Severstal
International

January 31, 2011

Mr. Andrew Fan
US EPA Region III, 3WC23
1650 Arch Street
Philadelphia, PA 19103-2029

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, Maryland 21230

Re: Consent Decree, Civil Action Nos. JFM-97-558, JFM-97-559
Coke Oven Area Interim Measures Progress Report December 2010

Dear Mr. Fan and Ms. Brown:

Enclosed with this correspondence is the ***Coke Oven Area Interim Measures Progress Report December 2010*** completed for the Severstal Sparrows Point Facility in accordance with the requirements outlined in US EPA's September 2, 2010 approval letter for the Coke Oven Area Interim Measures work associated with the referenced Consent Decree. The report summarizes implementation progress for the approved interim measures (IMs) that have been developed to address identified environmental conditions at the Coke Oven Area through December 31, 2010.

As of December 31, 2010, Cell 1 and Cell 6 are operational and Cell 4 is in the process of being evaluated and designed. All three Cells are addressed in this progress report. The other Cells are in various stages of evaluation, design, and under permitting considerations by Maryland Department of the Environment (MDE) in accordance with the schedule requirements outlined in the revised approval letter for the IMs received from US EPA dated January 13, 2011.

Please contact me at (410) 388-6622 should questions arise during your review of the enclosed progress report.

Sincerely,

Russell Becker
Division Manager, Environmental Engineering and Affairs

Enclosure

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COKE OVEN AREA INTERIM MEASURES PROGRESS REPORT
(DECEMBER 2010)

Prepared for

Severstal-Sparrows Point, LLC
Sparrows Point, Maryland

January 31, 2011

URS Corporation
200 Orchard Ridge Drive, Suite 101
Gaithersburg, MD 20878
Project no. 15302307

Introduction

In accordance with the United States Environmental Protection Agency's (US EPA)'s September 2, 2010 letter, this document is the monthly progress report for December 2010 for the US EPA-approved interim measures (IMs) that have been developed to address identified environmental conditions at the Coke Oven Area (COA) Special Study Area at the Severstal Sparrows Point Facility located in Sparrows Point, Maryland. This progress report summarizes IM progress for December 2010.

For mutual ease of understanding, and as agreed during the June 3, 2010 teleconference with US EPA, the following designations are applied in this document to the six (6) IM "Cells" (**Figure 1**) at the COA:

- Cell 1: Prototype Air Sparge/Soil Vapor Extraction (AS/SVE) System in the Former Benzol Processing Area,
- Cell 2: AS/SVE and Dual Phase Groundwater Extraction System in Former Coal Storage Area,
- Cell 3: AS/SVE System in "Cove" Area,
- Cell 4: In-Situ Anaerobic Bio-treatment Area in Coal Tar Area,
- Cell 5: Groundwater Extraction at the Turning Basin Area, and
- Cell 6: Light Non-Aqueous Phase Liquid (LNAPL) Recovery at the Former Benzol Processing Area.

Cells 1, 4 and 6 had either continuing operations or design work completed during December 2010 and are addressed in this progress report. The other Cells are in various stages of evaluation, design, and under permitting considerations by Maryland Department of the Environment (MDE). The work for the other cells is being conducted in accordance with the requirements outlined in the revised approval letter received from US EPA on January 13, 2011.

Cell 1 operation was temporarily suspended from December 14th to January 23rd to support system modifications required for cold weather operation and to complete maintenance repairs of the internal combustion engine (ICE) remediation unit. Details of system winterization are described in this progress report.

Evaluation and design work for the in-situ enhanced anaerobic bioremediation system at Cell 4 continued during December 2010.

Cell 6 was operational in December 2010 and continued to effectively remove LNAPL from the recovery wells.

Cell 1: Prototype AS/SVE System in the Former Benzol Processing Area

The US EPA's March 2, 2010 letter approved the AS/SVE interim measure for Cell 1 as originally proposed by Severstal. This cell consists of a prototype IM, which includes AS/SVE coupled with vapor destruction via an ICE unit. Design of this system includes air sparging groundwater wells and vapor collection trenches as shown schematically on **Figure 2**.

Figure 3 shows the system layout of Cell 1, which consists of the following major components:

- Three (3) generally parallel and interconnected vapor collection trenches approximately 500 feet long and 60 feet apart, fitted with perforated 4-inch DR-17 high-density polyethylene (HDPE) pipe. 15 vertical extraction risers are connected to a common suction header,
- 16 air sparge wells located between the trenches,
- At-grade, 4-inch DR-17 HDPE sparge and suction headers fitted with control valves for 2-inch DR-17 HDPE sparge and suction laterals,
- One (1) ICE unit for extraction vacuum and vapor destruction, which is equipped with an integral Becker KDT series air compressor for sparge air, and
- Perimeter slag berm for system demarcation and protection from vehicular traffic.

December 2010 Operational Performance

Operational performance of Cell 1 during this reporting period is summarized in **Table 1**. In summary, the ICE operated approximately 29% during this reporting period. Hydrocarbon removal rates averaged approximately 1.35 pounds per hour (approximately 32 pounds per operating day for a total of 295 pounds) during this period. Recorded ICE and field data from December 2, 2010 is consistent with the data and methodology used to compute hydrocarbon removal rates as described in Attachment 1 of URS' November 2010 Progress Report. A summary of both ICE and field data from December 2, 2010 is presented in **Table 2**. The ICE catalytic converter destruction efficiency averaged around 93%.

Soil gas and ICE exhaust gas samples were collected to evaluate system performance. Calibrated field instruments (e.g., photoionization detector [PID]) and ICE system-calculated vapor concentrations were also used to evaluate system performance. The untreated soil gas samples were collected in Tedlar® bags and the ICE exhaust sample collected in a 6-liter

SUMMA can. All gas samples were submitted to TestAmerica Laboratories, Inc. Knoxville, Tennessee laboratory for analysis by US EPA Method TO-15. These data are summarized in **Table 3**.

From **Table 3**, influent soil gas hydrocarbon concentrations, collected on December 12 and 14, 2010, were 3,140 and 449 parts per million by volume (ppmv), respectively. The relatively low concentration on December 14 was likely due to ice buildup in the extraction piping which restricted soil gas flow rates.

December 2010 Groundwater Monitoring Results

Groundwater samples were collected on December 29, 2010 from the following wells:

- BP-MW-09 (upgradient of Cell 1),
- CO18-PZM006 (upgradient of Cell 1 at edge of berm), and
- CO02-PZM006 (downgradient of Cell 1).

The groundwater samples were submitted to Microbac Laboratories, Inc. of Baltimore, Maryland for the analyses shown in **Table 4**.

Table 4 presents data for the groundwater monitoring wells from November and December 2010. Please note, the previously reported November 2010 groundwater data has been revised in **Table 4** after it was discovered that a laboratory dilution error had caused irregularly high groundwater concentrations to be reported. The November 2010 laboratory report has since been revised and the corrected values are reported in **Table 4**.

Figure 3A presents a graph of the total measured volatile organic compound (VOC) concentration in Cell 1 for each well by month since the startup of the IM system. A generally decreasing total VOC concentration trend is documented since system start-up in August 2010. The identified trend for these monitoring wells will continue to be monitored and assessed during system operation in future months.

Cell 1 System Modifications

Cell 1 operation was suspended on December 14th to modify the collection system piping and ICE unit for cold-weather operation. System modifications have been designed and installed to

permit cold weather operation of the prototype Cell 1 remediation system. These modifications included:

1) Relocation of the ICE unit and associated influent and effluent piping,

2) Installation of sloping and intermediate collection containers to permit condensate removal from the soil gas collection piping (suction headers and lateral lines), and

3) Installation of appropriate insulation and protection for the collection lines and ICE unit.

The suction lines were sloped downward from the suction headers to condensate collection containers prior to entering the ICE unit's moisture-separator tank. The condensate containers include secondary containment and were constructed in an insulated encasement below grade (to prevent freezing) along the route of the suction header lines to the ICE unit. The ICE unit was moved to the middle of the prototype test area to allow for appropriate sloping of the collection lines. **Figure 4** shows photographs of the Cell 1 winterization modifications, which were substantially completed and the system re-started on January 24, 2011.

As indicated during our conference call in December 2010, modifications to the Cell 1 prototype system are also currently being designed to support continued longer-term operation of the AS/SVE interim measure remedial action in this area. Data collected during the operational period indicates that remedial actions in this area will be more efficiently conducted with the use of an electrically powered air compressor and catalytic oxidizer vapor destruction unit. Design of these system modifications is underway and will be installed in the coming months, along with appropriate modifications to the existing air permit. The existing ICE unit will continue to operate in the intervening period. The system modifications will also include measures to either maximize hydrocarbon concentration in the extracted soil gas or maximize the treatment area to increase the effectiveness of the remedial measure.

Cell 4: In-Situ Anaerobic Bio-treatment Area in Coal Tar Area

The US EPA's March 2, 2010 letter approved the in-situ bio-treatment concept for Cell 4 (**Figure 5**), as originally proposed by Severstal. As discussed in September's progress report, baseline groundwater data and a microbial conditions evaluation using Bio-Trap® Samplers (Bio-Traps) were performed in July 2010 as the first step to developing a preliminary conceptual design.

Severstal is continuing efforts toward designing, installing and operating the planned in-situ enhanced anaerobic bioremediation system at Cell 4. These activities include:

1. Design and install a groundwater re-circulation system to deliver bionutrients to the subsurface, and

2. Supplement the depleted nutrients that are necessary to support general microbial activities, including nitrate and phosphorous. Commercially available bionutrients (such as VB591 from BioNutra Tech) are being evaluated.

The design activities for Cell 4 are on track to meet the final design submittal date of April 1, 2011 as outlined in the January 13, 2011 revised approval letter from the US EPA.

Cell 6: LNAPL Extraction at the Former Benzol Processing Area

The Cell 6 LNAPL monitoring and recovery system was monitored approximately weekly during December (four site visits). **Table 5** summarizes LNAPL occurrence and recovery observed during the reporting period and **Figure 6** illustrates the well locations.

During December, approximately 368 gallons (2,693 pounds) of LNAPL was recovered, bringing the total recovered LNAPL to 2,617 gallons (19,175 pounds) as of December 28. The LNAPL was recovered from the following wells:

Well	LNAPL Recovery (gal/lbs)		Notes
	During December	Total thru December 28	
BP-MW-05	287 /2,103	2,197 / 16,098	
RW-04	47 /344	264 / 1,934	
BP-MW-08	33 / 242	147 / 1,077	
BP-MW-11	0 / 0	7.8 / 57	(a)
RW-1	0.3 / 2	0.6 / 5	(b)
RW-3	0.3 / 2	0.5 / 4	(b)

(a) Recovery system moved from BP-MW-11 to BP-MW-08 on September 8, 2010.
(b) Manual bailing.

The wells are presented in **Table 5** in the order of decreasing LNAPL occurrence/recovery. During the reporting period, the range of LNAPL thicknesses has varied as summarized below (wells are not listed if LNAPL was not present):

- BP-MW-05 (1.63 to 2.14 feet),
- RW-04 (0.13 to 0.80 feet),
- BP-MW-08 (0.09 to 0.82 feet),
- BP-MW-11 (0.10 to 0.11 feet),
- BP-MW-10 (0.14 to 0.32 feet),
- RW-1 (0.12 to 0.16 feet),
- RW-2 (0.08 to 0.12 feet), and
- RW-3 (0.21 to 0.23 feet).

LNAPL was not observed in wells RW-5, BP-MW-07, BP-MW-06, BP-MW-09, or CO19-PZM004.

For all wells in which LNAPL accumulated, **Table 6** provides well-specific details concerning the measured depths to LNAPL, the water table, and calculated LNAPL thicknesses.

Recovered LNAPL was removed for off-site disposal on December 16, 2010. Approximately 1,004 gallons were removed and transported to an approved disposal facility.

Tables

Table 1
Summary of Operating Conditions
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
Severstal Sparrows Point, LLC

Parameter	Units	Quantity
Total ICE Operating Time (December 1 - December 31, 2010)	hours	218
Overall ICE Operational Time	%	29.3
Estimated Total Hydrocarbons Destroyed	pounds	295
Estimated Hydrocarbon Removal Rate	pounds/hour	1.35

Table 2
Summary Comparison of Operating Conditions
December 2, 2010
Cell 1 IM Severstal-Sparrows Point, LLC

SEVERSTAL	**DATE: 12/2/10**											
			Vacuum									
Date/Time	Open AS Wells:	Open VE points:	ΔP	Static Pressure	Temp.	3-in Dwyer Flow	PID RAW Gas	ICE PID Reading*	Load	Engine Vac	Well Vac	Well Flow*
			(inches H_2O)	(inches H_2O)	(deg F)	(SCFM)	(ppm)	(ppm)	(BTU/hr)	(inches Hg)	(inches H_2O)	(SCFM)
12/2/10 10:00	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						56,500	860,000	14	20	40
12/2/10 10:01	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5										
12/2/10 10:11	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.23	6	59	62.3					18	38
12/2/10 10:15	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,333	66,100				
12/2/10 10:18	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					5,526	68,700				
12/2/10 10:28	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					3,951	61,200				
12/2/10 10:30	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						54,800	761,000	15	20	36
12/2/10 10:32	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					5,129	64,700				
12/2/10 10:40	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					3,997	57,600				
12/2/10 10:44	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.22	6	56	61.1	4,458	64,200			17	34
12/2/10 10:48	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5										
12/2/10 10:50	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,637	60,000				
12/2/10 10:58	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					3,621	65,500				
12/2/10 11:00	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						52,700	703,000	15	18	34
12/2/10 11:03	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,361	58,300				
12/2/10 11:16	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,017	65,300				
12/2/10 11:26	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.23	6	56	62.4	4,791	59,200			19	36
12/2/10 11:30	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						60,900	830,000	15	18	37
12/2/10 11:33	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					3,854	41,700				
12/2/10 11:43	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					3,687	48,200				
12/2/10 11:51	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					6,223	68,000				
12/2/10 11:55	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,871	60,100				
12/2/10 11:58	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.24	6	58	63.7	4,187	60,700			18	37
12/2/10 12:00	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						58,300	841,000	15	19	38
12/2/10 13:00	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						< 2,000	< 10,000	21	0	0
12/2/10 13:15	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.06	2	55	32.1					2	12
12/2/10 13:17	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					5,297	9,600				
12/2/10 13:20	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					5,857	13,800				
12/2/10 13:28	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.15	4	54	50.7	5,587	12,200			11	25
12/2/10 13:30	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						9,500	90,000	16	12	26
12/2/10 13:34	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5										
12/2/10 13:38	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					5,645	19,900				
12/2/10 13:40	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					5,391	17,200				
12/2/10 13:54	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,792	7,100				
12/2/10 13:57	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5					4,851	9,200				
12/2/10 14:00	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5						11,500	141,000	14	19	33
12/2/10 14:03	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5	0.21	6	60	59.4	4,794	4,100			19	33
12/2/10 14:06	AS-1, AS-2, AS-5	V-1, V-2, V-4, V-5										

Table 3
Summary of Soil Gas Analytical Results
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
Severstal Sparrows Point, LLC

	Sample ID	ICE Influent	ICE Exhaust	ICE Influent
	Date	12/12/2010	12/12/2010	12/14/2010
	Time	11:00	11:10	10:40
	Dilution Factor	137942.50	14915.60	27975.37
Analyte	Units			
TO-15 Volatile Organics				
trans-1,3-Dichloropropene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Acetone	ppb	< 690,000 U	< 75,000 U	< 140,000 U
Ethylbenzene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
2-Hexanone	ppb	< 69,000 U	< 7,500 U	< 14,000 U
Methylene Chloride	ppb	< 69,000 U	< 7,500 U	< 14,000 U
Benzene	ppb	**2,500,000**	**190,000**	**440,000**
1,1,2,2-Tetrachloroethane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Tetrachloroethene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Toluene	ppb	**510,000**	**40,000**	**9,000**
1,1,1-Trichloroethane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
1,1,2-Trichloroethane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Trichloroethene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Vinyl Chloride	ppb	< 28,000 U	< 3,000 U	< 5,600 U
o-Xylene	ppb	**30,000**	< 3,000 U	< 5,600 U
m-Xylene & p-Xylene	ppb	**100,000**	**6,000**	< 5,600 U
2-Butanone (MEK)	ppb	< 140,000 U	< 15,000 U	< 28,000 U
4-Methyl-2-pentanone (MIBK	ppb	< 69,000 U	< 7,500 U	< 14,000 U
Bromoform	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Carbon Disulfide	ppb	< 69,000 U	< 7,500 U	< 14,000 U
Carbon tetrachloride	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Chlorobenzene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Chloroethane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Chloroform	ppb	< 28,000 U	< 3,000 U	< 5,600 U
1,1-Dichloroethane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
1,2-Dichloroethane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
1,1-Dichloroethene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
trans-1,2-Dichloroethene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
1,2-Dichloropropane	ppb	< 28,000 U	< 3,000 U	< 5,600 U
cis-1,3-Dichloropropene	ppb	< 28,000 U	< 3,000 U	< 5,600 U
Total Volatile Organics	ppb	**3,140,000**	**236,000**	**449,000**
Hydrocarbons				
Methane	%	< 0.16 U		< 0.21 U

Notes:

<Blank>	= Not measured
BOLD	= Analyte detected
ppb	= parts per billion
</U	= Analyte not detected above corresponding Reporting Limit
%	= Percent

Table 4
Summary of Groundwater Analytical Results
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
Severstal Sparrows Point, LLC

Analyte	Units	Sample ID	CO02-PZM006	CO02-PZM006*	CO02-PZM006	CO18-PZM006	CO18-PZM006*	CO18-PZM006	BP-MW-09	BP-MW-09*	BP-MW-09
		Date	11/30/2010	11/30/2010	12/29/2010	11/30/2010	11/30/2010	12/29/2010	11/30/2010	11/30/2010	12/29/2010
Water Quality Parameters											
Temperature	deg C		19.50	19.50	18.72	24.00	24.00	22.87	17.93	17.93	16.45
pH	std units		7.9	7.9	7.95	8.01	8.01	7.27	11.68	11.68	11.64
ORP	mV		--	--	-316	--	--	-96	--	--	-395
Conductivity	mS/cm		1.620	1.620	1.520	2.040	2.040	2.490	2.520	2.520	2.120
Turbidity	NTU		0.0	0.0	1.2	11.2	11.2	2.1	1.2	1.2	2.1
DO	mg/L		0.34	0.34	0.66	5.67	5.67	1.04	0.76	0.76	1.54
Volatile Organics											
Acetone	µg/L		< 500 U	< 500 U	< 25,000 U	< 500 U	< 500 U	< 25,000 U	< 500 U	< 500 U	< 25,000 U
Benzene	µg/L		**3,600,000**	**360,000**	**470,000**	**1,900,000**	**190,000**	**810,000**	**2,500,000**	**250,000**	**240,000**
Bromoform	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
2-Butanone (MEK)	µg/L		< 500 U	< 500 U	< 25,000 U	< 500 U	< 500 U	< 25,000 U	< 500 U	< 500 U	< 25,000 U
Carbon Disulfide	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Carbon Tetrachloride	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Chlorobenzene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Chloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Chloroform	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
1,1-Dichloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
1,2-Dichloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
1,1-Dichloroethene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
trans-1,2-Dichloroethene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
1,2-Dichloropropane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
cis-1,3-Dichloropropene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
trans-1,3-Dichloropropene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Ethylbenzene	µg/L		**1,100**	**1,100**	< 5,000 U	**240**	**240**	< 5,000 U	**4,000**	**4,000**	< 5,000 U
2-Hexanone (MBK)	µg/L		< 500 U	< 500 U	< 25,000 U	< 500 U	< 500 U	< 25,000 U	< 500 U	< 500 U	< 25,000 U
4-Methyl-2-Pentanone (MIBK)	µg/L		< 500 U	< 500 U	< 50 U	< 500 U	< 500 U	< 50 U	< 500 U	< 500 U	< 50 U
Methylene Chloride	µg/L		< 100 U	< 100 U	**8,900**	< 100 U	< 100 U	**5,700**	< 100 U	< 100 U	< 5,000 U
1,1,1,2-Tetrachloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
1,1,2,2-Tetrachloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Tetrachloroethene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Toluene	µg/L		**330,000**	**33,000**	**27,000**	**220,000**	**22,000**	**64,000**	**670,000**	**67,000**	**51,000**
Xylenes, Total	µg/L		**10,000**	**10,300**	**4,200**	**6,300**	**6,200**	**4,100**	**292,000**	**36,100**	**26,000**
1,1,1-Trichloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
1,1,2-Trichloroethane	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Trichloroethene	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Vinyl Chloride	µg/L		< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U	< 100 U	< 100 U	< 5,000 U
Total Volatile Organics	**µg/L**		**3,941,100**	**404,400**	**510,100**	**2,126,540**	**218,440**	**883,800**	**3,466,000**	**357,100**	**317,000**

Notes:

--	= Not measured
Bold	= Analyte Detected
deg C	= Degree Celcius
mg/L	= milligrams per liter
mS/cm	= Microsiemens per Centimeter
mV	= Millivolts
NA	= Standard not available or not currently established
NTU	= Nephelometric Turbidity Units
ORP	= Oxidation Reduction Potential
std units	= Standard units
</U	= Analyte not detected above corresponding Reporting Limit
µg/L	= micrograms per liter
*	= revised laboratory report

Table 5
LNAPL Occurrence and Recovery
Cell 6: LNAPL Recovery System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
Severstal Sparrows Point, LLC

Well	LNAPL Occurrence During December (ft)	Total LNAPL Recovery Period		Total LNAPL Recovered thru December 28, 2010		LNAPL Recovered during December 2010	
		Begin	End	(gal)	(lbs) (a)	(gal)	(lbs) (a)
BP-MW-05	1.63 to 2.14	28-Jan-10	On-going (b)	2197	16,098	287	2,103
RW-04	0.13 to 0.80	23-Jul-10	On-going (b)	264	1,934	47	344
BP-MW-08	0.09 to 0.82	8-Sep-10	On-going (b)	147	1,077	33	242
BP-MW-11	0.10 to 0.11	23-Jul-10	8-Sep-10	7.8	57	0	0
BP-MW-10	0.14 to 0.32	na	na	0	0	0	0
RW-1	0.12 to 0.16	28-Oct-10	On-going (c)	0.63	5	0.3	2
RW-2	0.08 to 0.12	na	na	0	0	0	0
RW-3	0.21 to 0.23	na	On-going (c)	0.5	4	0.3	2
RW-5	none	na	na	0	0	0	0
BP-MW-07	none	na	na	0	0	0	0
BP-MW-06	none	na	na	0	0	0	0
BP-MW-09	none	na	na	0	0	0	0
CO19-PZM004	none	na	na	0	0	0	0

Notes:

(a) Weight is calculated based on average BP-MW-05 and BP-MW-08 oil density of 0.878 grams per cubic centimeter, measured by EA (2009) by ASTM method D1481.

(b) Skimmer

(c) Bailing

Table 6
Depths (feet) to Water and LNAPL
Cell 6: LNAPL Recovery System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
Severstal Sparrows Point, LLC

Date	RW-1			RW-2			RW-3		
	Depth product	Depth to Water	Product Thickness	Depth product	Depth to Water	Product Thickness	Depth product	Depth to Water	Product Thickness
12/3/2010	11.46	11.61	0.15	11.80	11.89	0.09	9.50	9.71	0.21
12/10/2010	11.38	11.50	0.12	11.70	11.78	0.08	9.38	9.60	0.22
12/17/2010	11.55	11.71	0.16	11.94	12.06	0.12	9.65	9.88	0.23
12/28/2010	11.61	11.68	0.07	11.99	12.08	0.09	- -	- -	- -

	RW-04			BP-MW-05			BP-MW-08		
	Depth product	Depth to Water	Product Thickness	Depth product	Depth to Water	Product Thickness	Depth product	Depth to Water	Product Thickness
12/3/2010	9.60	10.40	0.80	11.10	13.12	2.02	12.22	12.31	0.09
12/10/2010	9.50	9.95	0.45	10.91	13.05	2.14	12.05	12.18	0.13
12/17/2010	10.02	10.15	0.13	11.28	12.91	1.63	12.28	13.10	0.82
12/28/2010	10.22	10.41	0.19	11.31	13.10	1.79	12.38	12.61	0.23

	BP-MW-10			BP-MW-11		
	Depth product	Depth to Water	Product Thickness	Depth product	Depth to Water	Product Thickness
12/3/2010	9.88	10.20	0.32	11.30	11.41	0.11
12/10/2010	9.75	9.89	0.14	11.19	11.29	0.10
12/17/2010	10.00	10.18	0.18	11.35	11.46	0.11
12/28/2010	- -	- -	- -	- -	- -	- -

Figures

N
W E
S

Legend

- Existing Monitoring Well

INTERIM MEASURES TREATMENT CELLS

"Cell 1": Prototype AS/SVE System in Benzol Area

"Cell 2": AS/SVE and Dual Phase GW Treatment/Injection System in the Former Coal Storage Area

"Cell 3": AS/SVE System in the "Cove" Area

"Cell 4": In-Situ Anaerobic Bio-treatment System in the Coal Tar Area

"Cell 5": Groundwater Extraction/Treatment/ Injection at the Turning Basin Area

"Cell 6": LNAPL Recovery at the Former Benzol Processing Area

200 0 200 400 Feet

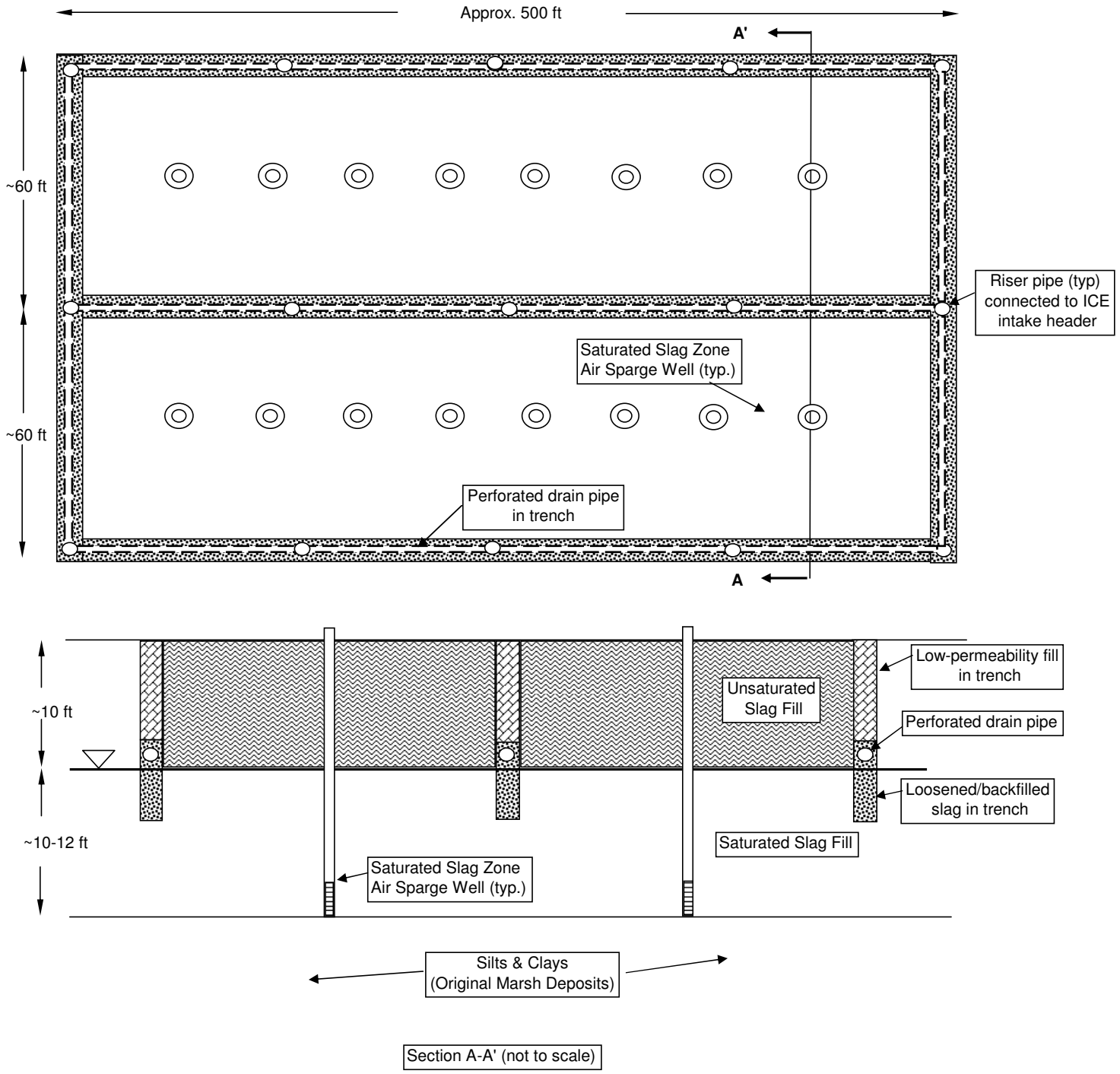
CLIENT: Sparrows Point	LOCATION: Baltimore, MD
DATE: 06/11/10	FILE: G:\Projects\SparrowsPoint\Projects\2010\CokeOven-and-CokePoint-6Prototype Cells_rev1.mxd
GIS: AER	
CHECKED: RL	
SENIOR: BE	

URS
200 Orchard Ridge Drive
Gaithersburg, MD 20878

Figure 1

Interim Measures Treatment Areas

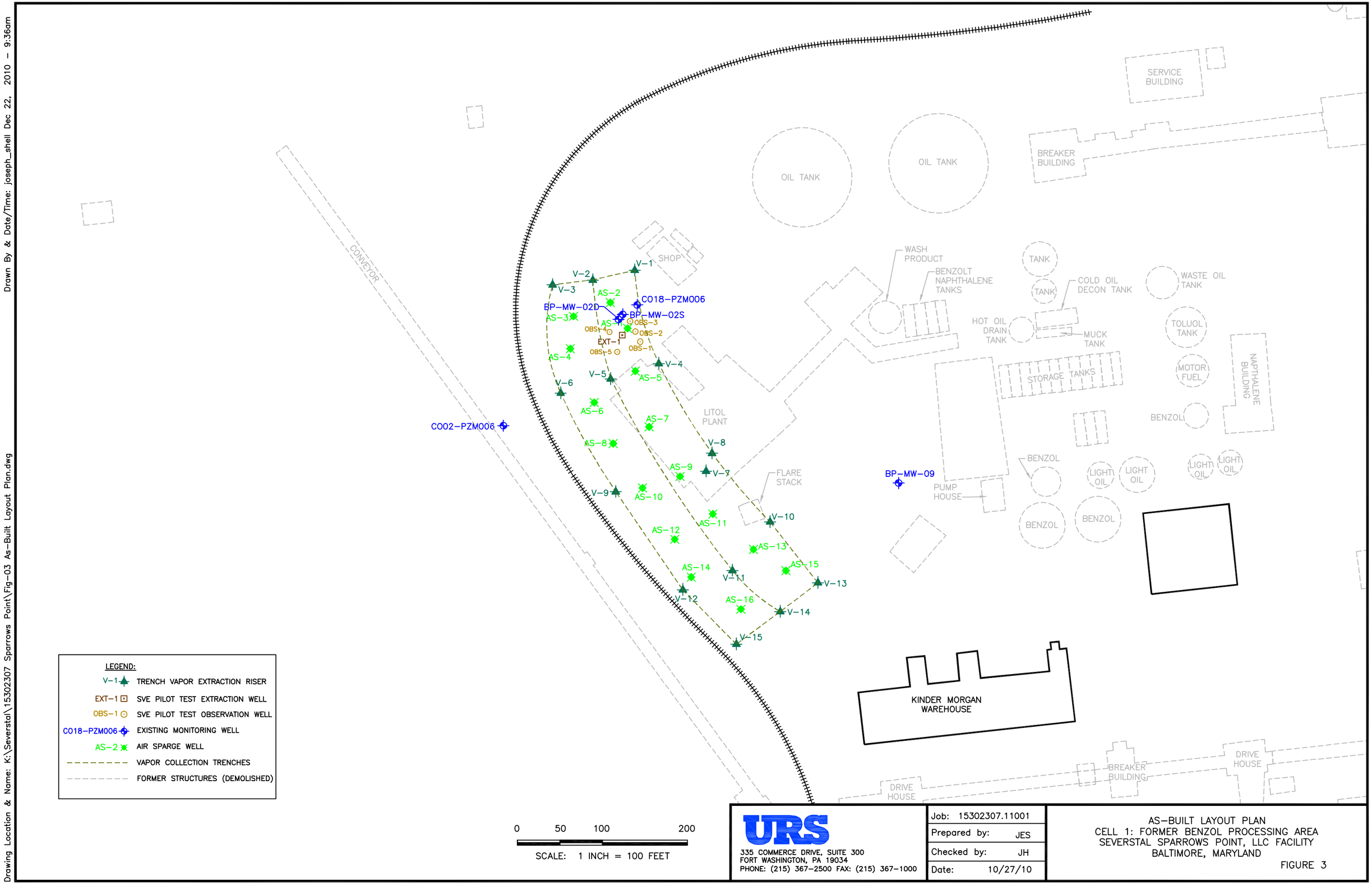
Figure 2
Schematic Diagram
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Former Coke Oven Area Interim Remedial Measures
Severstal Sparrows Point, LLC



Section A-A' (not to scale)

Drawn By & Date/Time: joseph_shell Dec 22, 2010 - 9:36am

Drawing Location & Name: K:\Severstal\15302307 Sparrows Point\Fig-03 As-Built Layout Plan.dwg



LEGEND:

- V-1: TRENCH VAPOR EXTRACTION RISER
- EXT-1: SVE PILOT TEST EXTRACTION WELL
- OBS-1: SVE PILOT TEST OBSERVATION WELL
- CO18-PZM006: EXISTING MONITORING WELL
- AS-2: AIR SPARGE WELL
- VAPOR COLLECTION TRENCHES
- FORMER STRUCTURES (DEMOLISHED)

0 50 100 200

SCALE: 1 INCH = 100 FEET

URS
335 COMMERCE DRIVE, SUITE 300
FORT WASHINGTON, PA 19034
PHONE: (215) 367-2500 FAX: (215) 367-1000

Job:	15302307.11001
Prepared by:	JES
Checked by:	JH
Date:	10/27/10

AS-BUILT LAYOUT PLAN
CELL 1: FORMER BENZOL PROCESSING AREA
SEVERSTAL SPARROWS POINT, LLC FACILITY
BALTIMORE, MARYLAND

FIGURE 3

Figure 3A
Measured Groundwater VOC Concentration per Month
Cell 1: Prototype AS/SVE System in Former Benzol Processing Area
Severstal Sparrows Point, LLC

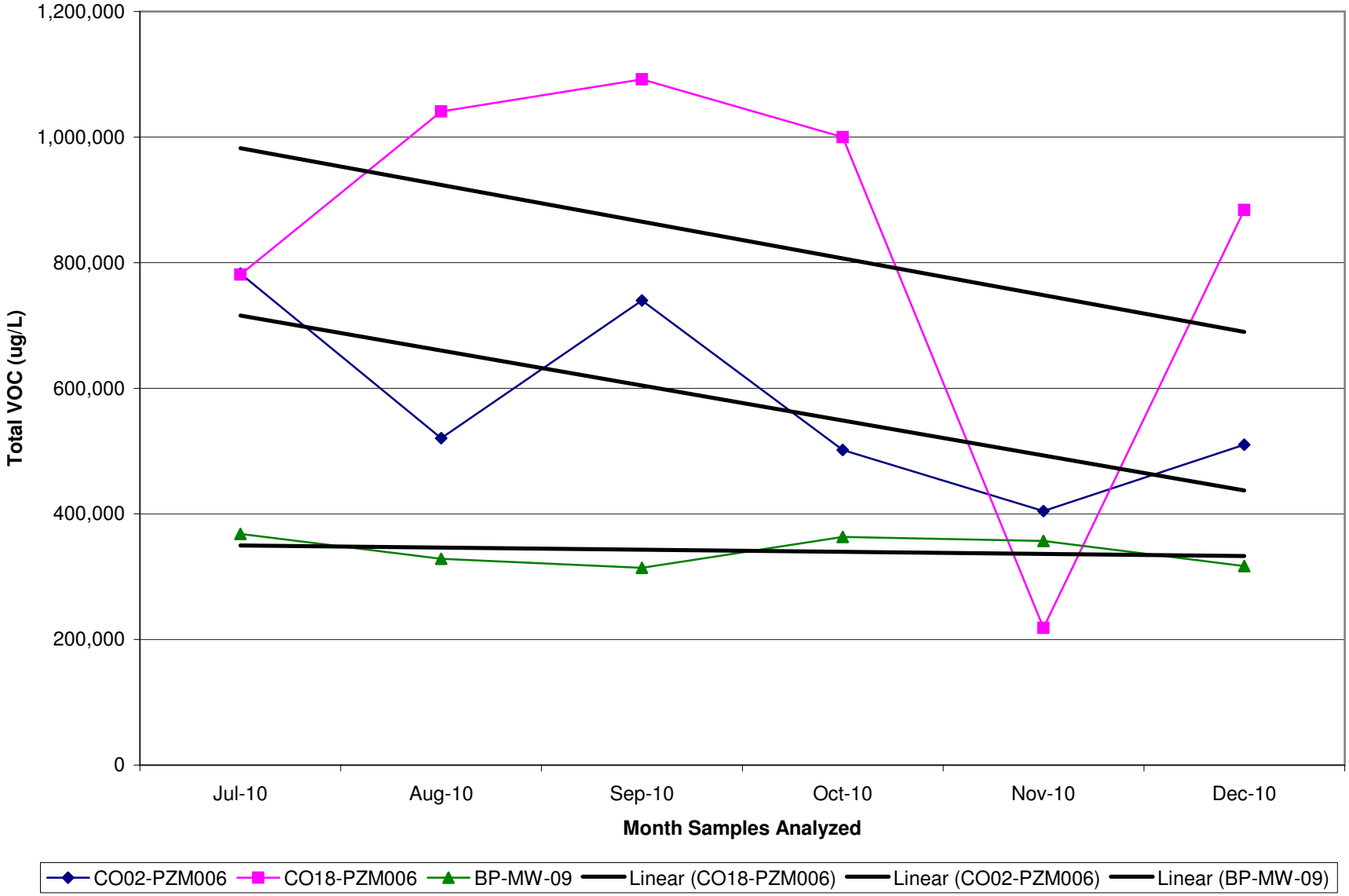


Figure 4
Photos of System Winterization Modifications
Cell 1: Former Benzol Processing Area
Severstal Sparrows Point, LLC Facility
Baltimore, Maryland

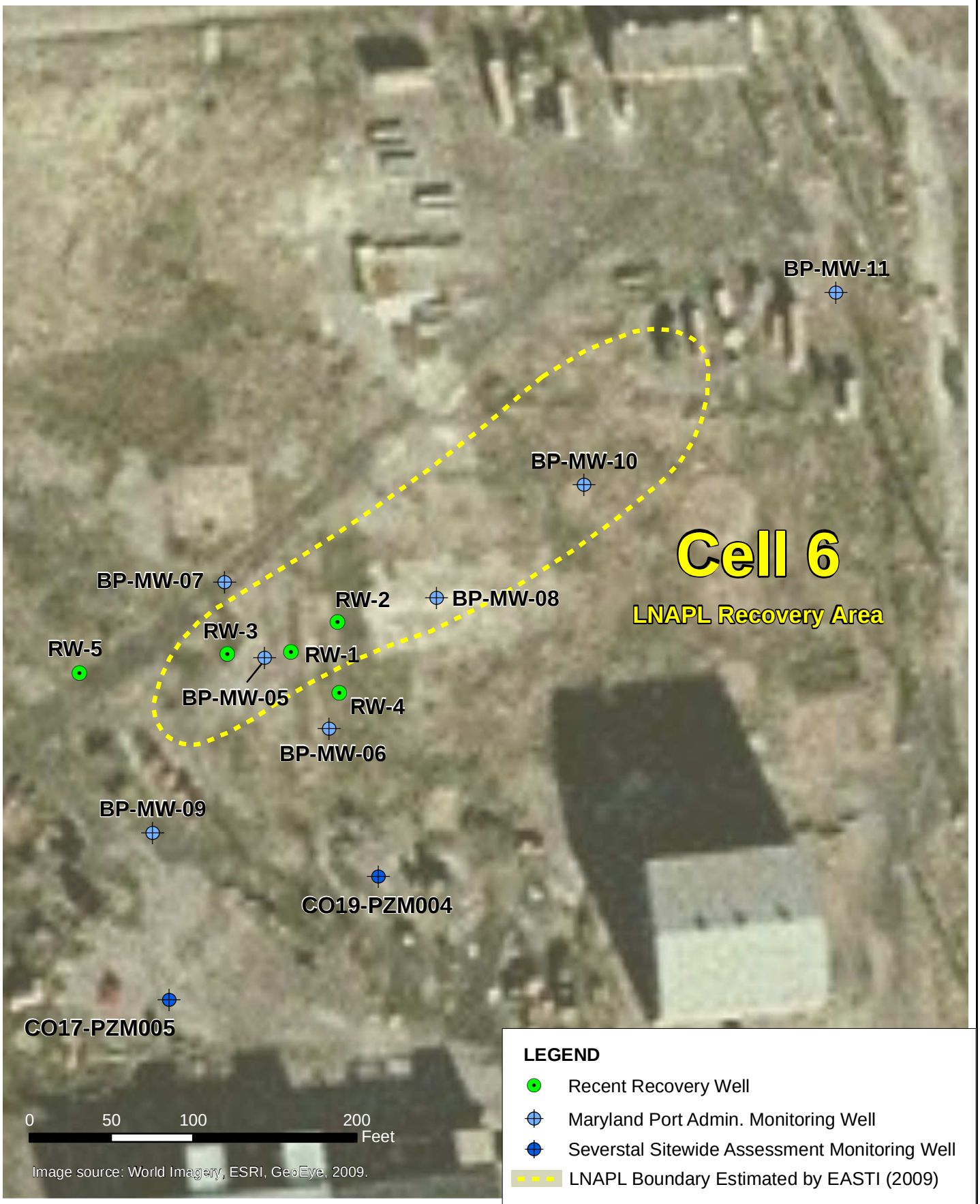
CLIENT	Sparrows Point		
LOCATION	Baltimore, MD		
URS 200 Orchard Ridge Drive Gaithersburg, MD 20878	GIS BY	JK	10/13/10
	CHK BY	BE	10/14/10
	PM	BE	10/14/10

N

Figure 5

Existing Cell 4 Wells

G:\Projects\SparrowsPoint\Projects\2010\CokeOven-and-CokePoint-Cell4closeup_rev.mxd



CLIENT	Sparrows Point
LOCATION	Baltimore, MD

URS
200 Orchard Ridge Drive
Gaithersburg, MD 20878

GIS BY	JK	10/13/10
CHK BY	BE	10/14/10
PM	BE	10/14/10

N

Figure 6

LNAPL Monitoring and Recovery Wells

G:\Projects\SparrowsPoint\Projects\2010\CokeOven-and-CokePoint-Cell6closeup_rev.mxd