Fidelity onsite
0812 - JBohnsack

0829 - began operating and abandoning CT-HSA-01

PID Calibration — 100 ppm isobutylene

Initial zero	0.0
Initial span	109
Final zero	0.0
Final Span	102

CGI Calibration — 50% Methane

Initial zero	0%
Initial span	52%
Final zero	0%
Final span	50%

1002 - completed operating and abandoning CT-HSA-03
1016 - began dozen of augers and tools
1022 - SCY labeled all empty drums
1100 - completed dozen

1110 - setup on CT-HSA-01

Location Sparrows Point, MD Date 01 JUNE 09

Project / Client Air Monitoring

CT-HSA-01

	Time	REE?	PID (ppm)	CGI (%)
	1250	Y	0	0/21.4
	1300	Y	0	0/21.4
	1315	Y	0	0/21.4
	1319	N	0	0/21.4
	1336	Y	0	0/21.4
	1411	Y	0	0/21.4
	1441	Y	0	0/21.4
	1451	Y	0	0/21.3
6/2/09	0830	Y	0	0/20.9
	0848	Y	0	0/20.9
	0856	Y	0	0/20.9
	0910	Y	0	0/20.9
	0924	Y	0	0/20.9
	0936	Y	0	0/20.9
	0944	Y	0	0/20.9
	1010	Y	0	0/20.9
	1040	Y	0	0/20.9
	1100	Y	0	0/20.9
	1139	Y	0	0/20.9
6/3/09 CT-HSA-05	0939	Y	0	0/20.9
	0950	Y	0	0/20.9
	1024	Y	0	0/20.9
	1040	Y	0	0/20.9

Location Sparrows Point, MD Date 1 JUNE 09

Project / Client

1142- began drilling CT-HSA-01

1300- very hard drilling from 4.5 ft to - likely concrete fill material

1345- auger refusal @ 5.5 ft - offset 8 ft SE

1404- resumed drilling on offset hole

1415- end of drilling @ 8 ft

1519- refilled drill rig water tank

1538- Findling offsite

1544- SCY/JS offsite

Location Sparrows Point, MD Date 2 JUNE 09

Project / Client

0717- SCY onsite

0730- PID Calibration 100 ppm isobutylene

initial zero 0.2 ppm

initial span 93.8 ppm

final zero 0%

final span 103 ppm

CGI Calibration 50% methane

initial zero 0%

initial span 46%

final zero 0

final span 50%

0736- JS onsite

0811- Findling onsite

0826- resumed drilling CT-HSA-01

0915- collected sample CT-SO-B01-10

0956- slight mothball odor (Napthalene) at 14-16 ft

1030- collected CT-SO-B01-18 (MS/MSD) and META fingerprint

Location Sparrows Point, MD Date 6/2/09

Project / Client

1100 - completed drilling CT-HSA-01
unit install well from 12-22 feet
CT-MW-01

- collected CT-SO-B01-14 at 1100

1111 - began installing CT-MW-01

1244 - began spacing up original CT-HSA-01 borehole

1412 - refueling drill rig

1440 - RAN out of concrete for surface completion
1446 - JS offsite to plant
1500 - Findling offsite
1530 - SCY offsite

Location Sparrows Point, MD Date 6/3/09

Project / Client

0736 - SCY onsite
JS onsite
0745 - Findling onsite
0752 - began clean of augers and downhole tools

0801 - PID calibration UV51402X 100 ppm isobutylene
initial zero 0 ppm
initial span 89.6 ppm
final zero 0 ppm
final span 103 ppm

CGI calibration 170-105360 50% methane
initial zero 0%
initial span 50%
final zero 0%
final span 50%

0829 - SCY and JS restaked CT-HSA-04 and 05
0855 - set up on CT-HSA-05

0939 - began drilling CT-HSA-05

1040 - auger refusal at 6.5 ft. offset 10 ft NW

Location Sparrows Point, MD Date —

Project / Client

Air Monitoring Log ~~Soil Sampling Log~~

TIME		BZ (?)	PID (ppm)	LEL (%)
1202		✓	0	0/21.4
1220		✓	0	0/21.4
1250		✓	0	0/21.4
1314	CT-HSA-04 6/4/09	✓	0	0/21.4
0756		✓	0	0/20.9
0831		✓	0	0/20.9
0906		✓	0	0/20.9
1030		✓	0	0/20.9
1050		✓	0	0/20.9
1103		✓	0	0/20.9
1115		✓	0	0/20.9
1140		✓	0	0/20.9
1203		✓	0	0/20.9
0800	CT-HSA-02 6/5/09	✓	0	0/20.9
0808		✓	0	0/20.9
0822		✓	0	0/20.9
0840		✓	0	0/20.9
0857		✓	0	0/20.9
0926		✓	0	0/20.9
0929		✓	0	0/20.9
1248		✓	0	0/21.4
1303		✓	0	0/21.5
1320		✓	0	0/21.5

Location Sparrows Point, MD Date —

Project / Client

Soil Sampling Log

SAMPLE ID	SOIL DESCRIPTION	SAMPLE DATE/ TIME	VISIBLE NAPL?	COLOR
CT-SO-B04-10	POORLY SORTED GRAVEL- SUBANGULAR TO ANGULAR- <5% VF-F SAND - SUBANGULAR- WET- TRACE NONPLASTIC SILTY FINES	6/4/09 1110	N	BLK 10YR 2/2
CT-SO-B04-18	POORLY SORTED-COARSE TO VERY COARSE SAND-SUBANGULAR- 5% ANGULAR GRAVEL - TRACE NONPLASTIC SILTY FINES- WET-	6/4/09 1210	N	BLK 10YR 2/2
CT-SO-B04-14	POORLY SORTED- COARSE TO VERY COARSE SAND - SUBANGULAR- <5% ANGULAR GRAVEL — FINE SAND- <5% SILTY FINES- SLIGHT NAPTHALENE ODOR	6/4/09 1230	N	BLK 10YR 2/2
CT-SO-B02-12	POORLY SORTED- MEDIUM TO COARSE SAND AND GRAVEL- SUBANGULAR- <10% NONPLASTIC SILTY FINES- MOIST- NO ODOR - NO STAINING	6/8/09 1320	N	BLK 10YR 2/2

Location Sparrows Point, MD Date 6/3/09

Project / Client

1150- auger refusal at 6.5 ft offset 20 ft NW
1202- resumed drilling
1249- auger refusal at 5 ft offset 40 ft E
1250- resumed drilling
1322- auger refusal at 4 ft
1329- began backfilling and abandoning offset boreholes
1342- begin surface completion of CT-HSA-01

1359- mobed supplies to grout up last remaining offset borehole

1440 - Findling offsite
1519- SCY/JS offsite

Location Sparrows Point, MD Date 6/4/09

Project / Client

0550- SCY depart York
0710- SCY onsite

0720- PID Calibration 100ppm isobutylene

initial zero	0ppm
initial span	91ppm
final zero	0ppm
final span	102ppm

LEL Calibration 50% methane

initial zero	0%
initial span	47%
final zero	0%
final span	51%

0736- JS onsite
0741- Findling onsite
0752- begin drilling CT-HSA-04

~~NAPL ...~~ 0840- encountered concrete/cement at 2.5 feet in CT-HSA-04 - possible building foundation

0819- JS to gauge NAPL in wells

Location Sparrows Pt. Date 6/4/09

Project / Client

NAPL GAUGING

ID	DTN (BOS FT)	DTW (BGS FT)	NAPL THICKNESS (FT)
BP-MW-04	—	9.98	—
BP-MW-05	6.81	10.34	3.53
BP-MW-02S	—	9.25	—
BP-MW-02D	—	9.34	—
CT-MW-01	—	9.05	—

1005 - refusal on concrete (tank pad?) - offset 100 ft due west

1020 - resumed drilling at offset location

1110 - collected CT-SO-B04-10

1210 - collected CT-SO-B04-18

1230 - collected CT-SO-B04-14 -
* slight sheen on soil water from 20-22 feet

1245 - began grouting and abandoning CT-SO-B04
1438 Complete decon of augers.
1500 Set up at CT-HSA-02.
1515 EA + Findling off-site.

Location Sparrows Point Date 6/5/09

Project / Client

0715 JS on site at CT-HSA-02 and begin calibration of PID + CGI.

PID Calibration — 100 ppm Isobutylene
initial zero: 0.0
initial span: 85.8
final zero: 0.0
final span: 99.6

CGI Calibration — 50% methane
initial zero: 0%
initial span: 46%
final zero: 0%
final span: 50%

0736 Findling on-site and inform that they will not be drilling in the rain.
0750 Findling transferring water to drill rig tank.
0900 Findling + EA off-site.

Location Sparrows Point Date 6/5/09

Project / Client CT-HSA-02 Air Monitoring

Time		BZ?	PID (ppm)	CGI (%)
1330		Y	0	0/21.4
1340		Y	0	0/21.4
1352		Y	0	0/21.4
1406		Y	0	0/21.4
1420		Y	0	0/21.5
1444		Y	0	0/21.5
1010	6/9/09 CT-HSA-05	Y	0	0/21.5
1036		Y	0	0/21.4
1048		Y	0	0/21.4
1059		Y	0	0/21.4
1110		Y	0	0/21.5
1129		Y	0	0/21.4
1150		Y	0	0/21.4
1212		Y	0	0/21.4
1304	CT-MW-05 INSTALLATION	Y	0	—

Location Sparrows Point, MD Date —

Project / Client SOIL SAMPLING LOG

SAMPLE ID	SOIL DESCRIPTION	DATE/TIME	USIBLE VAPR	COLOR
CT-SO-B02 16	MODERATELY SORTED MEDIUM TO COARSE SAND - SUBANGULAR TO ANGULAR - <10% SUBANGULAR GRAVEL - 5% NONPLASTIC SILTY FINES -	6/8/09 1400	NAPTHALENE ODOR SHEEN ON SPLIT SPOONS	BLK 10YR 2/1
CT-SO-B02-20	NATIVE MATERIAL - WELL SORTED FINE SAND - <5% VF-F SAND	6/8/09 1420	NAPTHALENE ODOR NO STAINING	VD GREENISH GRAY 5GY 3/1
CT-SO-B05-8	POORLY SORTED-MEDIUM TO COARSE SAND - SUBANGULAR - 10% GRAVEL - SUBANGULAR - <5% NONPLASTIC SILT FINES	6/9/09 1120	/ NO	BLK 10YR 2/1
CT-SO-B05-16	POORLY SORTED - FINE TO MEDIUM SAND - SUBANGULAR - <5% SUBANGULAR GRAVEL - TR. NONPLASTIC SILTY FINES -	6/9/09 1215	NO	BLK 10YR 2/1

Location Sparrows Point, MD Date 8 JUNE 09

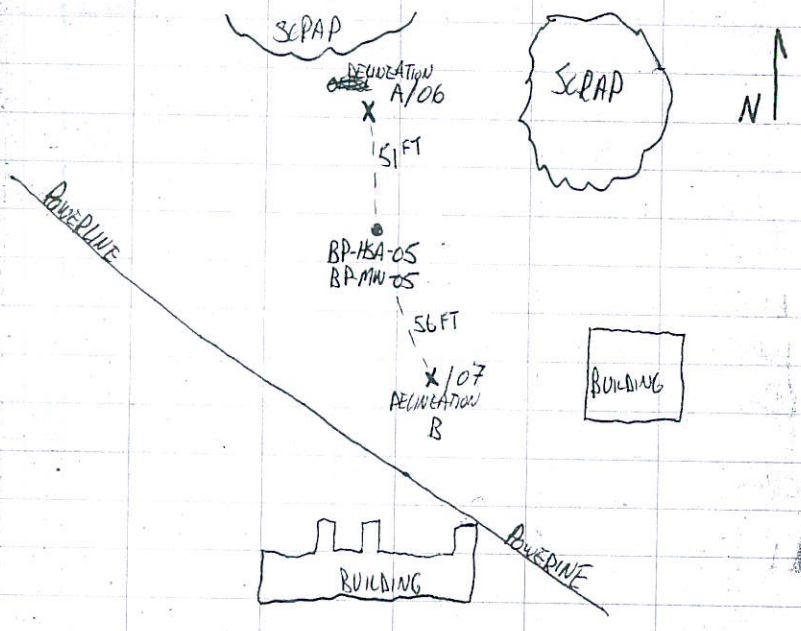
Project / Client

0720- SC onsite
0730- Findley onsite
0750- JS onsite

0759- begin CT-HSA-07

0831- auger refusal at 4.5 ft- stopped drilling head- will repair and offset 15 ft south

0844- per FB- delineation points cleared BP-HSA-05



Location Sparrows Point, MD Date 8 JUNE 09

Project / Client

- begin with 2 delineation holes
  - ~50 ft from BP-MW-05
  - collect 3 samples - target depth 5 ft below impact in BP-MW-05 ( )
  - continue drilling if free NAPL in cores

For well development:
- drum purge water and return to EA yard/pay for treatment
- bail bail or pump
- DO NOT develop BP-MW-05!
- purge 3 well volumes

Development Volumes and

WELL ID	WATER COLUMN	VOLUME (0.163 GAL/FT)	3 VOLUME
BP-MW-04	16.52 FT	2.69 GAL	8.07 GAL
BP-MW-02D	15.16 FT	2.47 GAL	7.41 GAL
BP-MW-02S	5.25 FT	0.86 GAL	2.56 GAL
CT-MW-01	12.95 FT	2.11 GAL	6.33 GAL

1000- drill rig down to repair broken hydraulic line
1136- Findley mechanic onsite
1145- " " off site
1221- " " onsite

Location Sparrows Point, MD Date 6/8/09

Project / Client

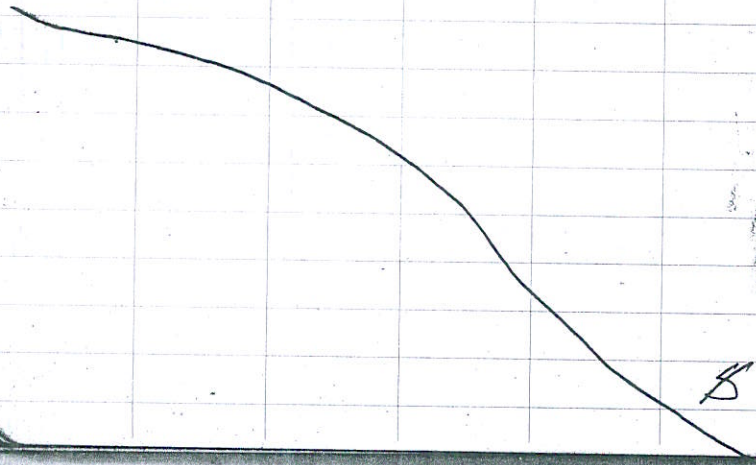
1236 - resumed drilling
1247 - Findley mechanic offsite
1400 - collect CT-SO-B02-16
1414 - slight naphthalene odor and sheen at 18 ft

1420 - collected CT-SO-B02-20 from native / full contact
1421 - completed boring CT-~~SO-B02~~-HSA-02 at 22 feet

1430 - began mixing grout to abandon CT-HSA-02

1527 - completed grouting - secured site
1530 - JS offsite to Fedex

1552 - Findley offsite
1559 - SCY offsite



Location Sparrows Point, MD Date 6/9/09

Project / Client

0719 - SCY onsite / Fyrdling onsite
- unloaded bollards at decon site

0735 - moved drill rig to decon pad

0741 - thunder and lightning → suspend work

0840 - began decanning augers

0859 - JS and Tony to begin well development
0932 - completed decanning augers and downhole tools

1007 - began drilling CT-HSA-05 (again)

1120 - collected CT-SO-B05-8 from groundwater contact

1139 - JS completed well development of BP-MW-04, 2D, 2S and CT-MW-01 - ~40 gallons removed

1215 - collected CT-SO-B05-16

Location Sparrows Point, MD Date 6/9/09

Project / Client

1230- collected GT-~~SO~~-BOS-20 from fill interval contact - slight sheen on soil - collected META PAH fingerprint sample

1236- terminated GT-~~SOBOS~~ HSA-05 at 22 ft
- will install well w/ screen from 10-20 ft
- 4 ft bentrite seal and no grout

1300- began installing GT-MW-05 (9.5-19.5)

1350- TS offsite to filter development water at EA warehouse

1443- completed GT-MW-05 installation

1457- began decon augers and downhole tools

1531- completed decon

1540- Finishing offsite

1550- SC offsite

Location Sparrows Point, MD Date ~~6/9/09~~

Project / Client Soil Sampling Log

SAMPLE ID	Soil DESCRIPTION	DATE/TIME	VISIBLE NAPL	COLOR
GT-SO-BOS-20 (META & TA)	POORLY SORTED - VF-F SAND AND SLAG - NATIVE VF WELL SORTED SAND - SAT - TR. SLAG	6/9/09 1230	Y - SHEEN	VD GREENISH GRAY (5GY 6/1)
BP-SO-BO8-8	Poorly sorted M-C SAND + SLAG fragments	6/11/09 0815	Benzene odor No	Black 10 YR 2/2
BP-SO-BO6-12	Poorly sorted M-C SAND, subangular 10% Slag.	6/11/09 0900	Yes	Black 10 YR 2/2
BP-SO-BO6-16	Poorly sorted m-fn SAND, slag, subangular 15% non plastic fines	6/11/09 0910	No	Med Gray

Location Sparrows Point, MD Date 6/10/09

Project / Client

0718 - SCY onsite ; Findley onsite
0726 - JS onsite

0730 - began installing bollards around CT-MW-01

Well MDE Permit Number	
CT-MW-01	BA-95-3038
BP-MW-05	BA-95 3036
BP-MW-02D	~~BA-95-3039~~
BP-MW-02S	
BP-MW-04	BA-95-3037

0814 - completed bollards at CT-MW-01

0819 - began installing 4 bollards at BP-MW-05
1040 - completed bollards at BP-MW-05

1051 - set up on BP-MW-04 to install 4 bollards

1210 - SCY to meet w/ Doug Knote to get permit for additional 2 delineation bollards

1400 Complete concrete bollards at BP-MW-05. Move to BP-MW-04.

Location Date 6/10/09

Project / Client

1500 Findley complete bollards for today

1530 Findley and EA depart site

Location Sparrows Point, MD Date 6/11/09

Project / Client

0720 EA on-site, Findling on-site

PID Calibration — 100ppm Isobutylene

Initial zero - 0.0
Initial span - 93
Final zero - 0.0
Final span - 102

CGI Calibration — 50% Methane

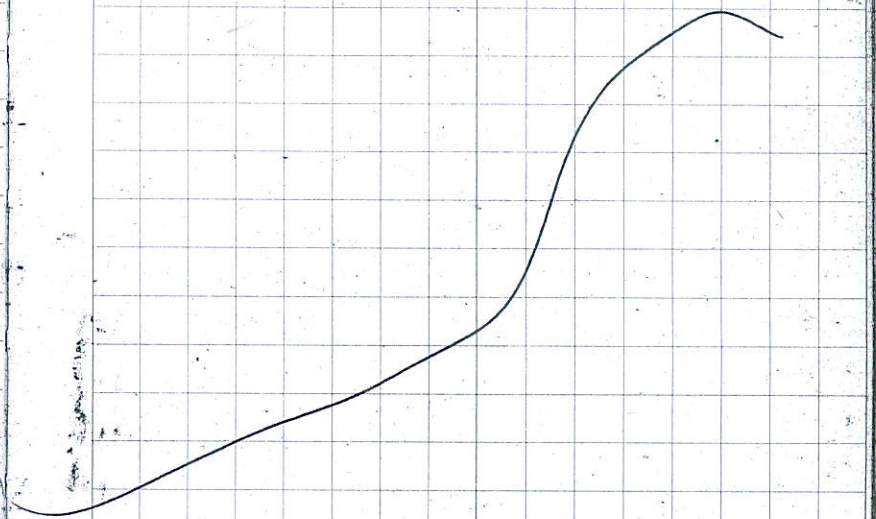
Initial zero - 0%
Initial span - 48%
Final zero - 0%
Final span - 50%

0730 Findling begin drilling at BP-HSA-06
0900 Findling complete drilling to 18ft bgs. Begin to pull augers and set well with screen from 6-16 ft bgs.
1035 JS call Frank Barranco of EA to determine sampling plan for delineation holes. He indicates that only one sample will be taken at delineation holes at most contaminated area. Findling move to BP-HSA-07.

Location Sparrows Point, MD Date 6/11/09

Project / Client

1055 Concrete complete at BP-MW-06 Findling begin drilling at BP-HSA-07.
1135 Refusal at 3.7 ft. Findling offset 3 ft. North.
1400 Complete drilling at BP-HSA-07 Set well with screen at 6-16 ft bgs.
1515 Findling complete well installation at BP-HSA-07.
1535 Findling + EA depart site.



Location Sparrows Point, MD Date 6/12/09

Project / Client

0730 EA + Findling on-site to decon augers.
0830 No well permits were prepared to continue drilling. Findling will spend day obtaining permits and well supplies for Monday 6/15/09.
0900 EA + Findling depart site.

Location Sparrows Pt., MD Date 6/15/09

Project / Client

0730 EA + Findling on-site.
0743 Findling begin drilling at BP-HSA-08.
0955 Boring complete at BP-HSA-08. Begin installation of MW with screen at 6-16 ft bgs.
1110 Setting well complete. Move to BP-HSA-09 SW of BP-HSA-05.
1138 Begin drilling at BP-HSA-09
1350 Complete boring at BP-HSA-09 to 20 ft bgs.
1405 Begin setting well at BP-HSA-09 with screen at 8-18 ft bgs.
1510 Setting well complete. Driller clean up for the day.
1600 EA + Findling depart site.

Location Sparrows Pt., MD Date 6/16/09

Project / Client

0715 EA arrive on-site, Findling on-site. Findling to develop wells.

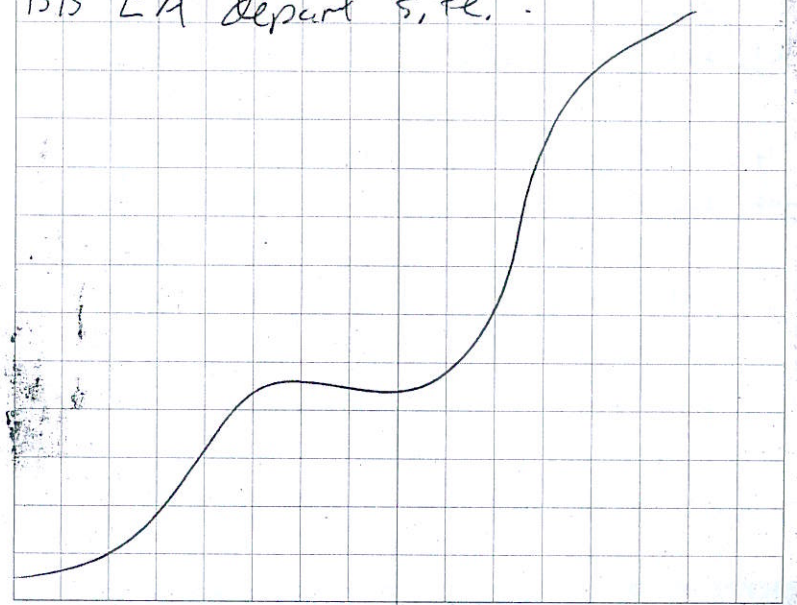
Well Gauging	WL	NAPL
BP-MW-09	6.91	—
BP-MW-08	6.09	—
BP-MW-07	6.50	—
BP-MW-06	7.76	—
BP-MW-05	10.23	6.61 3.62 Ft of NAPL

0720 Begin bailing BP-MW-09. Purge 10 gallons, to develop well.
0735 Well development at BP-MW-09 complete. Move to BP-MW-06 and begin development. Purge 10 gallons
0750 Complete development at BP-MW-06. Move to BP-MW-07 and begin development.
0855 Complete development at BP-MW-07. Purged 10 gallons. Move to BP-MW-08 and begin development.
0917 Development at BP-MW-08 complete. Purge 10 gallons. Move to CT-MW-05
0932 Gauge CT-MW-05 WL= 9.99 ft bgs no NAPL. Begin development.

Location Sparrows Pt., MD. Date 6/16/09

Project / Client

1005 Complete development of CT-MW-05. 10 gallons purged.
1040 Begin installing bollards at BP-MW-08.
1300 Complete drilling bollards at BP-MW-08. Begin concrete and drill rig move to BP-MW-06 and begin augering bollards.
1453 Complete augering at BP-MW-06 and move to BP-MW-07.
1505 Findling depart site.
1515 EA depart site.



Location Sparrows Pt., MD Date 6/17/09

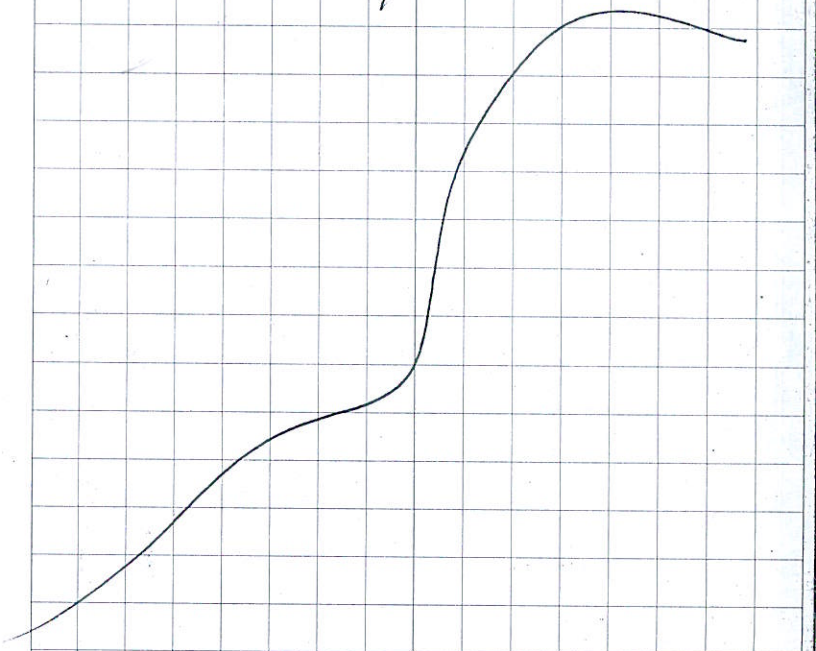
Project / Client

0730 EA + Findling on-site. Findling begin augering at BP-MW-07 bollards and continuing concrete at BP-MW-08.
0800 Frank Barranco of EA calls and informs JS to abandon CT-MW-05.
0830 JS gauge CT-MW-05 and CT-MW01 and no product indentified.
0845 FB indicates the EA will sample Severstal well C013-PZM008 for NAPL.
0914 Findling complete augering at BP-MW-07 and move to BP-MW-09. Continue concreting BP-MW-06.
1010 Findling hit a water ut. l.f. while auger bollards at BP-MW-09. EA notified Severstal and a ut. l.f. personel will arrive to assess situation. Area had previously been cleared by Severstal.
1045 Doug from Severstal ut. l.f. res arrive and determines pipe not in use and hole can be filled. Findling will abandon holes and no bollard will be installed.

Location Sparrows Pt, MD Date 6/17/09

Project / Client

1130 Move to CT-MW-05 and begin well abandonment.
1250 Well abandonment complete at ~~CT-~~BP-MW-05. Move to BP-MW-09 and concrete bollards.
1430 Concrete complete at BP-MW-09. Findling pack up equipment at decon pad.
1500 EA + Findling off-site.



Location Sparrows Point, MD. Date 6/18/09

Project / Client

0730 JS of EA on-site to complete final gauging and measurements at MW after development. Also GPS coordinates for MW's.
1010 Tony of Findling on site to complete concrete bollards at BP-MW-07
1200 Tony of Findling depart site.
1230 JS discovers 4.64 ft of product in BP-MW-08. JS informs Frank Barranco and FB indicates another well should be drilled 100 ft to NE of BP-MW-08.
1245 JS contacts Doug From Severstal Utility to clear location for utilities.
1300 Doug arrives at location and will contact JS with clearance.
1400 JS complete well gauging and measuring.
1430 JS depart site.

Location Sparrows Point, MD Date 6/19/09

Project / Client

0730 EA + Findling on-site. Findling begin setting up decon pad.
0800 Findling begin deconing augers
0855 Decon complete. Move to BP-HSA-$0.
0905 Calibrate meters

PID Calibration — 100ppm Isobutylene
Initial zero - 0.0
Initial span - 94
Final zero - 0.0
Final span - 103

CGI Calibration — 50% Methane
Initial zero - 0%
Initial span 48%
Final zero - 0%
Final span - 50%

1020 ~~Auger~~ Sample taken at 4-6 ft bgs. WT at approx 4 ft bgs.
1030 Auger refusal at 7.5 ft bgs Off-set 6 ft SW.
1250 Boring complete to 18 ft. well screen set at 4-14 ft bgs.

Location Sparrows Point, MD Date 6/19/09

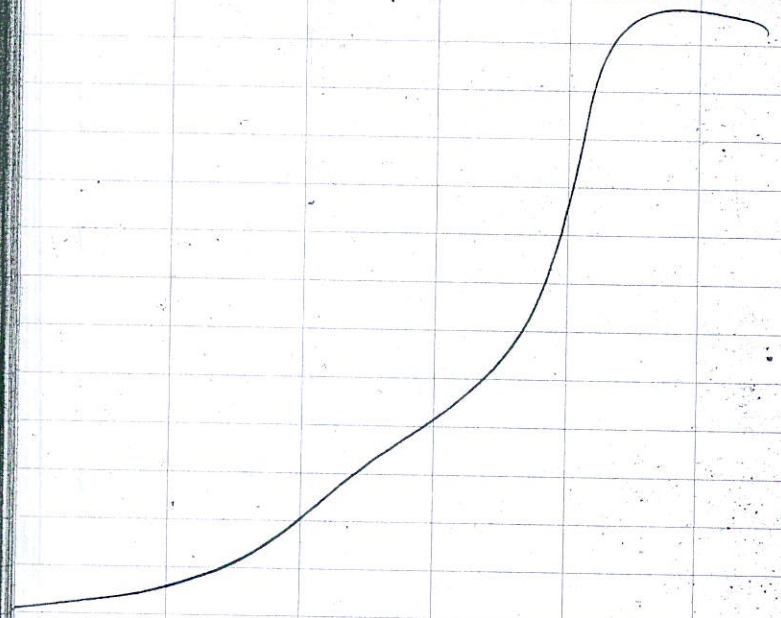
Project / Client

1300 Begin setting MW, Backfill hole to 14 ft bgs and set well. Sample interval 12-14

1330 Sample interval 16-18 at BP-HSA-10.

1345 Well setting complete. Finding begin to develop well with bailer.

1440 Finding clean up and depart site. EA depart site.



Location Sparrows Point, MD Date 6/22/09

Project / Client

0830 JS arrive on-site. Findling on-site. JS call Doug Fort from Severstal to clear location BP-HSA-11 of utilities.

0845 Findling begin drilling bollards for BP-MW-10.

0945 Findling complete bollard augering at BP-MW-10. Move to BP-HSA-11 and await utility clearance.

1100 Doug Fort of Severstal arrives to clear location of utilities

PID Calibration 100 ppm isobutylene

initial zero - 0.0
initial span - 107
final zero - 0.0
final span - 103

CGI Calibration 50% methane

initial zero = 0%
initial span = 42%
final zero = 0%
final span = 50%

Location Sparrows Point, MD Date 6/22/09

Project / Client

1120 Location cleared of utilities. Findling begin drilling at BP-HSA-11
1255 Boring BP-HSA-11 complete. to 18 ft bgs. Well to be set at 4-14 ft. screen.
1410 Well set. Gauge well w. 7h IFP, no product detected. Bail well, no product in bailer.
1420 Begin development of BP-MW-11 w. 7h bailer.
1436 Bailing complete at BP-MW-11 10 gallons purged during development.
1450 Findling depart site.
1500 JS depart site.

Location Sparrows Point, MD Date 6/23/09

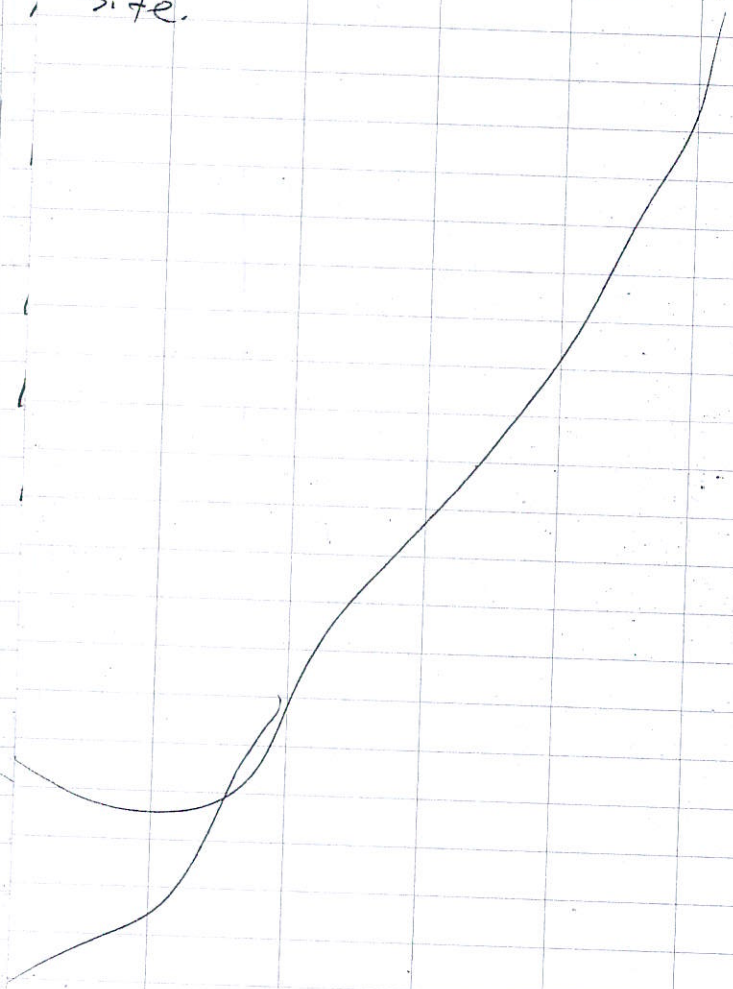
Project / Client

0730 JS arrive on-site to sample LNAPL wells and gauge BP-MW-10 + 11.
0800 Gauging complete. BP-MW-10 has 0.64 ft of product. BP-MW-11 has no product detected.
0845 Findling arrive to complete bollard installation. JS prepare to sample BP-MW-5, BP-MW-8 and C013-PZM-008 for NAPL.
1000 Sample BP-MW-5 NAPL and GW.
1048 Sampling complete at BP-MW-5 and move to BP-MW-8.
1140 Sample BP-MW-8 NAPL and GW. Findling complete augering bollards at BP-MW-11. Begin setting concrete.
1300 JS move to C013-PZM-008 to sample DNAPL.
1400 Not enough DNAPL in C013-PZM-008 to complete sampling. Approx 100mL of DNAPL collected for Test America.

Location Sparrows Point, MD Date 6/23/09

Project / Client

1420 Finding depart site.
1430 JS clean up and depart site.



Location Sparrows Point, MD Date 6/24/09

Project / Client Bail down test

0730 JS + Caron Mercrak (CM) on-site. No security pass for CM. Call Several for pass.
0930 Security pass obtained and JS + CM on-site.
1000 Begin bail down test at BP-MW-5.
Initial NAPL Level 6.25 ft bgs
Initial WL = 10.35 ft bgs
Total NAPL = 4.1 ft.
1006 Began bailing
NAPL level = 6.39 ft. bgs
WL = 10.40 ft. bgs
Total NAPL = 4.01 ft
1020 Began 2nd bailing
NAPL level = 6.54 ft bgs
WL = 8.92 bgs
Total NAPL = 2.42 ft
1031 Began 3rd bailing
NAPL level = 6.44 ft bgs
WL = 9.03 ft bgs
Total NAPL = 2.59 ft.

Location Sparrows Point MD Date 6/24/09

Project / Client Bail Down Test

1043 NAPL level = 6.36 ft bgs
WL = 9.92 ft bgs
Total NAPL = 3.56 ft.

1053 NAPL level = 6.29 ft bgs
WL = 10.17 ft bgs
Total NAPL = 3.88 ft

1123 NAPL level = 6.29 ft bgs
WL = 10.27 ft bgs
Total NAPL = 3.98 ft

BP-mw-8

1130 Initial NAPL level = 6.99 ft bgs
Initial WL = 11.48 ft bgs
Total NAPL = 4.49 ft.

1133 Began bailing.

1141 NAPL less than .45 ft.
NAPL level = 7.47 ft bgs
WL = 7.92 ft bgs
Total NAPL = 0.45 ft

1143 NAPL level = 7.46 ft bgs
WL = 8.09 ft bgs
Total NAPL = 0.63 ft

1153 NAPL level = 7.42 ft bgs
WL = 8.20 ft bgs
Total NAPL = 0.84 ft

Location Sparrows Point MD Date 6/24/09

Project / Client Bail Down Test

1223 NAPL level = 7.42 ft bgs
WL = 8.44 ft bgs
Total NAPL = 1.02 ft

BP-mw-5

1224 NAPL level = 6.26 ft bgs
WL = 10.34 ft bgs
Total NAPL = ~~1.08~~ 4.08 ft

BP-mw-10

1235 Initial NAPL level = 7.09 ft bgs
Initial WL = 7.79 ft bgs
NAPL level = 0.70 ft

1238 Began bailing

1242 NAPL level = 7.38 ft bgs
WL = 7.43 ft bgs
Total NAPL = 0.05 ft

1244 NAPL level = 7.38 ft bgs
WL = 7.43 ft bgs
Total NAPL = 0.05 ft

1254 NAPL level = 7.28 ft bgs
WL = 7.39 ft bgs
Total NAPL = 0.11 ft.

1323 NAPL level = 7.28 ft bgs
WL = 7.39 ft bgs
Total NAPL = 0.11 ft

Location Sparrows Point MD Date 6/24/09

Project / Client Bail Down Test

BP-MW-8

1324 NAPL level = 7.42 ft bgs
WL = 8.41 ft bgs
Total NAPL = 0.99 ft.

BP-MW-~~10~~5

1325 NAPL level = 6.29 ft bgs
WL = 10.32 ft bgs
Total NAPL = 4.03 ft

BP-MW-10

1423 NAPL level = 7.27 ft bgs
WL = 7.42 ft bgs
Total NAPL = 0.15 ft

BP-MW-8

1424 NAPL level = 7.40 ft bgs
WL = 8.86 ft bgs
Total NAPL = 1.46 ft

BP-MW-5

1425 NAPL level = 6.30 ft bgs
WL = 10.36 ft bgs
Total NAPL = 4.06 ft.

1435 Collect TCLP sample from soil drum.

1500 Clean up and depart site.

Location Date

Project / Client

ONSHORE INVESTIGATION
BORING LOGS

Severstal International

Severstal Sparrows Point

EXCAVATION AND WALL/CEILING PENETRATION PERMIT

Before any digging/excavation or wall/ceiling penetration occurs, this permit must be completed and displayed at the worksite. On non-emergency work, this permit must be requested a minimum of forty-eight (48) hours before any work is started or is performed.

The project planner is responsible for obtaining this permit. If the person requesting the work does not have a planner, the Mill will provide one. For outside work, the person requesting the work must contact the 406 Department Planner.

Any work in the mill requiring wall or ceiling penetration will require a permit from the Mill where the work is being performed.

Contact the Safety, Health and Environment Department at x4765 for any questions or concerns.

Any changes in the project from the original plan may require a new permit to be issued.

Date Issued: 05/27/09	Time: 11:00 am	Date Expires:	Time:

Location: Old Coke Oven Office Area

Work to be Performed: excavate to drill test holes

Every reasonable effort must be made to identify the potential hazards. This includes, but is not limited to, review of prints or drawings and a physical inspection of the site. If NO is checked for any item below, an explanation MUST be provided.

For Work INSIDE the Mill Area

Senior General Foreman, Maintenance should be notified. The Mill is responsible for reviewing all related drawings and obtaining this permit. If underground utilities are indicated, contact Power & Utilities.

Yes	No	
☐	☐	Facility drawings have been reviewed Provide drawing numbers or reason none were reviewed
☐	☐	Site has been inspected Date:

All known hazards for this excavation/penetration have been eliminated and the work is authorized. Issuance of this permit does not guarantee that all hazards have been identified. You must continue to use caution when doing the work.

Mill Maintenance Supervisor Signature	*Symbol-Number*	*Phone*	*Date*	*Time*

For Work OUTSIDE the Mill Area

Power & Utilities Department will start this permit process. Contact Power & Utilities Crew Leader at x5674. If no answer, call Penwood Utility Operator at x7254 who will contact the Crew Leader.

Yes	No	
☑	☐	Facility drawings have been reviewed 5608, 5508
☑	☐	Site has been inspected Date: 05/27/09 2" Potable Line in area, but should be off per blueprint

All known hazards for this excavation/penetration have been eliminated and the work is authorized. Issuance of this permit does not guarantee that all hazards have been identified. You must continue to use caution when doing the work.

Power & Utilities Signature	*Symbol-Number*	*Phone*	*Date*	*Time*
Doug E. Jr	814-80093	x4583	5/28/09	12:13pm

Original to Department - Copy to Safety Department

Severstal International

Severstal Sparrows Point

EXCAVATION AND WALL/CEILING PENETRATION PERMIT

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The project planner is responsible for obtaining this permit. If the person requesting the work does not have a planner, the Mill will provide one. For outside work, the person requesting the work must contact the 406 Department Planner.

Any work in the mill requiring wall or ceiling penetration will require a permit from the Mill where the work is being performed.

Contact the Safety, Health and Environment Department at x4765 for any questions or concerns.

Any changes in the project from the original plan may require a new permit to be issued.

Date Issued: 06/01/09	Time: 11:00 am	Date Expires:	Time:

Location: South side of Benzoil Plant

Work to be Performed: excavate to drill test holes

Every reasonable effort must be made to identify the potential hazards. This includes, but is not limited to, review of prints or drawings and a physical inspection of the site. If NO is checked for any item below, an explanation MUST be provided.

For Work INSIDE the Mill Area

Senior General Foreman, Maintenance should be notified. The Mill is responsible for reviewing all related drawings and obtaining this permit. If underground utilities are indicated, contact Power & Utilities.

Yes	No	
☐	☐	Facility drawings have been reviewed Provide drawing numbers or reason none were reviewed
☐	☐	Site has been inspected Date:

All known hazards for this excavation/penetration have been eliminated and the work is authorized. Issuance of this permit does not guarantee that all hazards have been identified. You must continue to use caution when doing the work.

Mill Maintenance Supervisor Signature	*Symbol-Number*	*Phone*	*Date*	*Time*

For Work OUTSIDE the Mill Area

Power & Utilities Department will start this permit process. Contact Power & Utilities Crew Leader at x5674. If no answer, call Penwood Utility Operator at x7254 who will contact the Crew Leader.

Yes	No	
☑	☐	Facility drawings have been reviewed 5613, 5513, 5507, 5607
☑	☐	Site has been inspected Date: 06/10/09 Utilities all clear

All known hazards for this excavation/penetration have been eliminated and the work is authorized. Issuance of this permit does not guarantee that all hazards have been identified. You must continue to use caution when doing the work.

Power & Utilities Signature	*Symbol-Number*	*Phone*	*Date*	*Time*
Doug E. Ley	814-80093	x4583	6/10/2009	12:50pm

Original to Department - Copy to Safety Department

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-01
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			20-May-09	21-May-09
Date				1429	0920
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low shrubby vegetation - sand and gravel
					27				1429 - SLAG/FILL - poorly graded medium to coarse sand - subangular -
					58	1			<15% subangular coarse gravel - 15% nonplastic silty fines - brick
			--		112				fragments - slight benzene odor - no staining - very dark brown (10YR 4/1)
	24/18			272	45	2			1438 - Same as 0-2 feet.
					11				
					17	3			
					32				
	24/10		--	171	13	4			1450 - very hard coarse sand - cemented. Same as 0-2 feet.
					8				
					13	5			
					16				
	24/8		NEG	1866	17	6			1500 - Same as 0-2 feet.
					13				
					13	7	WL		
		BP-SO-			10				
COMP.	24/6	B01-8	--	300	9	8			1517 - Same as 0-2 feet.
					7				
					9	9			
					16				
	24/9		NEG	NEG	14	10			1525 - END 20 MAY 09 DRILLING. Same as 0-2 feet.
					16				
					22	11			
					20				
	24/10		NEG	NEG	23	12			751 - Same as 0-2 feet.
					10				
					28	13			
		BP-SO-			23				
COMP.	24/12	B01-14	NEG	>10K	19	14			804 - Same as 0-2 feet.
		ms/msd			11				
					15	15			
					12				
	24/16		TRACE	>10K	9	16			813 - Same as 0-2 feet.
					4				
					5	17			
					4				
	24/6		NEG	>10K	3	18			820 - Same as 0-2 feet.
					1				
					3	19			
		BP-SO-			5				
COMP.	24/10	B01-20	NEG	3436	4	20			831 - Same as 0-2 feet.

Logged by: Steven Yankay (EA) Date: 5/20/09 - 5/21/09

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-01
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2

				Drilling	
Water Level				Start	Finish
Time	-			20-May-09 1429	21-May-09 0920
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low shrubby vegetation - sand and gravel
					1				
					1	21			
					1				
	24/24		NEG	540	1	22			859 - NATIVE MATERIAL - clayey silt - medium plasticity - several
					1				<3 inch lenticular sand layers - black - no odor - no staining
					2	23			
					12				
	24/24		--	936	50	24			0920 - BORING TERMINATED AT 24 FEET. Same as 22-23 feet.
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 5/20/09 - 5/21/09

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-02D
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			22-May-09	22-May-09
Date				1127	1335
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low shrubby vegetation - sand and gravel
					74				1127 - SLAG/FILL - poorly graded medium to coarse sand - subangular -
					136	1			15% nonplastic fines - no odor - no staining - very dark brown (10YR 4/2)
					--				
	24/12		--	0	--	2			1134 - Same as 0-1 feet.
					45				
					100/2	3			
					--				
	24/12		--	8.6	--	4			1155 - Same as 0-1 feet.
					9				
					20	5			
					41				
	24/17		--	61.1	31	6			1217 - large slag fragments in split spoons. Same as 0-1 feet.
					15				
					48	7			
		BP-SO-			163				
COMP.	24/12	B02-8	NEG	16.6	--	8			1226 - Same as 0-1 feet.
					33				
					37	9			
					32		WL		
	24/18		NEG	>10K	46	10			1234 - Same as 0-1 feet.
					18				
					15	11			
					7				
	24/1		NEG	>10K	7	12			1240 - Large slag block in split spoon sand catcher - NO RECOVERY.
					2				Same as 0-1 feet.
					6	13			
		BP-SO-			8				
COMP.	24/14	B02-14	NEG	>10K	4	14			1255 - Same as 0-1 feet.
					3				
					6	15			
					9				
	24/12		NEG	>10K	11	16			1303 - Same as 0-1 feet.
					2				
					3	17			
					6				
	24/13		NEG	>10K	7	18			1310 - Same as 0-1 feet.
					5				
					6	19			
		BP-SO-			7				
	24/14	B02-20	NEG	>10K	5	20			1322 - Same as 0-1 feet.

Logged by: Steven Yankay (EA) Date: 05/22/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75 with 14 lbs. auto hammer		Boring No. BP-HSA-02D
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 2 of 2

				Drilling	
Water Level				Start	Finish
Time	-			22-May-09 1127	22-May-09 1335
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low shrubby vegetation - sand and gravel
					3				
					4	21			
					3				
	24/21		NEG	>10K	8	22			1322 - NATIVE MATERIAL - sandy clay - medium plasticity - light gray
					1				
					2	23			
					3				
	24/24		NEG	>10K	93	24			1335 - BORING TERMINATED AT 24 FEET
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 05/22/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-02A
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			26-May-09	26-May-09
Date				0930	1030
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low shrubby vegetation - sand and gravel ** OFFSET FOR SHALLOW WELL INSTALLATION **
					74				0935 - SLAG/FILL - medium to coarse sand - <10% silt and clay- medium
					136	1			plasticity - black - no odor - no staining
					--				
	24/20		--	44.1	--	2			942
					45				
					100/2	3			
					--				
	24/11		--	13.5	--	4			955
					9				
					20	5			
					41				
	24/8		--	38.4	31	6			1005
					15				
					48	7			
					163				
	24/9		--	2284	--	8			1012
					33				
					37	9			
					32		WL		
	24/9		--	4404	46	10			1030 - AUGER REFUSAL - BORING TERMINATED AND ABANDONED
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 05/26/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter CME-75		Boring No. BP-MW-02S
Sampling Method: Continuous split spoon sampling with 3 in. diameter spoons with acetate liners		Sheet 1 of 1

				Drilling	
				Start	Finish
Water Level					
Time	-			28-May-09 0820	
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Sand and gravel - grass
						1			0820 - Poorly graded course sand - gravel - subangular - slag/fill ~20% nonplastic fines - slight org odor - black (10YR 2/1)
	24/12		--	0.0		2			0910 - Very hard drilling - concrete. Same as 0-2 feet.
						3			No recovery.
	--		--	--		4			No recovery.
						5			No recovery.
	--		--	--		6			No recovery.
						7			No recovery.
	--		--	--		8			0920 - 2 in. concrete layer. Benzene odor - no staining.
						9			
	24/19	Trace	>10K	--		10			Very hard drilling.
						11			*REFUSAL AT 10.2 FEET - OFFSET*
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 05/28/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-MW-02S
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			28-May-09 1050	28-May-09 1133
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
									Surface Conditions: Low shrubby vegetation - sand and gravel
									** OFFSET FOR SHALLOW WELL INSTALLATION **
						1			1050 - SLAG/FILL - poorly sorted medium to coarse sand and gravel - subangular - 10% nonplastic silty fines - concrete fragments - slight benzene odor - no staining - black (10YR 2/2)
	24/10		--	--		2			1101 - Same as 0-2 feet.
						3			
	--		--	--		4			1110 - Same as 0-2 feet.
						5			
	--		--	--		6			1113 - Same as 0-2 feet.
						7			
COMP.	24/20	BP-SO-MW02S-8 (Meta)	--	--		8			1116 - slight sheen on acetate liner - benzene odor. Same as 0-2 feet.
						9			
	--		--	--		10	WL		1120 - Same as 0-2 feet.
						11			
	--		--	--		12			1127 - sheen on water - sweet benzene odor. Same as 0-2 feet.
						13			
	--		--	--		14			1133 - BORING TERMINATED AT 14 FEET - INSTALLATION OF BP-MW-02S
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 05/28/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-03
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			19-May-09	20-May-09
Date				0854	1045
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Sand - slag - low shrubby vegetation
					6				0854 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					47	1			subangular - <15% nonplastic fines - cement and metal debris - no odor -
					100/2				no staining - very dark brown (10YR 2/2)
	24/14		--	0	--	2			909
					48				
					200	3			0914 - Refusal - penetrated with 2 inch spoon
		BP-SO-			--				
Comp.	24/13	B03-4	--	0	--	4			
					40				
					120	5			0930 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					34				<5% subrounded gravel - no odor - no staining - very dark brown (10YR 2/
	12/6		--	1.7	37	6	WL		
					13				
					22	7			Same as 5-6 feet.
					57				
	24/12		--	18.1	95	8			0945 - Large gravel - subrounded - 10 to 15% of soil matrix.
					51				Same as 5-6 feet.
					38	9			
					42				
	24/20		NEG	86.4	110	10			1011 - Heavily cemented - very difficult to penetrate with auger
					49				Same as 5-6 feet.
					58	11			
		BP-SO-			56				
Comp.	24/22	B03-12	--	15.9	50	12			1049 - Same as 5-6 feet.
					46				
					48	13			
					36				
	24/21.5		NEG	261	48	14			1106 - Same as 5-6 feet.
					63				
					89	15			
					125				
	24/21		NEG	48.5	--	16			1130 - Same as 5-6 feet.
					21				
					56	17			
		BP-SO-			58				
	24/24	B03-18	--	2	58	18			1154 - Same as 5-6 feet.
		(META)			42				
					89	19			
					133				
	24/24		--	8.9	--	20			1356 - Same as 5-6 feet.

Logged by: Steven Yankay (EA) Date: 19 May 09 - 20 May 09

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-03
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level				Start	Finish
Time	-			19-May-09	20-May-09
Date				0854	1045
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Sand - slag - low shrubby vegetation
					29				
					26	21			Same as 5-6 feet.
					38				
	24/24		NEG	289	42	22			1410 - Same as 5-6 feet.
					54				
					59	23			
					62				
	24/19		NEG	304	37	24			1521 -END 19 MAY 09 DRILLING.
					17				
					21	25			
					22				
	24/20		--	--	25	26			0852 - SLAG/FILL - poorly graded medium to coarse sand and gravel -
					12				subangular - <20% subangular coarse gravel - 5% silty nonplastic fines -
					17	27			poor soil cohesion - brick fragments - very dark brown (10YR 2/2) -
					14				no odor - no staining
	24/8		NEG	28.3	12	28			910 - Same as 26-28 feet.
					16				
					18	29			
					11				
	24/6		NEG	299	14	30			938 - Same as 26-28 feet.
					1				
					1	31			
					2				
	24/6		NEG	72.5	4	32			1005 - Same as 26-28 feet.
					3				
					2	33			
		BP-SO-			3				
COMP.	24/15	B03-32	NEG	42.5	1	34			1030 - Same as 26-28 feet.
					1				
					1	35			NATIVE SOIL - black clayey silt - moderate plasticity - laminated - moist
					1				
	24/20		NEG	532	1	36			1040 - BORING TERMINATED AT 36 FEET
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 19 May 09 - 20 May 09

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-04
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			21-May-09	22-May-09
Date				1058	0810
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Well graded medium sand - compact - surface slag and gravel
					42				1058 - SLAG/FILL - poorly graded medium to coarse sand -
					108	1			subangular - 15% nonplastic fines - metal scrap - brick frags - very dark
					100/3				brown (10YR 2/2) - no odor - no staining
	24/12		--	0	--	2			1107 - Same as 0-2 feet.
					46				
					30	3			1115 - Same as 0-2 feet.
					82				
	24/18		NEG	928	49	4			
					8				
					14	5			
					50				
	24/18		NEG	1239	51	6			1124 - slight product odor - no staining. Same as 0-2 feet.
					16				
					100/6	7			
					--				
	24/9		NEG	464	--	8			1138 - Same as 0-2 feet.
					52				
					30	9			
		BP-SO-			8				1141 - wood debris. Same as 0-2 feet.
COMP.	24/14	B04-10	--	137	13	10	WL		
					12				
					13	11			1150 - Same as 0-2 feet.
					40				
	24/8		NEG	2464	38	12			1225 - large gravel (0.5-1.5 inch) - >25% matrix - product odor
					25				no staining. Same as 0-2 feet.
					36	13			
					177				
	24/24		--	460	--	14			1250 - Same as 0-2 feet.
					56				
					116	15			1300 - AUGER REFUSAL AT 15.3 FEET - OFFSET 10 FEET NORTH
									AND DRILL TO 14 FEET AND RESUME SAMPLING. Same as 0-2 feet.
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 21 May 09 - 22 May 09

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-04
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			21-May-09	22-May-09
Date				1058	0810
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Well graded medium sand - compact - surface slag and gravel
					42				1058 - SLAG/FILL - poorly graded medium to coarse sand -
					108	1			subangular - 15% nonplastic fines - metal scrap - brick frags - very dark
					100/3				brown (10YR 2/2) - no odor - no staining
	24/12		--	0	--	2			1107 - Same as 0-2 feet.
					46				
					30	3			1115 - Same as 0-2 feet.
					82				
	24/18		NEG	928	49	4			
					8				
					14	5			
					50				
	24/18		NEG	1239	51	6			1124 - slight product odor - no staining. Same as 0-2 feet.
					16				
					100/6	7			
					--				
	24/9		NEG	464	--	8			1138 - Same as 0-2 feet.
					52				
					30	9			
		BP-SO-			8				1141 - wood debris. Same as 0-2 feet.
COMP.	24/14	B04-10	--	137	13	10	WL		
					12				
					13	11			1150 - Same as 0-2 feet.
					40				
	24/8		NEG	2464	38	12			1225 - large gravel (0.5-1.5 inch) - >25% matrix - product odor
					25				no staining. Same as 0-2 feet.
					36	13			
					177				
	24/24		--	460	--	14			1250 - Same as 0-2 feet.
					56				
					116	15			
	24/6		--	559		16			1300 - Same as 0-2 feet.
						17			
		BP-SO-							
COMP.	24/9	B04-16	--	5648		18			1500 - OFFSET LOCATION - SLAG/FILL - poorly graded coarse sand and
									gravel - 20% nonplastic silty fines - wet - product odor - no staining - very
						19			dark brown (10YR 2/2). Same as 0-2 feet.
	24/10		NEG	>10K		20			1516 - Same as 0-2 feet.

Logged by: Steven Yankay (EA) Date: 21 May 09 - 22 May 09

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-04
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level				Start	Finish
Time	-			21-May-09	22-May-09
Date				1058	0810
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Well graded medium sand - compact - surface slag and gravel
									1522 - END 21 May 09 DRILLING. Same as 0-2 feet.
						21			748
	24/12		NEG	1624		22			Same as 0-2 feet.
						23			Same as 0-2 feet.
COMP.	24/5	BP-SO-B04-24	NEG	1585		24			756 - Same as 0-2 feet.
						25			Same as 0-2 feet.
	24/24		--	176		26			800 - NATIVE SOIL - white sandy clay - medium plasticity - dry - very dense. Same as 0-2 feet.
						27			BORING TERMINATED AT 26 FEET
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date:

Drilling Contractor: Findling Drilling Driller:

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			27-May-09	27-May-09
Date				0800	1030
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Gravel and concrete debris
									0800 - SLAG/FILL - poorly graded medium to coarse sand and gravel -
						1			subangular - 10% nonplastic silty fines - metal/concrete fragments -
		BP-HSA-							no odor - no staining
	24/18	-5 0-2	--	5.3		2			809 - Same as 0-2 feet.
		(TOC)							
						3			Same as 0-2 feet.
	24/16		NEG	539		4			821 - Same as 0-2 feet.
						5			
		BP-SO-							
COMP.	24/15	B05-6	NEG	1127		6			0840 - 0.5 to 1.0 inch poorly sorted gravel - angular - GLEY1 4/1 - slight
		(META)							benzene odor - no staining
						7	WL		
		BP-SO-	LNAPL						
	24/4	B05-08	POS	>10K		8			0907 - ** VISIBLE SHEEN ON LINER 8.0 feet to 16 feet **
									Poorly sorted gravel - angular to subangular - <5% medium to coarse
						9			sand and nonplastic silty fines - greenish black (GLEY1 10GY)
			LNAPL						
COMP.	24/8		POS	>10K		10			916 - Same as 8-10 feet.
						11			
			LNAPL						
	24/12		TRACE	>10K		12			939 - Same as 8-10 feet.
						13			
		BP-SO-	LNAPL						
	24/19	B05-14	TRACE	>10K		14			950 - Same as 8-10 feet.
						15			
	24/18		NEG	2035		16			1000 - moderately sorted very coarse sand and gravel - subangular -
									bluish gray (GLEY2 5/1)
						17			
	24/15		NEG	3903		18			1010 - Same as 16-18 feet.
						19			
		BP-SO-							
	24/12	B05-20	NEG	3303		20			1020 - Same as 16-18 feet.

Logged by: Steven Yankay (EA) Date: 05/27/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level				Start	Finish
Time	-			27-May-09	27-May-09
Date				0800	1030
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Gravel and concrete debris
						21			
COMP.	24/11		NEG	1090		22			1025 - NATIVE MATERIAL - clayey silt - saturated - strong plasticity - very dark brown (10YR 4/1)
						23			
	24/23		--	121		24			1030 - BORING TERMINATED AT 24 FEET
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 05/27/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-06
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1

				Drilling	
Water Level				Start	Finish
Time	-			11-Jun-09 0730	11-Jun-09 1055
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					13				0736 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/6		--	16.5	30	1			10% nonplastic silty fines, brick and rock fragments - no odor - no staining
					28				black - (10YR 2/2)
					21	2			
					10				0745 - Same as 0-2 feet.
	24/8		--	3	25	3			
					27				
					14	4			
					7				0753 - Same as 0-2 feet.
	24/6		--	223	9	5			
					8				
					13	6	WL		
					3				0759 - Same as 0-2 feet.
	24/8		Trace	9999	6	7			
					7				
					9	8			
		BP-SO-			8				0812 - Same as 0-2 feet.
COMP.	24/12	B06-8	Negative	9999	200/3	9			
					--				
					--	10			
					200/3				0826 - NAPL observed in Acetate liner. Same as 0-2 feet.
	24/20		Positive	>10K	--	11			
					--				
					--	12			
		BP-SO-			14				0835 - Same as 0-2 feet.
COMP.	24/10	B06-12	Positive	>10K	48	13			
					24				
					27	14			
					13				0842 - Same as 0-2 feet.
	24/12		Negative	>10K	26	15			
					24				
					25	16			
		BP-SO-			7				0850 - SLAG/FILL - poorly sorted fine to medium sand and gravel -
COMP.	24/14	B06-16	--	1749	36	17			subangular - 10% nonplastic silty fines - napthalene odor - no staining -
					11				black (10YR 2/2)
					8	18			

Logged by: Joseph Sawicki (EA) Date: 06/11/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

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LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-07
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			11-Jun-09	11-Jun-09
Date				1055	1335
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					115				1113 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/14		--	3.8	119	1			<10% nonplastic silty fines, large slag and concrete fragments - no odor -
					41				no staining - black - (10YR 2/2)
					27	2			
									1125 - Same as 0-2 feet.
	24/6		--	2.9		3			REFUSAL AT 3.7 FT BGS, OFFSET 3 FT NORTH.
						4			
									1145
	24/4		--	461		5			Large slag fragments in acetate liner.
						6	WL		
									1235 - Poorly sorted, medium to coarse SAND, subangular, 15% non-
	24/5		--	1534		7			plastic fines, slag fragments. Blueish gray GLEY2 6/1.
						8			
									1255 - Same as 6-8 feet.
	24/18		Trace	>10K		9			
						10			
									1307 - Same as 6-8 feet.
	24/10		Positive	>10K		11			
						12			
		BP-SO-							1316 - Same as 6-8 feet.
COMP.	24/12	B07-12	Positive	>10K		13			
						14			
									1325 - Same as 6-8 feet.
	24/12		--	3762		15			
						16			
									1334 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/22		--	810		17			<10% nonplastic silty fines, large slag and concrete fragments -slight odor
									no staining - black - (10YR 2/2)
						18			BORING COMPLETE AT 18 FT BGS.
									WELL SCREEN SET AT 6-16 FT BGS.

Logged by: Joseph Sawicki (EA) Date: 06/11/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-08
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			15-Jun-09	15-Jun-09
Date				0743	0945
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					60				0755 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/10		--	0.4	200/4	1			<10% nonplastic silty fines, concrete and brick fragments - no odor -
					--				no staining - black - (10YR 2/2)
					--	2			
					22				0805 - Same as 0-2 feet.
	24/6		--	280	36	3			
					23				
					36	4			
					200/6				0830 - Same as 0-2 feet.
	24/6		--	942	--	5			Strong Benzene odor. Recovery mostly large slag fragments
					--				
					--	6	WL		
		BP-SO-			144/6				0844 - Same as 6-8 feet.
COMP.	24/10	B08-6	--	928	--	7			
					--				
					--	8			
					200/4				0855 - Same as 6-8 feet.
	24/6		--	271	--	9			
					--				
					--	10			
		BP-SO-			111				0920 - Same as 6-8 feet.
COMP.	24/18	B08-10	Negative	8590	62	11			
					208				
					--	12			
					8				0930 - Same as 6-8 feet.
	24/16		--	4795	54	13			
					47				
					25	14			
					8				0938 - Same as 6-8 feet.
	24/18		--	1370	14	15			
					15				
					29	16			
		BP-SO-			6				0942 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
COMP.	24/14	B08-16	--	2018	14	17			<10% nonplastic silty fines, concrete and brick fragments -slight odor -
					16				no staining - black - (10YR 2/2)
					11	18			BORING COMPLETE AT 18 FT BGS.
									WELL SCREEN SET AT 6-16 FT BGS.

Logged by: Joseph Sawicki (EA) Date: 06/15/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-09
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			15-Jun-09 1128	15-Jun-09 1345
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					31				1140 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/8		--	0.0	143	1			20% nonplastic silty fines, small slag fragments - no odor -
					97				no staining - black - (10YR 2/2)
					33	2			
					20				1146 - Same as 0-2 feet.
	24/4		--	0.0	26	3			
					20				
					32	4			
					13				1155 - Same as 0-2 feet.
	24/4		--	0.0	19	5			Large slag fragments
					36				
					29	6			
					2				1204 - Same as 0-2 feet.
	24/6		--	0.0	6	7			
					11				
					13	8	WL		
		BP-SO-			200/3				1221 - Same as 0-2 feet.
COMP.	24/12	B09-8	--	20.8	--	9			Large slag fragments
					--				
					--	10			
					200/4				1230 - Same as 0-2 feet.
	24/6		--	189	--	11			Large slag fragments
					--				
					--	12			
									1242 - Same as 0-2 feet.
	24/23		--	365		13			Large slag fragments
						14			
		BP-SO-							1255 - Same as 0-2 feet.
COMP.	24/12	B09-14	Negative	>10K		15			
						16			
									1302 - Same as 0-2 feet.
	24/15		Negative	6054		17			
					11	18			
		BP-SO-							1340 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
COMP.	24/16	B09-18	--	3569		19			10% nonplastic silty fines, small slag fragments -strong odor -
									no staining - black - (10YR 2/2)
						20			BORING COMPLETE AT 20 FT BGS.
									WELL SCREEN SET AT 8-18 FT BGS.

Logged by: Joseph Sawicki (EA) Date: 06/15/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-10
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			19-Jun-09	19-Jun-09
Date				0930	1250
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					40				0940 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/15		--	0.6	136	1			20% nonplastic silty fines, slag and brick fragments - no odor -
					167				no staining - black - (10YR 2/2)
					--	2			
					36				0957
	24/4		--	24.2	132	3			
					110				
					86	4			
		BP-SO-			9				1005 - SLAG/FILL - poorly sorted, medium to coarse SAND, subangular,
COMP.	24/16	B10-4	--	7.1	21	5	WL		25% non-plastic fines, slag fragments.
					27				
					20	6			
					14				1140
	24/24		--	47.0	73	7			REFUSAL AT 7.5 FT BGS, OFFSET 6 FT SOUTHWEST
					52				
					86	8			
					176/10				1154
	24/10		--	134	--	9			
					--				
					--	10			
					119				1202
	24/12		--	428	190	11			
					--				
					--	12			
					6				1220
	24/10		--	741	24	13			NAPL staining in acetate liner, possible run down
					21				
					23	14			
					6				1235
	24/12		--	272	9	15			
					11				
					22	16			
					24				1242- SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/15		--	232	33	17			10% nonplastic silty fines, small slag fragments -strong odor -
					14				slight staining in sleeve - black - (10YR 2/2)
					10	18			BORING COMPLETE AT 18 FT BGS.
									WELL SCREEN SET AT 4-14 FT BGS.

Logged by: Joseph Sawicki (EA) Date: 06/19/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		BP-HSA-11
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			22-Jun-09	22-Jun-09
Date				1130	1255
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					22				1132 - SLAG/FILL - poorly sorted, medium to coarse SAND, some gravel,
	24/14		--	0.4	54	1			subangular, <10% nonplastic silty fines, slag and brick fragments - no odor
					33				no staining - black - (10YR 2/2)
					15	2			
					10				1140
	2410		--	0.4	11	3			
					13				
					18	4	WL		
		BP-SO-			16				1150
COMP.	24/15	B11-4	--	1.9	60	5			
					157				
					29	6			
					18				1158
	24/6		--	34.9	200/4	7			
					--				
					--	8			
					127				1205 - Mostly Gravel and angular cobbles, 20% medium to coarse SAND,
	24/6		--	15.5	100/1	9			<10% non-plastic fines. Greenish Gray (GLEY1 5/1)
					--				
					--	10			
					21				1221
	24/14		--	29.8	25	11			Evidence of NAPL at 11 - 11.5 ft bgs
					200/3				
					--	12			
					16				1232
	24/12		--	56.1	24	13			Evidence of NAPL at 12-14 ft bgs
					35				
					39	14			
					18				1239
	24/10		--	31.5	15	15			
					17				
					18	16			
					10				1247- SLAG/FILL - poorly sorted, medium to coarse SAND, subangular
	24/21		--	2.3	21	17			10% nonplastic silty fines, small slag fragments -strong odor -
					32				slight staining in sleeve - black - (10YR 2/2)
					33	18			BORING COMPLETE AT 18 FT BGS.
									WELL SCREEN SET AT 4-14 FT BGS.

Logged by: Joseph Sawicki (EA) Date: 06/22/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-01
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			29-May-09	19-May-09
Date				1111	1344
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low grass - sand - moist
					40				1142 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					100/4	1			subangular - <5% nonplastic silty fines - brown (10YR 4/3)
					--				
	24/10		--	0	--	2			1156 - SLAG/FILL - well graded gravel - 0.5 to 1 inch - subrounded -
					78				<5% medium to fine sand - subangular - brown (10YR 4/3) - no odor -
					100/1	3			no staining
					--				
	24/5		---	0.2	--	4			1231 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					100/2				subangular to subrounded - 5% nonplastic silty fines - dry - brown
					--	5			(10YR 4/3) - no odor - no staining
					--				
	24/4		--	0.5	--	6			AUGER REFUSAL at 5.5 FEET - OFFSET 8 FEET SOUTHEAST
						7			
						8			
						9			
						10			
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 06/01/2009

Drilling Contractor: Findling Drilling Driller: Tony

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-01
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			1-Jun-09	2-Jun-09
Date				1356	1050
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low grass - sand - moist
					40				1356 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					100/4	1			subangular - very dark brown (10YR 2/2) - no odor - no staining
					--				
	24/7		--	0	--	2			
					78				1412 - well graded gravel - 0.5 to 1 inch - subrounded - <5% medium
					100/1	3			to fine sand - subangular - brown (10YR 4/3) - no odor - no staining
					--				
	24/7		--	1	--	4			1424 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					100/2				subangular to subrounded - 5% nonplastic silty fines - no odor - no
					--	5			staining - brown (10YR 4/3)
					--				
	24/6		--	0	--	6			1442
					92				
					100/2	7			
					--				
	24/8		--	0	--	8			1455 - END 6/1/09 DRILLING
					100/6				
					--	9	WL		
		CT-SO-			--				
COMP.	24/7	B01-10	--	0	--	10			0844 - large rock/concrete fragments in sand catcher
					100/4				
					--	11			
					--				
	24/8		--	2.5	--	12			0907 - split spoon refusal at 12.6 feet
					92				
					100/0	13			
					--				
	24/8		--	109	--	14			930
					31				
					100/1	15			
		CT-SO-			--				
COMP.	24/12	B01-14	--	26.7	--	16			0950 - napthalene (mothball) odor in split spoon
						17			
	24/16		--	15.2		18			1005 - dark staining - no odor
						19			
		CT-SO-							
COMP.	24/20	B01-20	NEG	1460		20			1018 - strong napthalene (mothball) odor - sheen on liner and soil water
		MS/MSD							

Logged by: Steven Yankay (EA) Date: 6/1/09 - 6/2/09

Drilling Contractor: Findling Drilling Driller: Tony

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-01
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			1-Jun-09	2-Jun-09
Date				1356	1050
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low grass - sand - moist
						21			
	24/20		NEG	267		22			1039 - NATIVE MATERIAL - sandy silt - dark gray - slight napthalene odor
						23			no staining
	24/24		--	197		24			1050 - BORING TERMINATED AT 24 FEET
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 06/02/2009

Drilling Contractor: Findling Drilling Driller: Tony

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-02
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			8-Jun-09	8-Jun-09
Date				0759	1421
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag and gravel - low shrubby vegetation
									OFFSET 15 FEET SOUTH
					7				0759 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					16	1			subangular - <10% nonplastic silty fines - moist - no odor - no staining -
					21				black (10YR 2/2)
	24/17		--	0	99	2			804
					200/4				
					--	3			
					--				
	24/4		--	0	--	4			815
					67				** AUGER REFUSAL AT 4.5 FEET - OFFSET 15 FEET SOUTH
					72	5			
					59				
	24/20		--	0.1	114	6			930
					200/6				
					--	7			
					--				
	24/10		--	0.2	--	8			950
					159/6				
					--	9			
					--		WL		
	24/7		--	0.9	--	10			1246
					210/6				
					--	11			
		CT-SO-			--				
COMP.	24/7	B02-12	--	0.1	--	12			1256
					5				
					8	13			
					17				
	24/11		--	0	106	14			1310 - SLAG/FILL - moderately sorted medium to coarse sand -
					53				angular to subangular - <10% subangular gravel - 5% nonplastic silty fines
					171	15			no odor - no staining -black (10YR 2/2)
		CT-SO-			148				
COMP.	24/13	B02-16	--	0.3	--	16			1324
						17			
	24/21		--	20.7		18			1340 - SLAG/FILL - poorly sorted medium to coarse sand - angular to
									subangular - <5% angular gravel - <5% nonplastic silty fines - wet -
						19			napthalene odor - dark staining - sheen on split spoons - black (10YR 2/2)
		CT-SO-							
COMP.	24/20	B02-20	--	112		20			1350

Logged by: Steven Yankay (EA) Date: 06/08/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-02
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level				Start	Finish
Time	-			8-Jun-09	8-Jun-09
Date				0759	1421
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
									Surface Conditions: Slag and gravel - low shrubby vegetation
									OFFSET 15 FEET SOUTH
						21			NATIVE MATERIAL - well sorted fine sand - wet - slight napthalene odor -
									no staining - very dark greenish gray (GLEY1 3/1)
	24/20		--	90		22			1421 - BORING TERMINATED AT 22 FEET
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 06/08/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-03
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			29-May-09	19-May-09
Date				1111	1500
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low grass - sand - moist
					97				1111 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					73	1			subangular - <5% nonplastic silty fines - no odor - no staining - very dark
					200/5				brown (10YR 2/2)
	24/28		--	8.5	--	2			1146 - Same as 0-2 feet.
					200/6				
					--	3			
					--				
	24/6		---	11	--	4			1201 - Same as 0-2 feet.
					280/6				
					--	5			
					--				
	24/8		---	0.1	--	6			1220 - Same as 0-2 feet.
					300/4				
					--	7			
					--				
	24/6		---	1.2	--	8			1240 - Same as 0-2 feet.
					105				
					97	9			
		CT-SO-			69				
COMP.	24/20	B03-10	---	0	66	10		WL	1250 - Same as 0-2 feet.
					62				
					50	11			
					39				
	24/16		---	0	36	12			1300 - very difficult drilling - very hard material
						13			
	24/13		---	5.3		14			1317
						15			
	24/6		---	1		16			1336
						17			
	24/20		---	20.5		18			1344
						19			
		CT-SO-							
COMP.	24/9	B03-20	---	21.2		20			1353

Logged by: Steven Yankay (EA) Date: 05/29/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-03
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level				Start	Finish
Time	-			29-May-09	19-May-09
Date				1111	1500
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Low grass - sand - moist
						21			1420 - moderately sorted very coarse to coarse sand - subangular -
COMP.	24/20	CT-SO-B03-22	--	47.4		22			<1% gravel - <1% nonplastic silty fines - slight napthalene odor - no staining - slight sheen on acetate liner - very dark brown (10YR 4/1) 1433
						23			
COMP.	24/14		--	18		24			1447
						25			NATIVE MATERIAL - clayey silt - no odor - no staining - very dark brown (10YR 4/1)
	24/24		--	8		26			1500 - BORING TERMINATED AT 26 FEET
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 05/29/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-04
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			4-Jun-09 1020	4-Jun-09 1215
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag and coal
					--				1020 - SLAG/FILL - poorly sorted coarse to very coarse sand and
					--	1			gravel - subangular - 10% non plastic silty fines - black (10YR 2/2) -
					--				no odor - no staining
	24/9			0	--	2			
					--				**NO BLOW COUNTS DUE TO CONCRETE AND SURFACE WATER**
					--	3			
					--				
	24/0		--	--	--	4			1031 - NO RECOVERY
					25				
					27	5			
		CT-HSA-			17				
	24/17	04 6-8	--	0	16	6			1043
		(NAPL)			16				
					15	7			
					17				
	24/0		--	--	17	8			1051 - NO RECOVERY
					102/1				
					-	9	WL		
		CT-SO-			--				
COMP.	24/17	B04-10	--	0	--	10			1100 - SLAG/FILL - poorly sorted gravel - angular to subangular - <5% fine
					10				to very fine sand - subangular - trace nonplastic silty fines - no odor -
					10	11			no staining -black (10YR 2/2)
					24				
	24/19		--	0	30	12			1112
					15				
					17	13			
		CT-SO-			40				
COMP.	24/17	B04-14	--	0	46	14			1123 - SLAG/FILL - poorly sorted very coarse to coarse sand and
					20				gravel - subangular - <5% nonplastic silty fines - wet - concrete fragments
					20	15			very dark brown (10YR 4/3) - no odor - no staining
					17				
	24/24		--	0	17	16			1140
					22				
					23	17			
		CT-SO-			24				
COMP.	24/24	B04-18	--	2.2	14	18			1200
					10				
					7	19			NATIVE MATERIAL - fine sand - well sorted - wet - greenish gray -
					7				slight napthalene odor
	24/24		--	37.1	5	20			1209

Logged by: Steven Yankay (EA) Date: 06/04/2009

Drilling Contractor: Findling Drilling Driller: Tony

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates: _____
Surface Elevation: _____
Casing Below Surface: _____
Reference Elevation: _____
Reference Desc: _____

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-04
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			4-Jun-09	4-Jun-09
Date				1020	1215
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag and coal
					2				
					2	21			
					5				
	24/24		--	96.4	6	22			BORING TERMINATED AT 22 FEET
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 06/04/2009

Drilling Contractor: Findling Drilling Driller: Tony

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 2
		Drilling

Water Level				Start	Finish
Time	-			9-Jun-09	9-Jun-09
Date				1007	1231
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					7				1007 - SLAG/FILL - medium to coarse sand and gravel - angular to
					79	1			subangular - <5% nonplastic silty fines - no odor - no staining - black
					200/3				(10YR 2/2)
	24/10		--	0	--	2			
					194/6				
					--	3			
					--				
	24/3		--	--	--	4			1030 - ACETATE LINER MANGLED IN SPLIT SPOON
					200/6				
					--	5			
					--				
	24/5		--	0	--	6			1055
					8				
					100/2	7			
		CT-SO-			--				
COMP.	24/7	B05-8	--	0	--	8			1105
					24				
					73	9	WL		
		CT-HSA-			70				
	24/23	05 10-12	--	0	87	10			1117
		(NAPL)			47				
					37	11			
					32				
	24/12		--	0	48	12			1129
					33				
					139/6	13			
					--				
	24/11		--	0	--	14			1136
					46				
					276/6	15			
		CT-SO-			--				
COMP.	24/6	B05-16	--	2.7	--	16			1158
					17				
					15	17			
					11				
	24/24		--	3.5	11	18			1215 - SLAG/FILL - poorly sorted fine to medium sand and gravel -
					17				subangular - 15% nonplastic silty fines - napthalene odor - no staining -
					21	19			black (10YR 2/2)
		CT-SO-			17				NATIVE MATERIAL - well sorted fine sand - wet - napthalene odor - sheer
COMP.	24/14	B05-20	NEG	226	20	20			on soil - very dark greenish gray (GLEY1 3/1)
									1222

Logged by: Steven Yankay (EA) Date: 06/09/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 2 of 2
		Drilling

Water Level				Start	Finish
Time	-			9-Jun-09	9-Jun-09
Date				1007	1231
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
					9				
					10	21			
					8				
	24/16		NEG	98.3	7	22			1231 - BORING TERMINATED AT 22 FEET
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
						40			

Logged by: Steven Yankay (EA) Date: 06/09/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			3-Jun-09	3-Jun-09
Date				0939	1039
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
									** OFFSET 10 FEET NORTHWEST**
					92				0939 - SLAG/FILL - coarse to very coarse sand and gravel - poorly sorted
					170	1			subangular - <5% nonplastic silty fines - brick fragments - no odor - no
					116				staining - black (10YR 2/1)
	24/24		--	0	77	2			0959 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					36				subangular to subrounded - 10% nonplastic silty fines - brown (10YR 4/3)
					136	3			
					100/3				
	24/16		--	0	--	4			1019
					70				
					100/1	5			
					--				
	24/8		--	0	--	6			1030
									1039 - AUGER REFUSAL AT 6.5 FEET - OFFSET 10 FEET NORTHWES
						7			
						8			
						9			
						10	WL		
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 06/03/2009

Drilling Contractor: Findling Drilling Driller: Tony

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			3-Jun-09	3-Jun-09
Date				1050	1140
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
									** OFFSET 20 FEET NORTHWEST**
					92				1050- SLAG/FILL - coarse to very coarse sand and gravel - poorly sorted -
					170	1			subangular - <5% nonplastic silty fines - brick fragments - no odor - no
					116				staining - black (10YR 2/1)
	24/24		--	0	77	2			1110 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					36				subangular to subrounded - 10% nonplastic silty fines - brown (10YR 4/3)
					136	3			
					100/3				
	24/16		--	0	--	4			1121
					70				
					100/1	5			
					--				
	24/8		--	0	--	6			1140 - AUGER REFUSAL AT 6.5 FEET - OFFSET 20 FEET NORTHWES
						7			
						8			
						9			
						10	WL		
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 05/29/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			3-Jun-09 1220	3-Jun-09 1250
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
					92				Surface Conditions: Slag - coal
					170	1			** OFFSET 10 FEET NORTHWEST**
					116				1050- SLAG/FILL - coarse to very coarse sand and gravel - poorly sorted -
	24/24		--	0	77	2			subangular - <5% nonplastic silty fines - brick fragments - no odor - no
					36				staining - black (10YR 2/1)
					136	3			1110 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					100/3				subangular to subrounded - 10% nonplastic silty fines - brown (10YR 4/3)
	24/16		--	0	--	4			1121
					70				
					100/1	5			
					--				
	24/8		--	0	--	6			1140 - AUGER REFUSAL AT 6.5 FEET - OFFSET 20 FEET NORTHWES
						7			
						8			
						9			
						10	WL		
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 05/29/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

EA Engineering, Science, and Technology, Inc.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
1453406	Sparrow's Point - Coke Oven Area	Sparrow's Point. MD
Drilling Method: Hollow Stem Auger - 6 1/4 in. diameter		Boring No.
CME-75 with 14 lbs. auto hammer		CT-HSA-05
Sampling Method: Continuous split spoon sampling		
with 3 in. diameter spoons with acetate liners		Sheet 1 of 1
		Drilling

Water Level				Start	Finish
Time	-			3-Jun-09	
Date				1250	
Reference					

Sample Type	Inches Drvn/In. Recvrd	Sample No.	Sudan IV	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions: Slag - coal
									** OFFSET 40 FEET EAST**
					92				1250- SLAG/FILL - coarse to very coarse sand and gravel - poorly sorted -
					170	1			subangular - <5% nonplastic silty fines - brick fragments - no odor - no
					116				staining - black (10YR 2/1)
	24/24		--	0	77	2			1306 - SLAG/FILL - poorly sorted medium to coarse sand and gravel -
					36				subangular to subrounded - 10% nonplastic silty fines - brown (10YR 4/3)
					136	3			
					100/3				
	24/16		--	0	--	4			
					70				
					100/1	5			
					--				
	24/8		--	2.9	--	6			
						7			
						8			
						9			
						10	WL		
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Logged by: Steven Yankay (EA) Date: 05/29/2009

Drilling Contractor: Findling Drilling Driller: Dan Fincham

ONSHORE INVESTIGATION
WELL COMPLETION LOGS

C 1 8590 (MDE USE ONLY)

1 2 3 6

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY

PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY DATE Received MM DD YY (8–13)

DATE WELL COMPLETED: MM 5 DD 28 YY 09 (15–20)

Depth of Well: 14 (TO NEAREST FOOT) (22–26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3034 (28–37)

OWNER: SEVERSTAL SPARROWS POINT LLC (last name / first name)

STREET OR RFD: 1430 SPARROWS POINT BOULEVARD   TOWN: BALTO. MD. 21219

SUBDIVISION: ____   SECTION: ____   LOT: ____

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	14'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes Y / no N (circled: N)

CIRCLE APPROPRIATE LETTER

- **A** A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- **E** ELECTRIC LOG OBTAINED
- **P** TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MGD009

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION): Dan W Finkel

LIC. NO.: __ __ D __ __ __

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box): yes Y (circled) / no N (44)

TYPE OF GROUTING MATERIAL (Circle one): CEMENT CM (circled) (45 46)   BENTONITE CLAY BC (45 46)

NO. OF BAGS: 1   NO. OF POUNDS: 94

GALLONS OF WATER: 5

DEPTH OF GROUT SEAL (to nearest foot): from 0 ft. (TOP, 48–52) to 2 ft. (BOTTOM, 54–58) (enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE (60–61)	Nominal diameter top (main) casing (nearest inch) (63–64)	Total depth of main casing (nearest foot) (66–70)
PL	2	4

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD

screen type or open hole insert appropriate code below: ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2 — DEPTH (nearest ft.)

EACH SCREEN

	Type	From	To
1	PL	4	14
2			
3			

SLOT SIZE 1: 0 2: 2 3: 0

DIAMETER OF SCREEN: 2 (NEAREST INCH) (56–60)

GRAVEL PACK: from 3 to 14

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T   (E.R.O.S.)   W Q

70 TELESCOPE CASING   72 LOG INDICATOR   74 75 76 OTHER DATA

C 3 PUMPING TEST

HOURS PUMPED (nearest hour): NA (8–9)

PUMPING RATE (gal. per min.): NA (11–15)

METHOD USED TO MEASURE PUMPING RATE: ____

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ ft. (17–20)

WHEN PUMPING ____ ft. (22–25)

TYPE OF PUMP USED (for test): A air, P piston, T turbine, C centrifugal, R rotary, O other (describe below), J jet, S submersible (27)

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / NO (circled: NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)

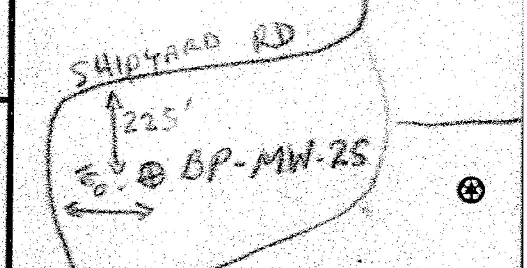
PUMP HORSE POWER (37–41)

PUMP COLUMN LENGTH (nearest ft.) (43–47)

CASING HEIGHT (circle appropriate box and enter casing height): + above (circled) / − below LAND SURFACE: 3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

OWNER

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

C | 1 | [illegible] — SEQUENCE NO. (MDE USE ONLY)
1 2 3 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED: MM 5 DD 26 YY 09 (15–20)

Depth of Well (22–26): 24 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" (28–37): BA - 95 - 3035

OWNER: SEVERSTAL SPARROWS POINT LLC (last name / first name)
STREET OR RFD: 1430 SPARROWS POINT BOULEVARD TOWN: BALTO. MD. 21219
SUBDIVISION: ______ SECTION: ______ LOT: ______

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	22'	✓
GRAY SILT W/ TRACE TO SOME SILT	22'	23.5'	✓
BROWN, GREEN, GRAY SAND W/ TRACE TO SOME SILT	23.5	24'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes Y / no N (circled: N)

CIRCLE APPROPRIATE LETTER
- **A** A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- **E** ELECTRIC LOG OBTAINED
- **P** TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MG D 009
[signature]
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ __ D __ __ __

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes Y (circled) / no N (44)

TYPE OF GROUTING MATERIAL (Circle one): CEMENT CM (circled) (45 46) / BENTONITE CLAY BC (45 46)

NO. OF BAGS: 3 NO. OF POUNDS: 282
GALLONS OF WATER: 20
DEPTH OF GROUT SEAL (to nearest foot): from 0 ft. (TOP, 48–52) to 10 ft. (BOTTOM, 54–58)
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE (60 61)	Nominal diameter top (main) casing (nearest inch)! (63 64)	Total depth of main casing (nearest foot) (66–70)
PL	2	14

OTHER CASING (if used) — EACH CASING: diameter inch / depth (feet) from / to

SCREEN RECORD
screen type or open hole — insert appropriate code below: ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2 — DEPTH (nearest ft.)

EACH SCREEN	Type	From	To
1 (8 9, 11–15, 17–21)	PL	14	24
2 (23 24, 26–30, 32–36)			
3 (38 39, 41–45, 47–51)			

SLOT SIZE: 1 0 2 2 3 0
DIAMETER OF SCREEN: 2 (NEAREST INCH) (56–60)

GRAVEL PACK: from 12 to 24
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
70 TELESCOPE CASING — 72 LOG INDICATOR — 74 75 76 OTHER DATA

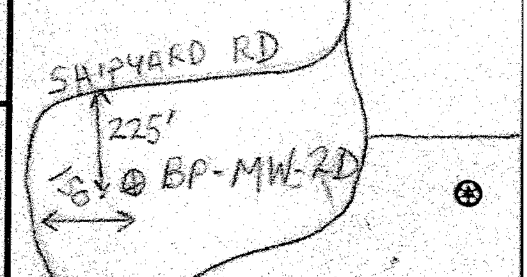
C 3 — PUMPING TEST
HOURS PUMPED (nearest hour) (8 9): N/A
PUMPING RATE (gal. per min.) (11–15): NA
METHOD USED TO MEASURE PUMPING RATE: ______
WATER LEVEL (distance from land surface)
BEFORE PUMPING (17–20): ______ ft.
WHEN PUMPING (22–25): ______ ft.

TYPE OF PUMP USED (for test) (27): A air, P piston, T turbine, C centrifugal, R rotary, O other (describe below), J jet, S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / NO (circled: NO)
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)
PUMP HORSE POWER (37–41)
PUMP COLUMN LENGTH (nearest ft.) (43–47)

CASING HEIGHT (circle appropriate box and enter casing height): + above (circled) / − below LAND SURFACE (49): 3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 — OWNER

C 1 [redacted] (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM DD YY: 5 22 09 (15 20)

Depth of Well: 26 (TO NEAREST FOOT) (22 26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3037 (28 29 30 31 32 33 34 35 36 37)

OWNER SEVERSTAL SPARROWS POINT
STREET OR RFD 1430 SPARROWS POINT BOULEVARD (last name / first name) TOWN BALTO. MD. 21219
SUBDIVISION ____ SECTION ____ LOT ____

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0'	24'	✓
GRAY, BROWN SILT W/TRACE F-M SAND	24'	25'	✓
LT. BROWN SILT F-M SAND	25'	26'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y (44) no N (44)

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD 009
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: ___ D ____

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y (44) no N (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT CM (45 46) BENTONITE CLAY BC (45 46)

NO. OF BAGS 3 NO. OF POUNDS 282

GALLONS OF WATER 20

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 11 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

ST STEEL; CO CONCRETE; PL PLASTIC; OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	16 (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD

screen type or open hole — insert appropriate code below

ST STEEL; BR BRASS BRONZE; HO OPEN HOLE; PL PLASTIC; OT OTHER

C 2 (1 2)

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL (8. 9)	16 (11 15)	26 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK from 14 to 26
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

70 TELESCOPE CASING; 72 LOG INDICATOR; 74 75 76 OTHER DATA

C 3 (1 2)

PUMPING TEST

HOURS PUMPED (nearest hour) NA (8 9)

PUMPING RATE (gal. per min.) NA (11 15)

METHOD USED TO MEASURE PUMPING RATE ____

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ ft. (17 20)

WHEN PUMPING ____ ft. (22 25)

TYPE OF PUMP USED (for test) (27)
- A air
- P piston
- T turbine
- C centrifugal
- R rotary
- O other (describe below)
- J jet
- S submersible

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

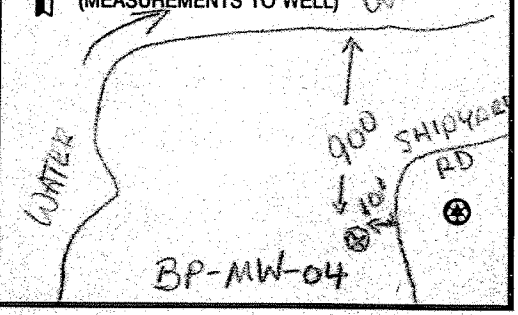
CASING HEIGHT (circle appropriate box and enter casing height)

+ above; − below (49) LAND SURFACE

3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 [redacted] (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM DD YY: 3 27 09 (15 20)

Depth of Well: 14 (TO NEAREST FOOT) (22 26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3036 (28 29 30 31 32 33 34 35 36 37)

OWNER SEVERSTAL SPARROWS POINT LLC (last name / first name)

STREET OR RFD SPARROWS POINT BOULEVARD TOWN BALTO MD 21219

SUBDIVISION SECTION LOT

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	14'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER

A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

E ELECTRIC LOG OBTAINED

P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M 6 D 0009

DRILLERS SIGNATURE
(MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: ___ D ____

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N] (44 44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [C M] (45 46) BENTONITE CLAY [B C] (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94

GALLONS OF WATER 5

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 2 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	0 (63 64)	4 (66 70)

EACH CASING — OTHER CASING (if used)

	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD

screen type or open hole insert appropriate code below

[S T] STEEL [B R] BRASS [H O] OPEN HOLE [P L] PLASTIC [O T] OTHER

C 2 (1 2)

EACH SCREEN

	DEPTH (nearest ft.)	
1	PL (8. 9)	4 (11 15) — 14 (17 21)
2	(23 24)	(26 30) — (32 36)
3	(38 39)	(41 45) — (47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

from	to
3	14

(68)

MDE USE ONLY
(NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING LOG INDICATOR OTHER DATA

C 3 (1 2)

PUMPING TEST

HOURS PUMPED (nearest hour): NA (8 9)

PUMPING RATE (gal. per min.): NA (11 15)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ (17 20) ft.

WHEN PUMPING ____ (22 25) ft.

TYPE OF PUMP USED (for test) (27)

A air P piston T turbine

C centrifugal R rotary O other (describe below)

J jet S submersible

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

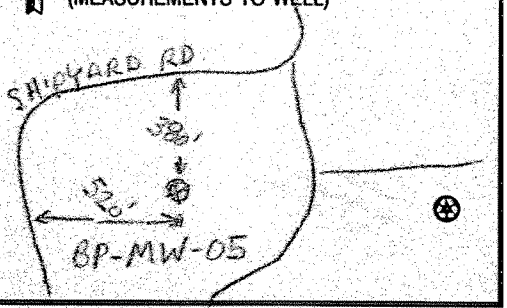
CASING HEIGHT (circle appropriate box and enter casing height)

[+] above [–] below (49) LAND SURFACE

3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 OWNER

C 1 [redacted] (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM 6 DD 11 YY 09
15 20

Depth of Well 22 16 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA - 95 - 3040
28 29 30 31 32 33 34 35 36 37

OWNER SEVERSTAL SPARROWS POINT LLC
STREET OR RFD 1430 SPARROWS POINT BOULEVARD TOWN BALTO MD. 21219
(last name / first name)
SUBDIVISION _____ SECTION _____ LOT _____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0'	16'	✓

NUMBER OF UNSUCCESSFUL WELLS: _____

WELL HYDROFRACTURED yes [Y] 44 no [N] 44

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M __ D ____

DRILLERS SIGNATURE
(MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ __ D ____

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] 44 no [N] 44

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [CM] 45 46 BENTONITE CLAY [BC] 45 46

NO. OF BAGS 1 NO. OF POUNDS 94
GALLONS OF WATER 5

DEPTH OF GROUT SEAL (to nearest foot)
from 0 (48 TOP 52) ft. to 2 (54 BOTTOM 58) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	6 (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below
[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2 (1 2)

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL (8 9)	6 (11 15)	16 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 4 to 16 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) NA (8 9)

PUMPING RATE (gal. per min.) NA (11 15)

METHOD USED TO MEASURE PUMPING RATE _____

WATER LEVEL (distance from land surface)

BEFORE PUMPING _____ (17 20) ft.

WHEN PUMPING _____ (22 25) ft.

TYPE OF PUMP USED (for test)
- [A] air (27)
- [P] piston (27)
- [T] turbine (27)
- [C] centrifugal (27)
- [R] rotary (27)
- [O] other (describe below) (27)
- [J] jet (27)
- [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

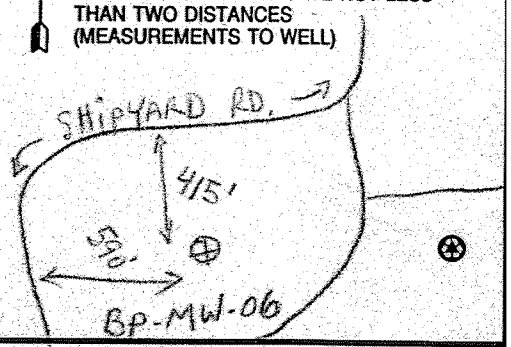
CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
[+] (49) above / [–] (49) below LAND SURFACE
3 (50 51) (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 8595 (MDE USE ONLY)

1 2 3 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED: MM 6 DD 11 YY 09 (15–20)

Depth of Well: 16 (22–26) (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3041 (28–37)

OWNER: SEVERSTAL SPARROWS POINT (last name / first name)
STREET OR RFD: 1430 SPARROWS POINT BOULEVARD TOWN: BALTO., MD. 21219
SUBDIVISION: ______ SECTION: ______ LOT: ______

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	16	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes Y / no **N** (circled)

CIRCLE APPROPRIATE LETTER
- **A** A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- **E** ELECTRIC LOG OBTAINED
- **P** TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. MGD 009
[signature]
DRILLERS SIGNATURE
(MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. __ __ D __ __ __

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes **Y** (circled) / no N (44)
TYPE OF GROUTING MATERIAL (Circle one): CEMENT **CM** (circled) (45 46) BENTONITE CLAY BC (45 46)
NO. OF BAGS: 1 NO. OF POUNDS: 94
GALLONS OF WATER: 5
DEPTH OF GROUT SEAL (to nearest foot): from 0 ft. (TOP 48–52) to 2 ft. (BOTTOM 54–58)
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE (60 61)	Nominal diameter top (main) casing (nearest inch)! (63 64)	Total depth of main casing (nearest foot) (66–70)
PL	2	6

OTHER CASING (if used) — EACH CASING: diameter inch; depth (feet) from / to

SCREEN RECORD
screen type or open hole insert appropriate code below: ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN	Type	from	to
1	PL	6	16
2			
3			

SLOT SIZE 1: 0 2: 2 3: 0
DIAMETER OF SCREEN: 2 (56–60) (NEAREST INCH)

GRAVEL PACK: from 4 to 16
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

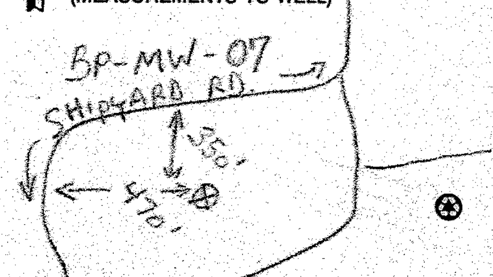
MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) TELESCOPE CASING; (E.R.O.S.) (72) LOG INDICATOR; W Q (74 75 76) OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour): NA (8 9)
PUMPING RATE (gal. per min.): NA (11–15)
METHOD USED TO MEASURE PUMPING RATE: ______
WATER LEVEL (distance from land surface)
BEFORE PUMPING: ______ ft. (17–20)
WHEN PUMPING: ______ ft. (22–25)
TYPE OF PUMP USED (for test): A air, P piston, T turbine, C centrifugal, R rotary, O other (describe below), J jet, S submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / **NO** (circled)
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)
PUMP HORSE POWER (37–41)
PUMP COLUMN LENGTH (nearest ft.) (43–47)
CASING HEIGHT (circle appropriate box and enter casing height): + above / − below LAND SURFACE: 3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

OWNER

C 1 [redacted] (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM DD YY: 6 15 09 (15 20)

Depth of Well: 16 (TO NEAREST FOOT) (22 26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3061 (28 29 30 31 32 33 34 35 36 37)

OWNER last name SEVERSTAL first name SPARROWS POINT, LLC

STREET OR RFD 1450 SPARROWS POINT BOULEVARD TOWN BALTO., MD. 21219

SUBDIVISION SECTION LOT

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	16'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M GD 009

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ __ D __ __ __

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N] (44 44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [C M] (45 46) BENTONITE CLAY [B C] (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94

GALLONS OF WATER

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 2 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	6 (66 70)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD

screen type or open hole — insert appropriate code below

[S T] STEEL [B R] BRASS BRONZE [H O] OPEN HOLE [P L] PLASTIC [O T] OTHER

C 2 (1 2)

DEPTH (nearest ft.) — EACH SCREEN

		from	to
1	PL (8 9)	6 (11 15)	16 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 4 to 16 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 TELESCOPE CASING; 72 LOG INDICATOR; 74 75 76 OTHER DATA

C 3 (1 2)

PUMPING TEST

HOURS PUMPED (nearest hour): NA (8 9)

PUMPING RATE (gal. per min.): NA (11 15)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft. (17 20)

WHEN PUMPING ft. (22 25)

TYPE OF PUMP USED (for test) (27)

[A] air [P] piston [T] turbine [C] centrifugal [R] rotary [O] other (describe below) [J] jet [S] submersible

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

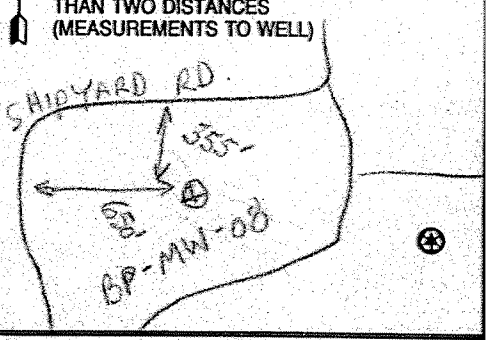
CASING HEIGHT (circle appropriate box and enter casing height)

[+] above [–] below (49) LAND SURFACE

3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 [redacted] (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM DD YY: 6 15 09 (15 20)

Depth of Well: 18 (22 26) (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3062 (28 29 30 31 32 33 34 35 36 37)

OWNER SEVERSTAL SPARROWS POINT LLC (last name / first name)

STREET OR RFD 1730 SPARROWS POINT BOULEVARD TOWN BALTO. MD. 21219

SUBDIVISION _____ SECTION _____ LOT _____

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	18	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED (yes Y / no N): N

CIRCLE APPROPRIATE LETTER

- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD 009 [illegible]

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ __ D __ __ __ __

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y / no N (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT C M (45 46) BENTONITE CLAY B C (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94

GALLONS OF WATER 7

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 52) TOP ft. to 4 (54 58) BOTTOM ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

S T STEEL; C O CONCRETE; P L PLASTIC; O T OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	8 (66 70)

EACH CASING — OTHER CASING (if used)

	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD

screen type or open hole — insert appropriate code below

S T STEEL; B R BRASS BRONZE; H O OPEN HOLE; P L PLASTIC; O T OTHER

C 2 (1 2)

EACH SCREEN — DEPTH (nearest ft.)

1	PL (8 9)	8 (11 15)	18 (17 21)
2		(23 24)	(26 30) (32 36)
3		(38 39)	(41 45) (47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 6 to 18 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING; LOG INDICATOR; OTHER DATA

C 3 (1 2)

PUMPING TEST

HOURS PUMPED (nearest hour) NA (8 9)

PUMPING RATE (gal. per min.) NA (11 15)

METHOD USED TO MEASURE PUMPING RATE _____

WATER LEVEL (distance from land surface)

BEFORE PUMPING _____ ft. (17 20)

WHEN PUMPING _____ ft. (22 25)

TYPE OF PUMP USED (for test) (27)

A air; P piston; T turbine; C centrifugal; R rotary; O other (describe below); J jet; S submersible

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

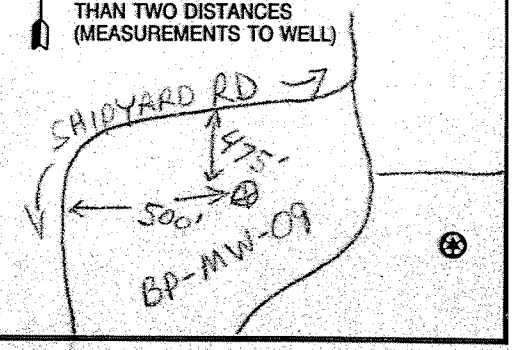
CASING HEIGHT (circle appropriate box and enter casing height)

+ above (49) / – below (49) LAND SURFACE

3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 [redacted] (MDE USE ONLY)

1 2 3 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM DD YY: 6 19 09 (15 20)

Depth of Well: 14 (TO NEAREST FOOT) (22 26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA - 95 - 3063 (28 29 30 31 32 33 34 35 36 37)

OWNER last name SEVERSTAL first name SPARROWS POINT LLC

STREET OR RFD 1430 SPARROWS POINT BOULEVARD TOWN BALTO, MD 21219

SUBDIVISION _____ SECTION _____ LOT _____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	18'	✓

NUMBER OF UNSUCCESSFUL WELLS: _____

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M __ D _____

DRILLERS SIGNATURE
(MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ __ D _____

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94

GALLONS OF WATER 5

DEPTH OF GROUT SEAL (to nearest foot)

from _____ (48 TOP 52) ft. to _____ (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	4 (66 70)

OTHER CASING (if used) — EACH CASING

	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2 (1 2)

DEPTH (nearest ft.) — EACH SCREEN

		from	to
1	PL (8 9)	4 (11 15)	14 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK — from 3 to 16

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

MDE USE ONLY
(NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) NA (8 9)

PUMPING RATE (gal. per min.) NA (11 15)

METHOD USED TO MEASURE PUMPING RATE _____

WATER LEVEL (distance from land surface)

BEFORE PUMPING _____ (17 20) ft.

WHEN PUMPING _____ (22 25) ft.

TYPE OF PUMP USED (for test)

[A] air (27) [P] piston (27) [T] turbine (27)
[C] centrifugal (27) [R] rotary (27) [O] other (describe below) (27)
[J] jet (27) [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

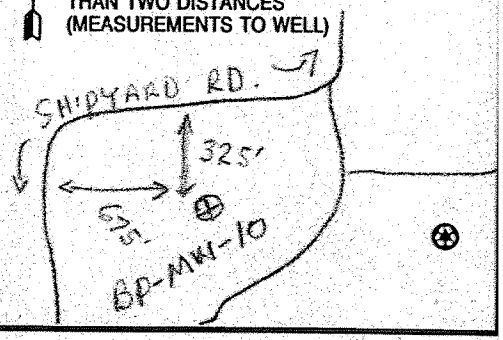
PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above (49) LAND SURFACE [−] below (49)

3 (50 51) (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 OWNER

C 1 [redacted] (MDE USE ONLY)

1 2 3 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM 6 DD 23 YY 89
15 20

Depth of Well 22 14 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA - 95 - 3073
28 29 30 31 32 33 34 35 36 37

OWNER SEVERSTAL SPARROWS POINT LLC (last name / first name)
STREET OR RFD 1430 SPARROWS POINT BOULEVARD TOWN BALTO. MD 21219
SUBDIVISION ____ SECTION ____ LOT ____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0'	18'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 0094
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ D __

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y no N (44)

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT C M (45 46) BENTONITE CLAY B C (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94
GALLONS OF WATER 5
DEPTH OF GROUT SEAL (to nearest foot)
from ____ (48 TOP 52) ft. to ____ (54 BOTTOM 58) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
- S T STEEL
- C O CONCRETE
- P L PLASTIC
- O T OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	4 (66 70)

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below
- S T STEEL
- B R BRASS BRONZE
- H O OPEN HOLE
- P L PLASTIC
- O T OTHER

C 2 (1 2)

EACH SCREEN	DEPTH (nearest ft.) from	to
1	PL (8. 9) 4 (11 15)	14 (17 21)
2	(23 24) (26 30)	(32 36)
3	(38 39) (41 45)	(47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 3 to 16 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

70 TELESCOPE CASING ____ 72 LOG INDICATOR ____ 74 75 76 OTHER DATA ____

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) NA (8 9)

PUMPING RATE (gal. per min.) NA (11 15)

METHOD USED TO MEASURE PUMPING RATE ____

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ (17 20) ft.

WHEN PUMPING ____ (22 25) ft.

TYPE OF PUMP USED (for test)
- A air (27)
- P piston (27)
- T turbine (27)
- C centrifugal (27)
- R rotary (27)
- O other (describe below) (27)
- J jet (27)
- S submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

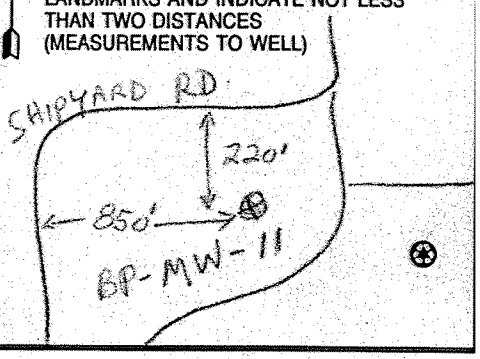
PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
- + (49) above
- – (49) below

LAND SURFACE

3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C1 8600 (MDE USE ONLY)
1 2 3 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM DD YY
15 6 3 68 20

Depth of Well 22 22 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL"
28 29 30 31 32 33 34 35 36 37 AA - 95 - 3038

OWNER CEVERSTAL SPARROWS POINT LLC
last name first name
STREET OR RFD 1450 SPARROWS POINT BOULEVARD TOWN BALTO., MD. 21219
SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	145	✓
GRAY SILT & COARSE SAND & GRAVEL	145	18'	✓
GRAY CLAYEY SILT W/ F-M SAND & GRAVEL	18'	20'	
GRAY SILT W/ F SAND W/ MICA & CLAY TRACES	20'	22'	
GRAY-BROWN SILTY CLAY W/ SMALL ROCK FRAGS.	22'	24'	

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED yes Y 44 no N 44

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. MGD 009
Dan O Fincham
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. D

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y 44 no N 44

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM 45 46 BENTONITE CLAY BC 45 46

NO. OF BAGS 3 NO. OF POUNDS 132
GALLONS OF WATER 18
DEPTH OF GROUT SEAL (to nearest foot)
from 0 48 TOP 52 ft. to 8 54 BOTTOM 58 ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
- ST STEEL
- CO CONCRETE
- PL PLASTIC
- OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
DL 60 61	7 63 64	12 66 70

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below
- ST STEEL
- BR BRASS, BRONZE
- HO OPEN HOLE
- PL PLASTIC
- OT OTHER

C 2 1 2

EACH SCREEN	DEPTH (nearest ft.)		
1	DL 8 9	12 11 15	22 17 21
2	23 24	26 30	32 36
3	38 39	41 45	47 51

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 56 60 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 — from 10 to 24 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
70 72 74 75 76
TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 1 2

PUMPING TEST
HOURS PUMPED (nearest hour) NA 8 9

PUMPING RATE (gal. per min.) NA 11 15

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft. 17 20

WHEN PUMPING ft. 22 25

TYPE OF PUMP USED (for test)
- A air
- P piston
- T turbine
- C centrifugal
- R rotary
- O other (describe below)
- J jet
- S submersible

(27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. 29

CAPACITY: GALLONS PER MINUTE (to nearest gallon) 31 35

PUMP HORSE POWER 37 41

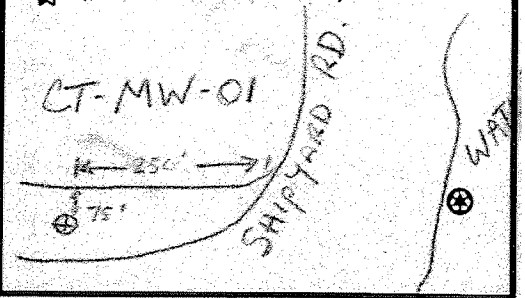
PUMP COLUMN LENGTH (nearest ft.) 43 47

CASING HEIGHT (circle appropriate box and enter casing height)
- + 49 above
- – 49 below

LAND SURFACE

3 50 51 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 OWNER

C 1 [redacted] (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY
8 13

DATE WELL COMPLETED MM 6 DD 9 YY 02
15 20

Depth of Well 22 20 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA - 95 - 3039
28 29 30 31 32 33 34 35 36 37

OWNER SEVERSTAL SPARROWS POINT LLC
STREET OR RFD 1430 (last name) SPARROWS POINT (first name) BOULEVARD TOWN BALTO, MD. 21219
SUBDIVISION _____ SECTION _____ LOT _____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
SLAG	0	18	✓
BROWN GRAY SAND W/TRACE SILT	18'	20'	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M D 0094
[signature] W. Fleming
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: __ __ D ____

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no [N] (44 44)

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [C M] (45 46) BENTONITE CLAY [B C] (45 46)

NO. OF BAGS 1 NO. OF POUNDS 94
GALLONS OF WATER 5
DEPTH OF GROUT SEAL (to nearest foot)
from 0 (48 TOP 52) ft. to 2 (54 BOTTOM 58) ft.
(enter 0 if from surface)

CASING RECORD
(casing types insert appropriate code below)
- [S T] STEEL
- [C O] CONCRETE
- [P L] PLASTIC
- [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2 (63 64)	10 (66 70)

EACH CASING

OTHER CASING (if used)	diameter inch	depth (feet) from	to

SCREEN RECORD
(screen type or open hole insert appropriate code below)
- [S T] STEEL
- [B R] BRASS BRONZE
- [H O] OPEN HOLE
- [P L] PLASTIC
- [O T] OTHER

C 2 (1 2)

DEPTH (nearest ft.)

EACH SCREEN

		from	to
1	PL (8 9)	10 (11 15)	20 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 7 to 20 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) NA (8 9)

PUMPING RATE (gal. per min.) NA (11 15)

METHOD USED TO MEASURE PUMPING RATE _____

WATER LEVEL (distance from land surface)

BEFORE PUMPING _____ (17 20) ft.

WHEN PUMPING _____ (22 25) ft.

TYPE OF PUMP USED (for test)
- [A] air (27)
- [P] piston (27)
- [T] turbine (27)
- [C] centrifugal (27)
- [R] rotary (27)
- [O] other (describe below) (27)
- [J] jet (27)
- [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

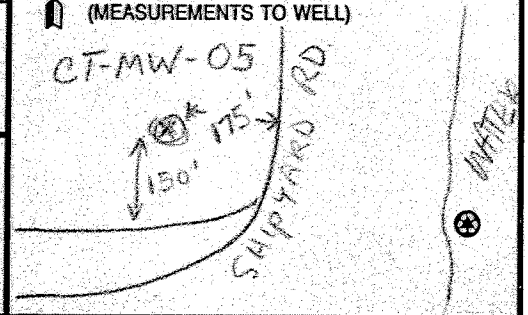
PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above (49)
- [–] below (49)

LAND SURFACE

3 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION
1800 Washington Blvd., Baltimore, Maryland 21230 (410) 537-3784

****

WATER WELL ABANDONMENT-SEALING REPORT FORM

****

SUBMIT COPIES OF COMPLETED FORM TO:

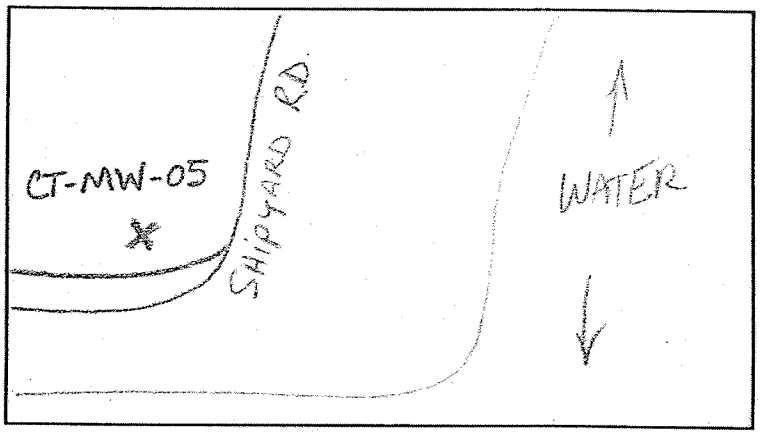
* COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
* WELL OWNER
* MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: 6/17/09 (month/day/year)

* PERMIT NUMBER OF ABANDONED WELL (if any) BA - 95 - 3039
* PERMIT NUMBER OF REPLACEMENT WELL — —
* PERSON ABANDONING WELL: DAN W. FINCHAM WELL DRILLERS LICENSE NUMBER: MGD 009
CIRCLE: MWD/MSD/MGL
* OWNER'S NAME: SEVERSTAL SPARROWS POINT, LLC

* WELL LOCATION:
COUNTY: BALTO. COUNTY
NEAREST TOWN: BALTO CITY
TAX MAP ____ BLOCK ____ PARCEL ____
SUBDIVISION: SPARROWS POINT
SECTION: ____ LOT: ____
NEAREST ROAD: SHIPYARD RD

SITE LOCATION MAP



* TYPE OF WELL BEING ABANDONED:

____ DRILLED ____ JETTED
__X__ BORED/AUGERED ____ HAND DUG
____ OTHER (specify) ____

* USE CODE:

____ DOMESTIC ____ MUNICIPAL/PUBLIC
____ IRRIGATION ____ INDUSTRIAL
__X__ TEST/OBSERVATION ____ GEOTHERMAL

* TYPE OF CASING:

____ STEEL __X__ PLASTIC
____ CONCRETE ____ OTHER (specify)

* SIZE OF CASING: 2 INCHES IN DIAMETER
* DEPTH OF WELL: 19.5 FEET DEEP
* WAS ANY CASING REMOVED? ____ YES __X__ NO
if yes, length removed, in feet: ____
* WAS CASING RIPPED OR PERFORATED? __X__ YES ____ NO

LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
CEMENT W/ BENTONITE	19.5'	0'

VOLUME OF MATERIAL USED: 10 GALLON

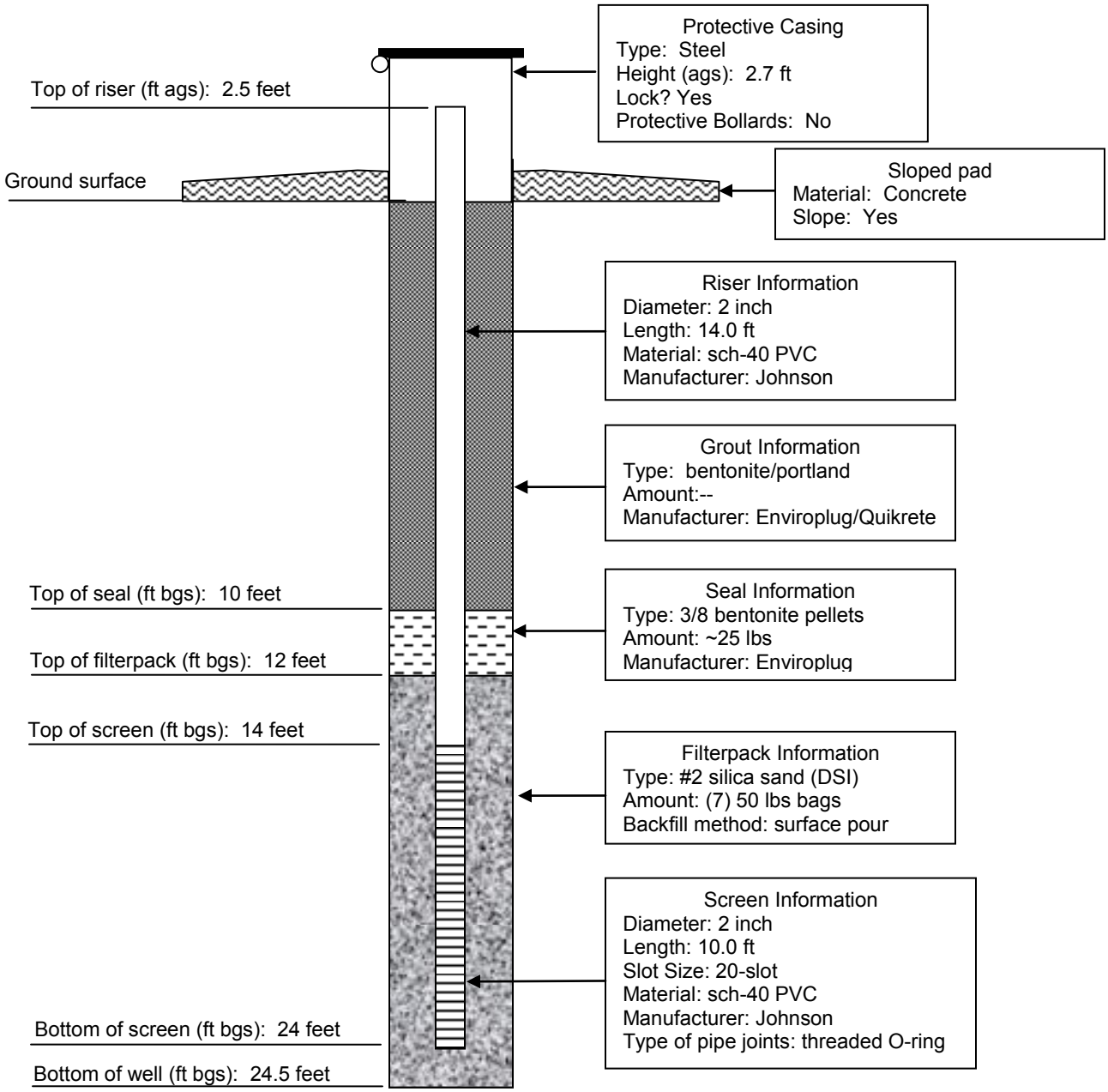
Dan W. Fincham MGD 009 MWD/MSD/MGD 6/18/09
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN LICENSE # CIRCLE ONE DATE

DENV 828 JULY 1997 4) WELL OWNER

RECORD OF MONITORING WELL CONSTRUCTION

(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-02D
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 5/26/09 0815 Time Finished: 1130
Location: Baltimore, MD	Depth to Water: 8.0 ft BGS
Site Geologist: Steven Yankay	Drilling Method: Hollow Stem Auger

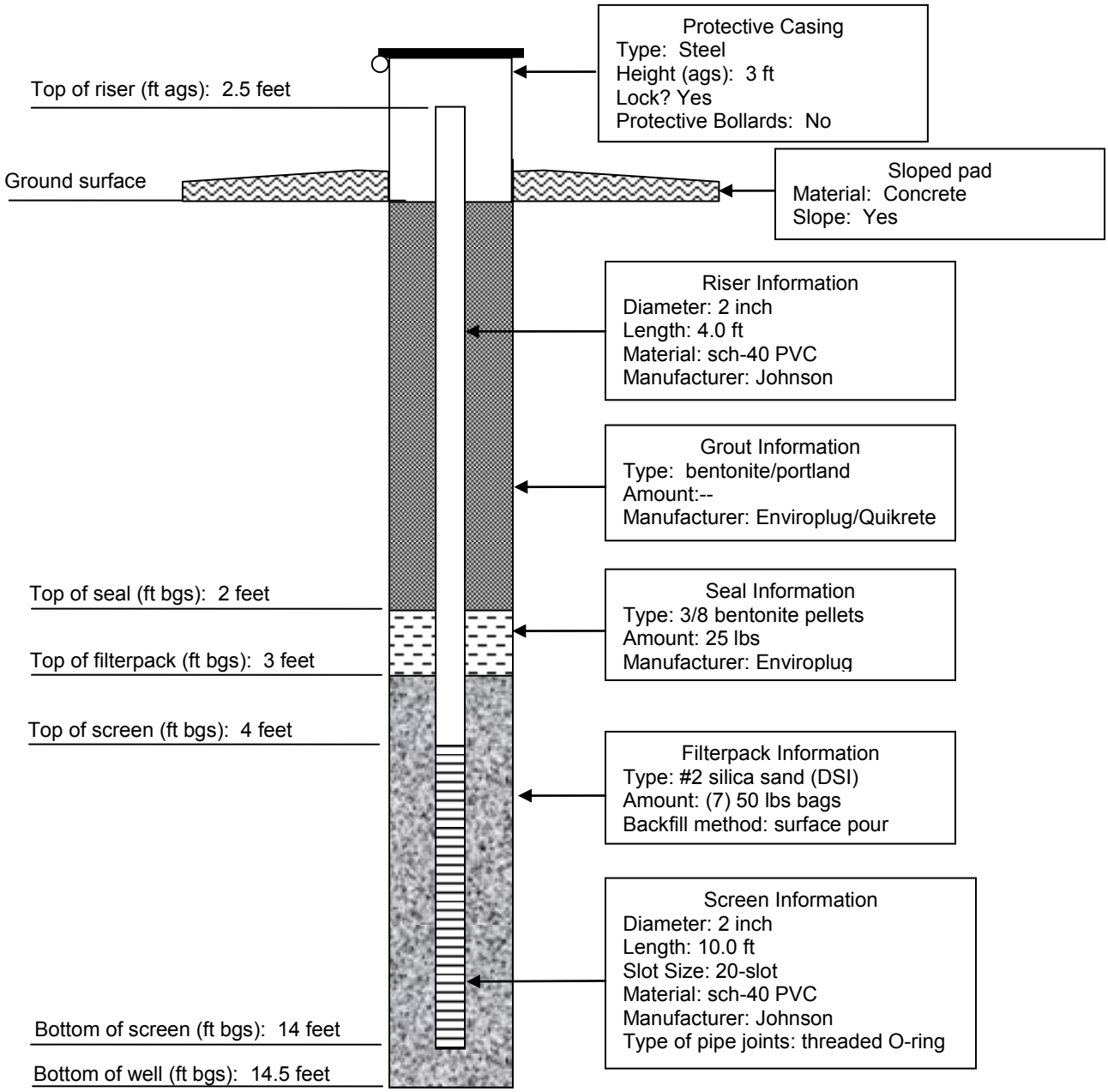


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-02S
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 5/28/09 1140 Time Finished: 1256
Location: Baltimore, MD	Depth to Water: 9.0 ft BGS
Site Geologist: Steven Yankay	Drilling Method: Hollow Stem Auger



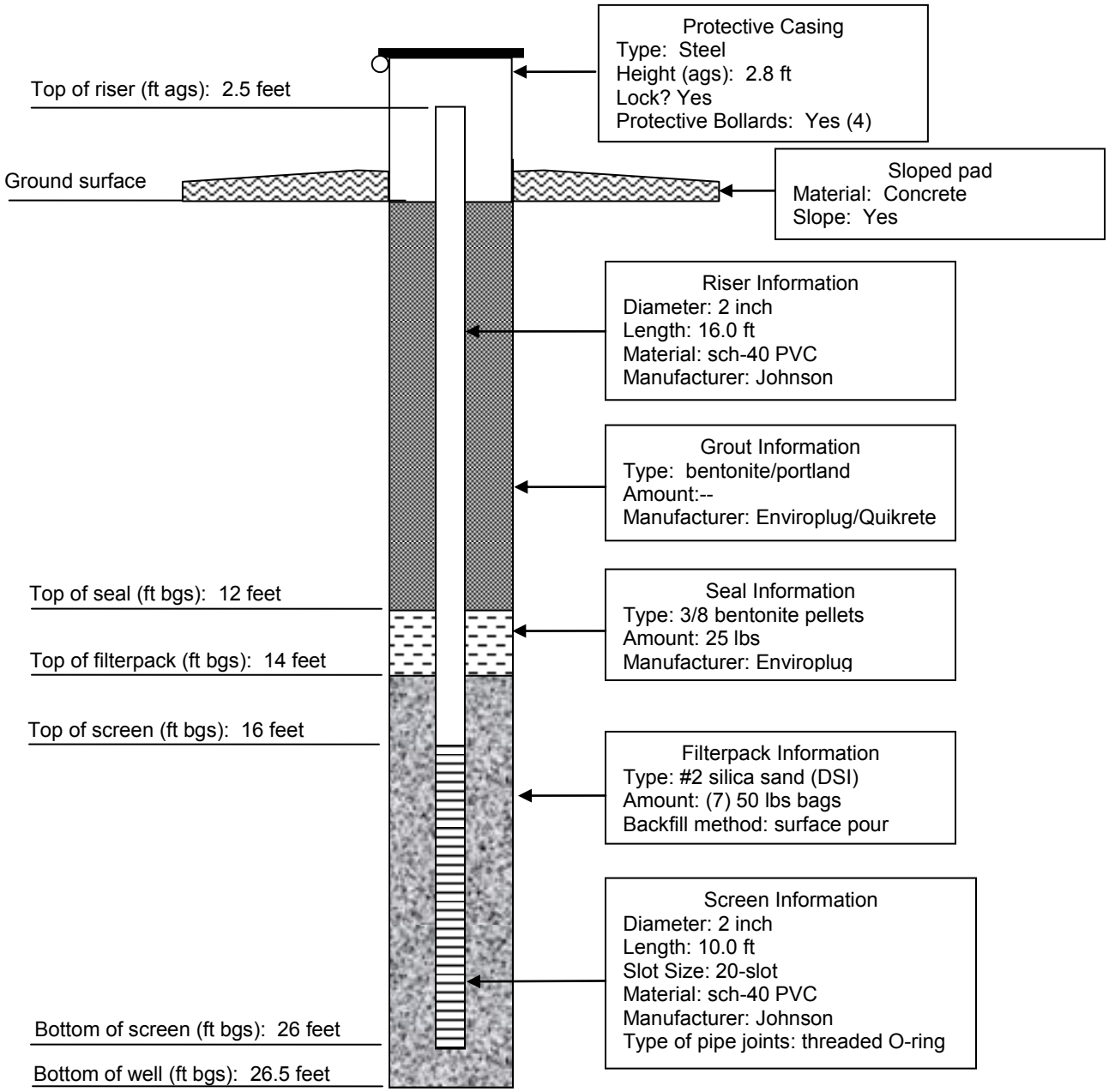
Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION

(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-04
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 5/22/09 0825 Time Finished: 1055
Location: Baltimore, MD	Depth to Water: 8.0 ft BGS
Site Geologist: Steven Yankay	Drilling Method: Hollow Stem Auger

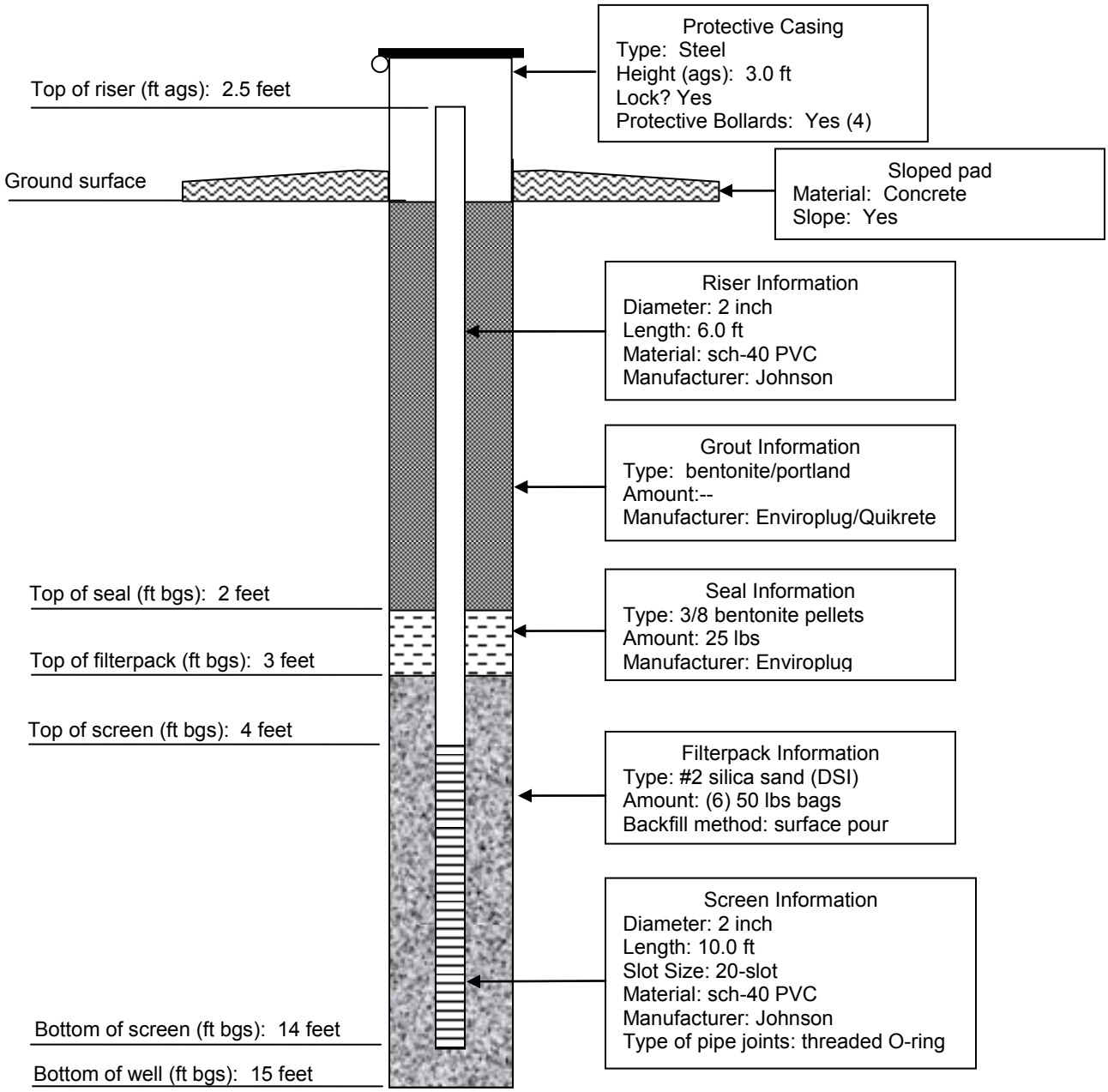


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-05
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 5/27/09 1320 Time Finished: 1409
Location: Baltimore, MD	Depth to Water: 6.0 ft BGS
Site Geologist: Steven Yankay	Drilling Method: Hollow Stem Auger

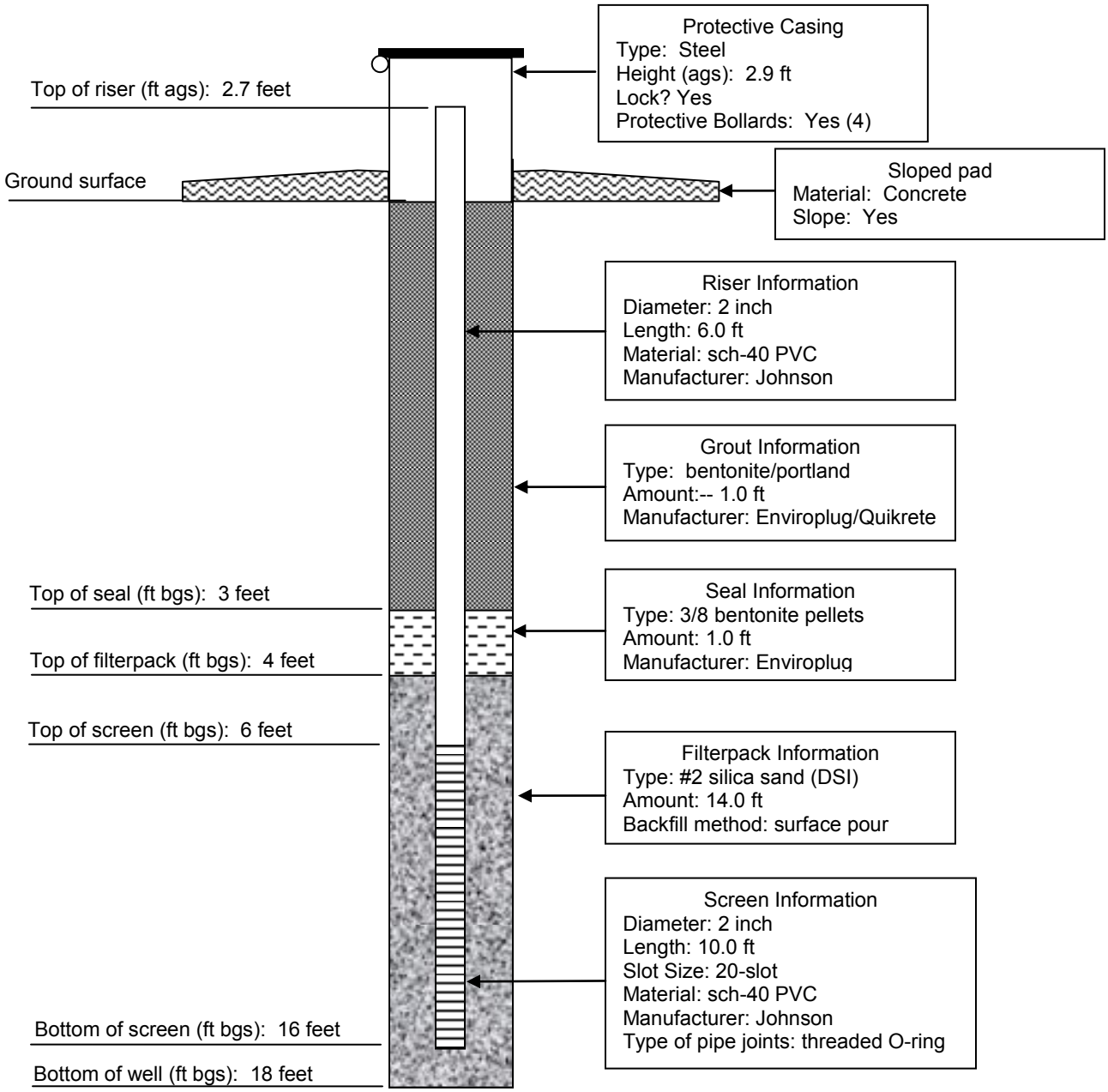


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-06
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/11/09 0855 Time Finished: 1055
Location: Baltimore, MD	Depth to Water: 4.5 ft BGS
Site Geologist: Joseph Sawicki	Drilling Method: Hollow Stem Auger

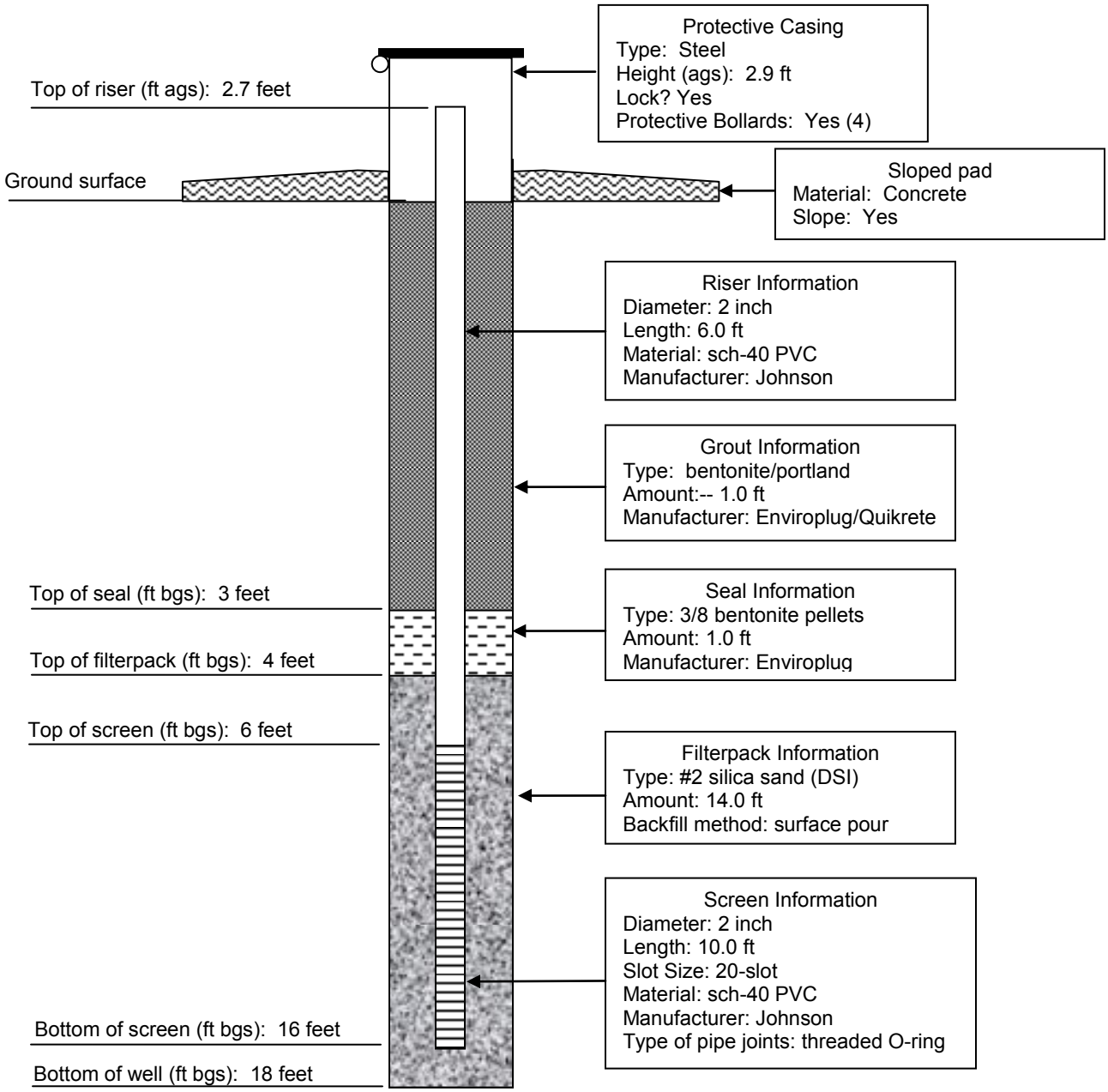


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-07
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/11/09 1335 Time Finished: 1515
Location: Baltimore, MD	Depth to Water: 6.25 ft BGS
Site Geologist: Joseph Sawicki	Drilling Method: Hollow Stem Auger



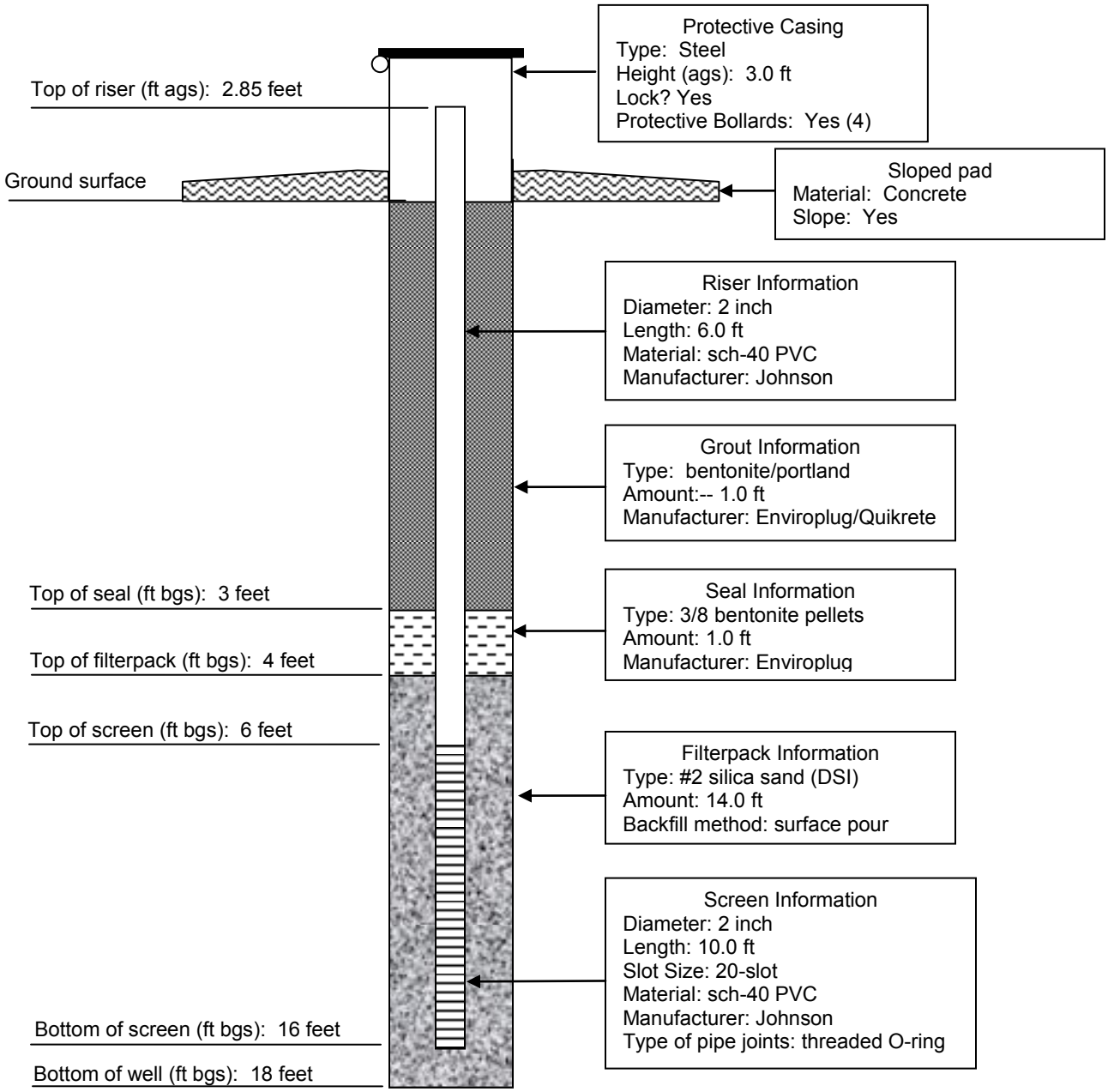
Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION

(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-08
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/15/09 0945 Time Finished: 1110
Location: Baltimore, MD	Depth to Water: 6.5 ft BGS
Site Geologist: Joseph Sawicki	Drilling Method: Hollow Stem Auger

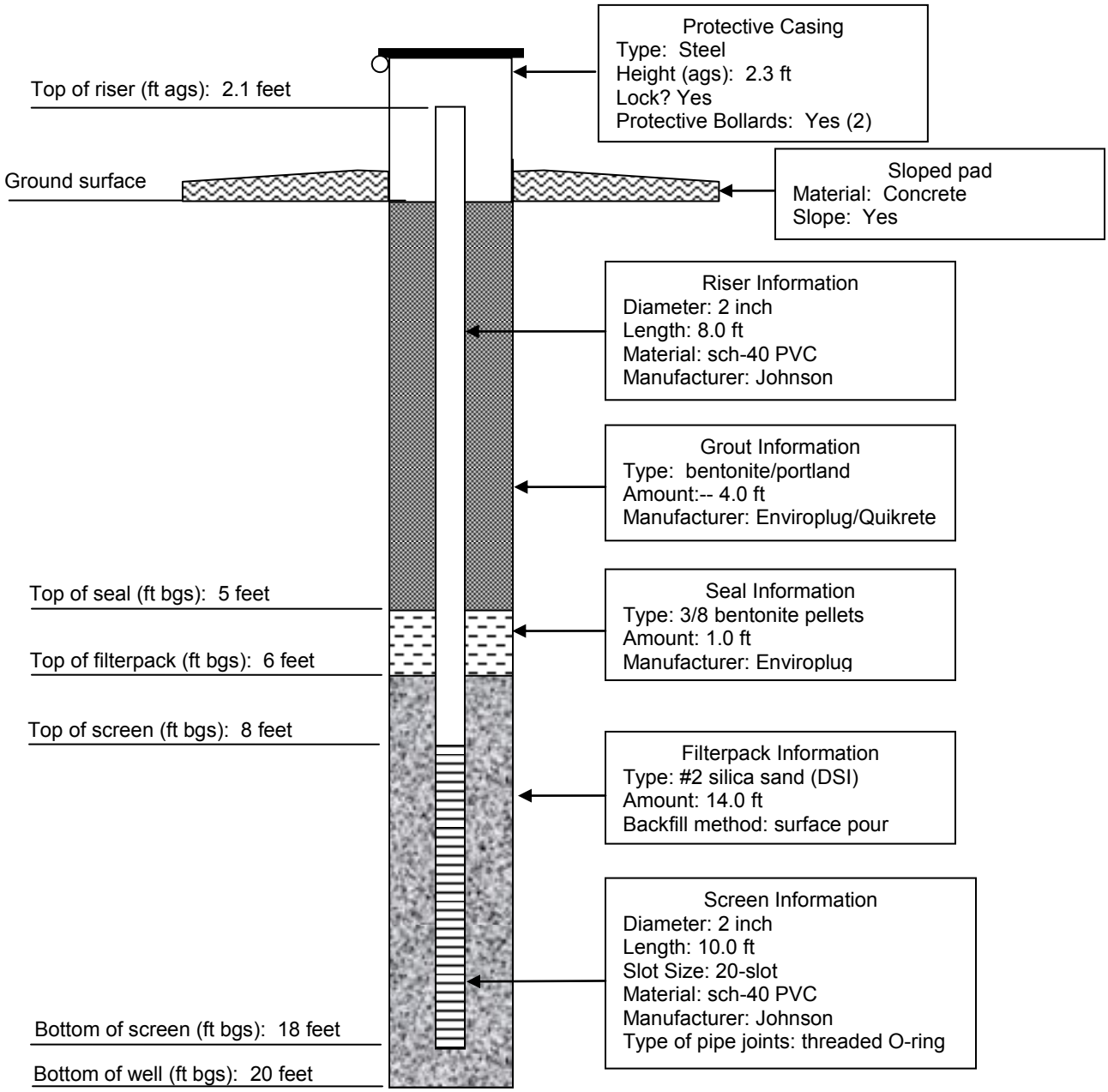


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-09
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/15/09 1345 Time Finished: 1510
Location: Baltimore, MD	Depth to Water: 8.5 ft BGS
Site Geologist: Joseph Sawicki	Drilling Method: Hollow Stem Auger

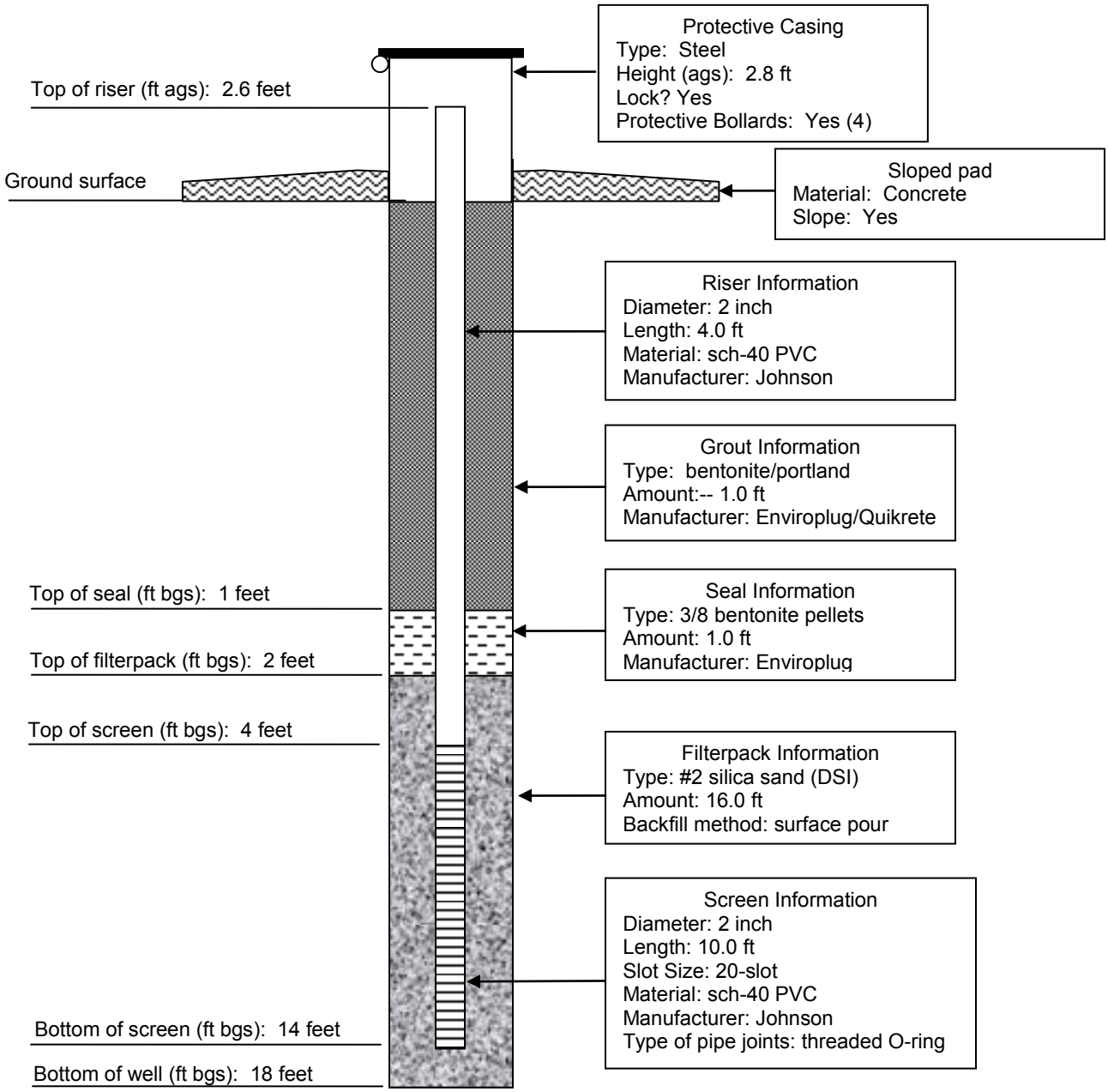


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-10
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/19/09 1250 Time Finished: 1345
Location: Baltimore, MD	Depth to Water: 7.5 ft BGS
Site Geologist: Joseph Sawicki	Drilling Method: Hollow Stem Auger

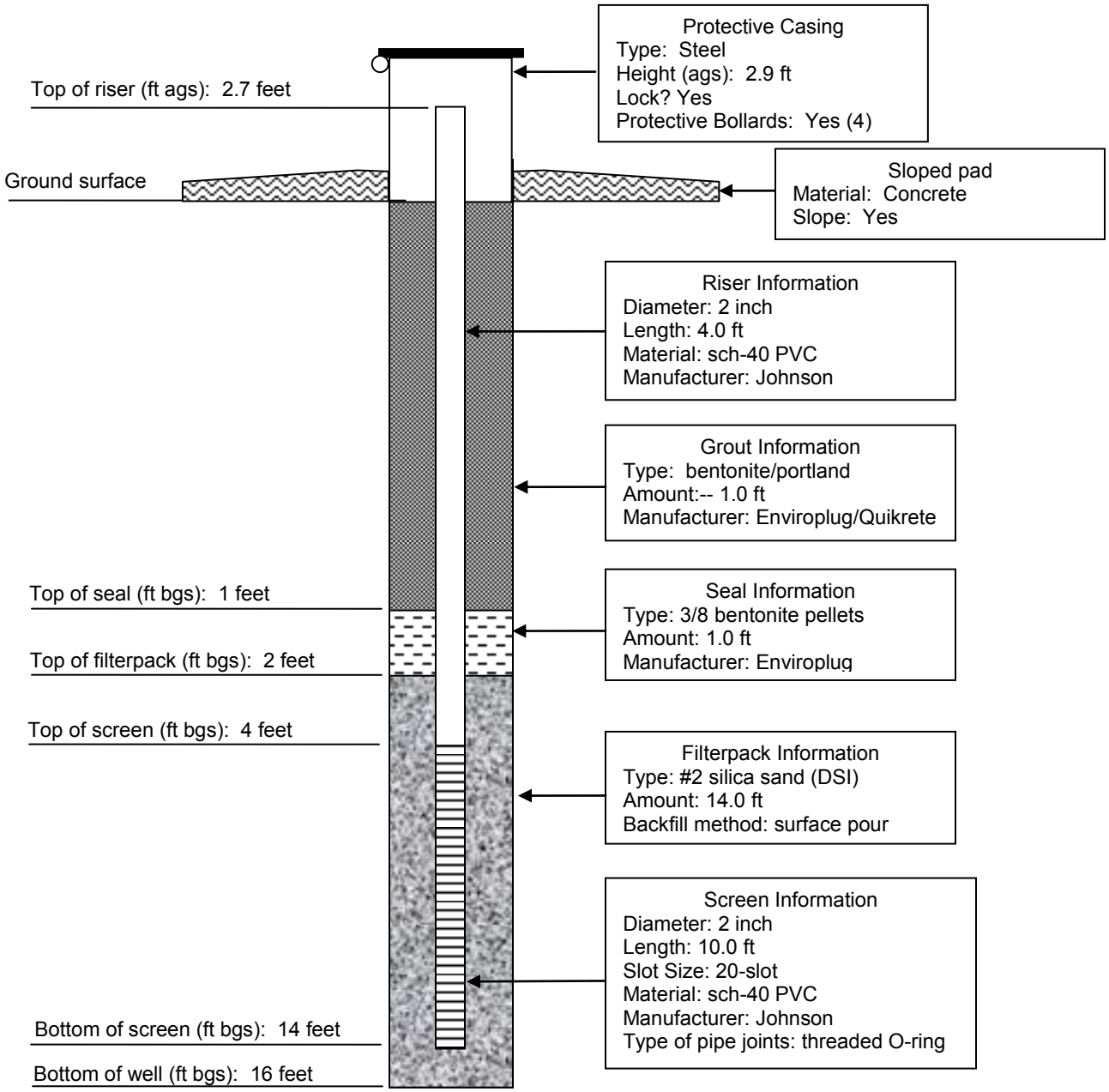


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: BP-MW-11
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/22/09 1255 Time Finished: 1410
Location: Baltimore, MD	Depth to Water: 6.5 ft BGS
Site Geologist: Joseph Sawicki	Drilling Method: Hollow Stem Auger

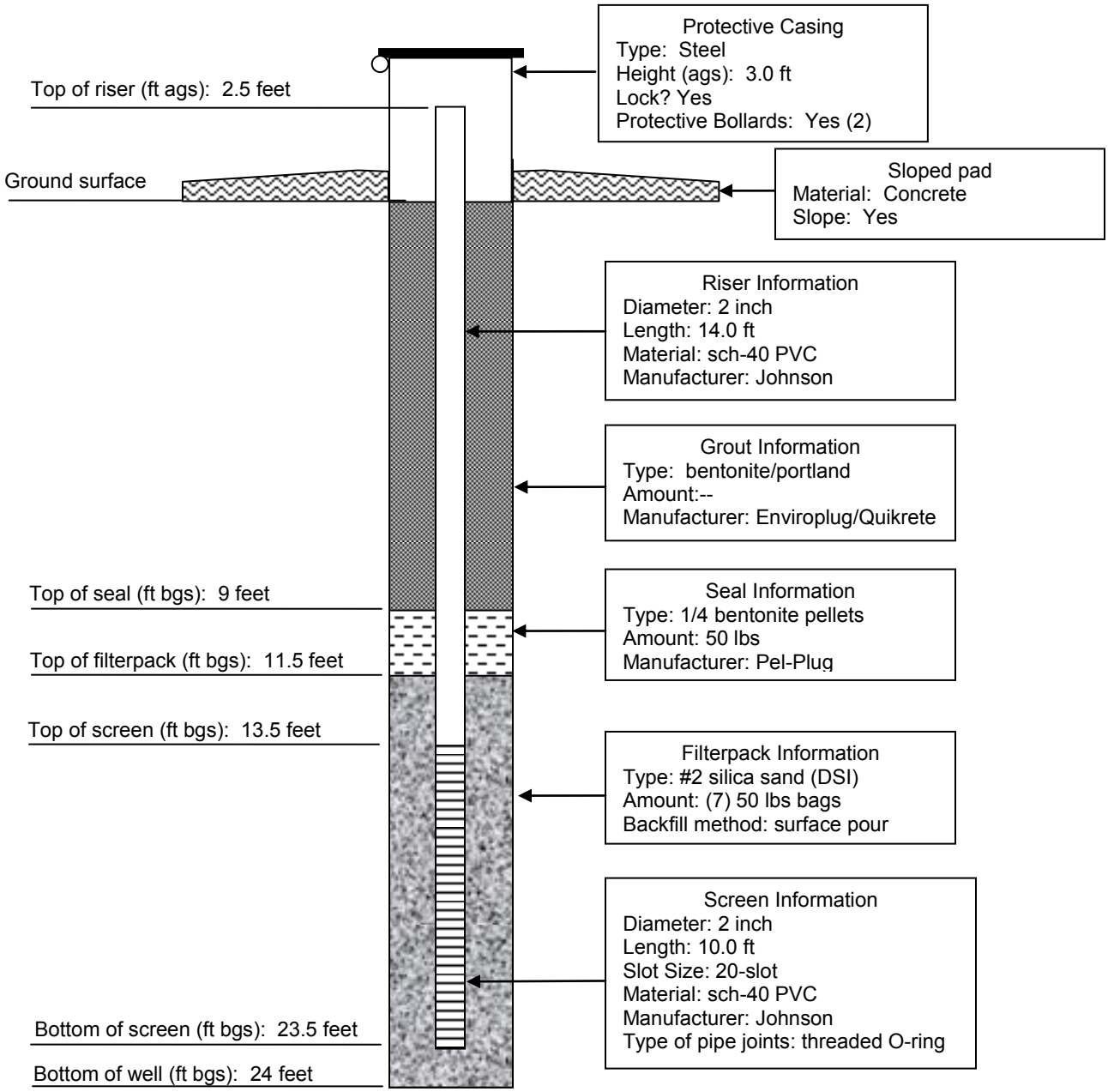


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: CT-MW-01
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/2/09 1129 Time Finished: 1306
Location: Baltimore, MD	Depth to Water: 9.0 ft BGS
Site Geologist: Steven Yankay	Drilling Method: Hollow Stem Auger

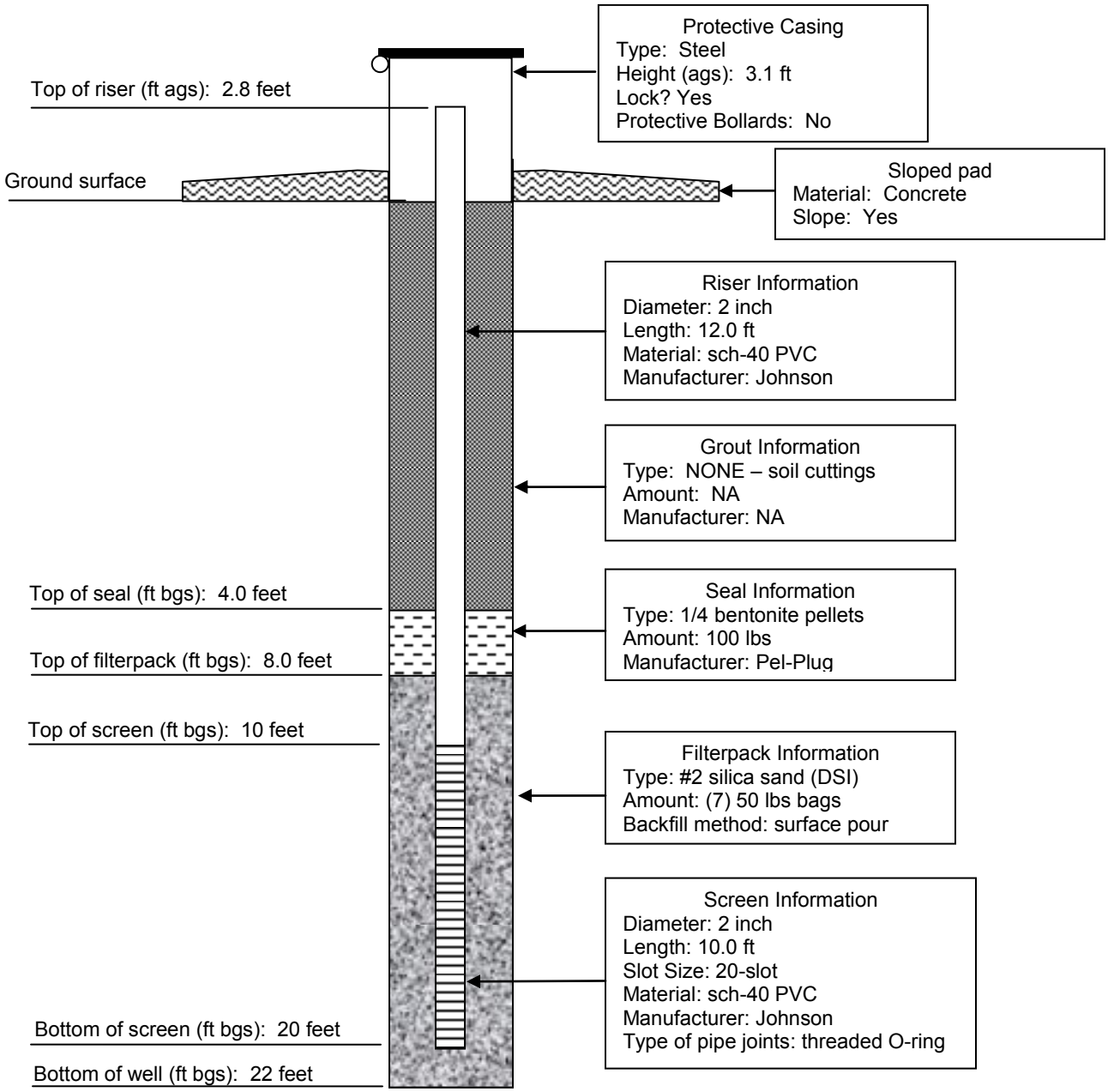


Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

RECORD OF MONITORING WELL CONSTRUCTION
(STICK-UP)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: CT-MW-05
Project Title/ Project No.: Sparrows Point 1453406.0001.0004B	Date/Time Installed: 6/9/09 1300 Time Finished: 1419
Location: Baltimore, MD	Depth to Water: 9.0 ft BGS
Site Geologist: Steven Yankay	Drilling Method: Hollow Stem Auger



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface