

COKE OVEN AREA INTERIM MEASURES CELL 3 “COVE” AREA AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM DESIGN

Prepared for

Severstal-Sparrows Point, LLC
Sparrows Point, Maryland



March 1, 2011

URS

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

Background: Cell 3: AS/SVE System in “Cove” Area

The design of the Cell 3 Air Sparge/Soil Vapor Extraction (AS/SVE) system in the “Cove” Area was preliminarily outlined in correspondence titled “*Coke Oven Area Interim Measures Work Plan Supplemental Information*” submitted to the agencies for approval on June 18, 2010. The Cell 3 system included the use of AS/SVE coupled with vapor destruction via internal combustion engine (ICE) located in the “Cove” Area of Coke Point. The potential for the final design of this system to be modified was identified in the June 18, 2010 correspondence based upon evaluation of results from operation of the Cell 1 AS/SVE prototype system that began operation in August 2010.

The United States Environmental Protection Agency (EPA) has requested submittal of the proposed final design for Cell 3 by March 1, 2011 and the completion of construction and operational start of Cell 3 by July 3, 2011 (as stated in their revised approval letter dated January 13, 2011). In accordance with that request, this document presents the proposed final design for Cell 3.

Summary of Information Learned from Cell 1 Operation

- The unsaturated (upper 10 feet) portion of slag in Cell 1 area has been proven to be densely compacted and essentially impermeable to upward vapor migration (i.e., sparged air cannot escape vertically through overlying slag).
- The saturated zone is more permeable, which has allowed sparged air to move horizontally toward collection trenches.
- Recoverable hydrocarbon vapor concentration in the extracted soil gas has been lower than anticipated for efficient use of the ICE unit (i.e., supplemental fuel consumption has been high and air volume throughput has been relatively low). The hydrocarbon vapor concentration ranges observed are more appropriate for a catalytic oxidizer (CATOX) unit.
- Through January 2011, an estimated 2,408 total pounds of hydrocarbon vapor has been recovered from the extracted soil gas and destroyed.
- The most current groundwater VOC concentrations in Cell 1 treatment area range from 337 to 676 mg/L and show a generally decreasing trend over time.

- Freezing of condensate in collection lines has been addressed through installation of sloped headers and laterals draining to intermediate condensate knockout sumps.
- Freezing of condensate in compressed air sparge lines has not appeared as a significant operational problem.

Cell 3 Design Overview

A total of four (4) groundwater monitoring wells (MW-CELL3-1 through MW-CELL3-4) were installed in locations proximate to Cell 3 to further delineate groundwater impacts in February 2011 (**Figure 1**). These wells were installed using hollow-stem auger drilling techniques and are constructed of 2-inch diameter PVC with screens installed across the unconfined water table which occurs at approximately 10 feet below ground surface.

Groundwater samples were collected from the above-mentioned wells, in addition to CO30-PZM015 and CO32-PZM004 on February 14, 2011 and were submitted to Microbac Laboratories, Inc. of Baltimore, Maryland for volatile organic compound (VOC) analyses via USEPA Method 8260B. Analytical results for benzene, the primary site constituent in this area, are also shown on **Figure 1**. Laboratory data results are included as **Attachment 1** with this design report.

Figures 2 and 3 show the typical sections and final system layout of the Cell 3 design that has been adjusted based on the results of the additional groundwater data and observations made from Cell 1 performance. Cell 3 will consist of the following major components:

- One (1) vapor collection trench (generally parallel to the cove shoreline) approximately 600 feet long and 3 feet wide fitted with a horizontal perforated 4-inch diameter DR-17 high-density polyethylene (HDPE) vapor collection pipe locate on the cove-side of the trench. Five (5) vertical vapor-extraction risers are connected to a common suction header.
- 14 air sparge wells located within the trench, opposite the vapor collection pipe. These 14 air sparge wells, each spaced approximately 40 feet apart, will be constructed of 2-inch, schedule 40 PVC with a 2 foot screen of the appropriate slot size and sand pack.
- At-grade, 3-inch DR-17 HDPE sparge and suction headers fitted with control valves for 2-inch DR-17 HDPE sparge and suction laterals. Means for freeze protection will be incorporated into the installation.

- One (1) electric CATOX unit for extraction vacuum and vapor destruction. The CATOX unit will be sized to handle at least the volume of sparge air delivered to the subsurface.
- One (1) electric air compressor for sparge air sized to have the capability to activate all sparge wells.
- Perimeter slag berm for system demarcation and protection from vehicular traffic.

As shown on the schematic layout and sections of **Figure 2**, a total of 14 air sparge wells will be installed on approximate 40-foot spacing as part of the AS/SVE system. The air sparge wells will be co-located within the trench with the vapor collection pipe in order to optimize sparge air collection and recovery. Loosening the slag in the trench below the water table during trench excavation will also enhance collection and recovery of sparge air.

Since groundwater hydrocarbon concentrations at Cell 3 are approximately 1 order of magnitude less than at Cell 1, lower hydrocarbon vapor concentrations are anticipated in the recovered Cell 3 trench sparge air. Accordingly, and based on ICE operational experience at Cell 1, an electric-powered air compressor and CATOX unit will be used at Cell 3 to provide sparge air and recover/destroy hydrocarbon vapors, respectively.

Modification of the existing Maryland Department of the Environment (MDE) air discharge permit for the Coke Oven Area will be requested from MDE for the Cell 3 CATOX system. The modified permit will define system operating conditions.

As depicted on the simplified process flow diagram of **Figure 4**, control valves and vacuum/pressure gauges will be installed at each section header and air sparge well before its junction with either manifold. In addition, flow meters will be installed at each sparge well to provide capability to “tune” the system for optimal performance and identify individual air sparge well characteristics during startup/shakedown operation.

Performance Monitoring Program

Soil gas and CATOX exhaust gas samples will be collected on a monthly basis to evaluate system performance. Calibrated field instruments (e.g., photoionization detector [PID]) and CATOX system-calculated vapor concentrations will also be used to evaluate system performance. The untreated soil gas samples will be collected in Tedlar[®] bags and the CATOX exhaust samples will be collected in 6-liter SUMMA canisters. Gas samples will be submitted to TestAmerica Laboratories, Inc. Knoxville, Tennessee laboratory for analysis by US EPA Method TO-15.

Cell 3 “Cove” Area Air Sparge/Soil Vapor Extraction Design

Groundwater samples will be collected and submitted for VOC analyses via Method 8260B on a monthly basis from the following wells:

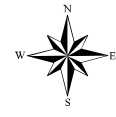
- MW-CELL3-1 (downgradient of Cell 3),
- MW-CELL3-2 (upgradient of Cell 3),
- MW-CELL3-3 (upgradient of Cell 3),
- CO30-PZM015 (downgradient of Cell 3), and

Results from these analyses will be used to monitor the performance of the AS/SVE system.

Once in operation, monthly progress reports will be submitted to the USEPA and MDE summarizing the performance of the Cell 3 system as well as efforts taken to optimize system performance. A reduction in frequency of submission of progress reports may be requested in the future once the Cell 3 operation is underway.

Figures

G:\Projects\SparrowsPoint\Projects\2009\6-2CokeOven-and-CokePoint\Benzene-focusareas-wWells-Jan11_rev2.mxd 02/21/2011 JK



200 0 200 400 Feet

Figure 1

Cell 3 AS/SVE Treatment Area^(a)

^(a)Exact locations may be adjusted depending on subsurface conditions encountered during excavation.

Figure 2
Schematic Layout and Sections - Cell 3 AS/SVE System
Former Coke Oven Area IM
Severstal Sparrows Point, LLC

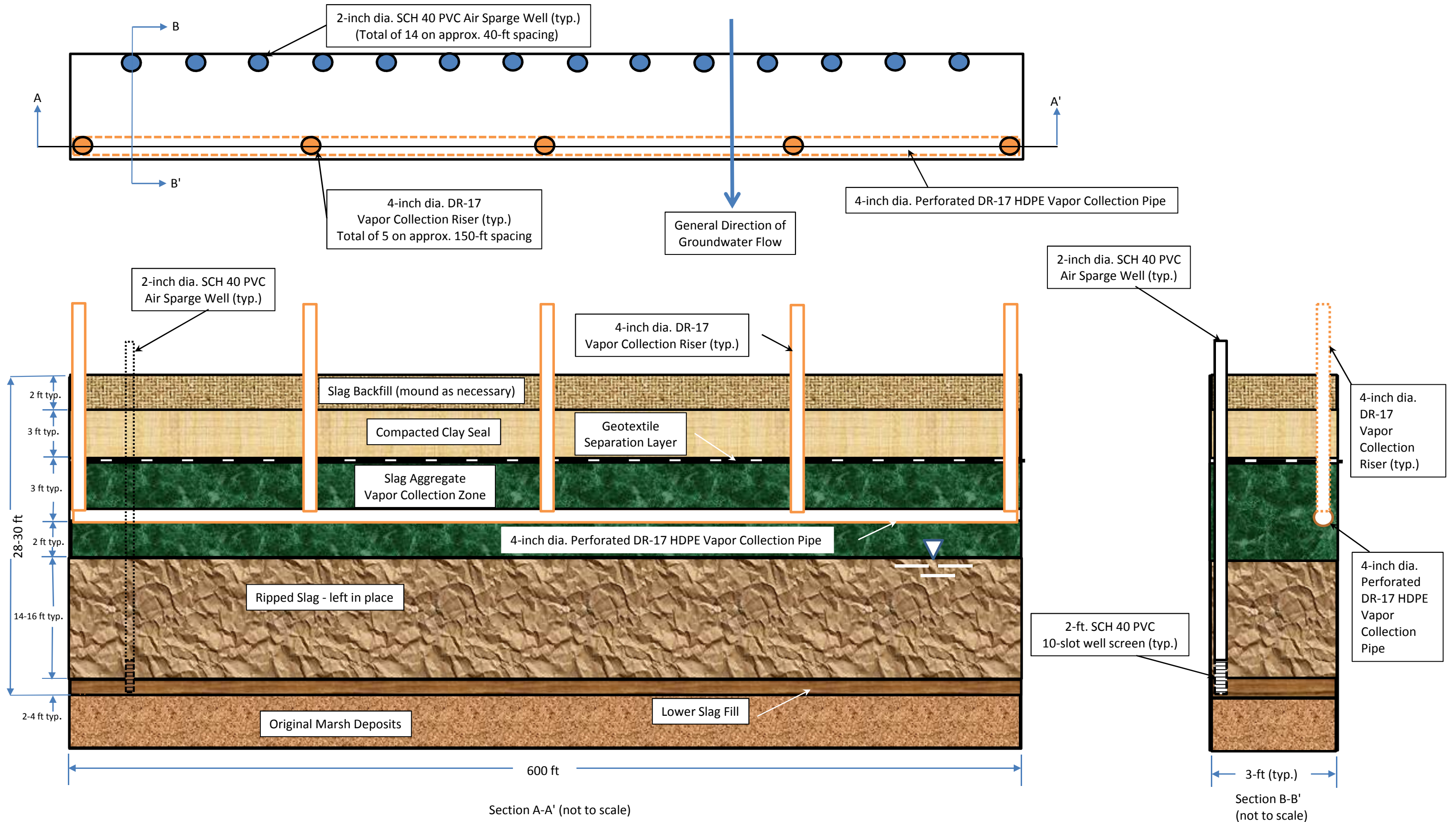


Figure 3
Schematic Layout Diagram - Cell 3 AS/SVE System
Former Coke Oven Area IM
Severstal Sparrows Point, LLC

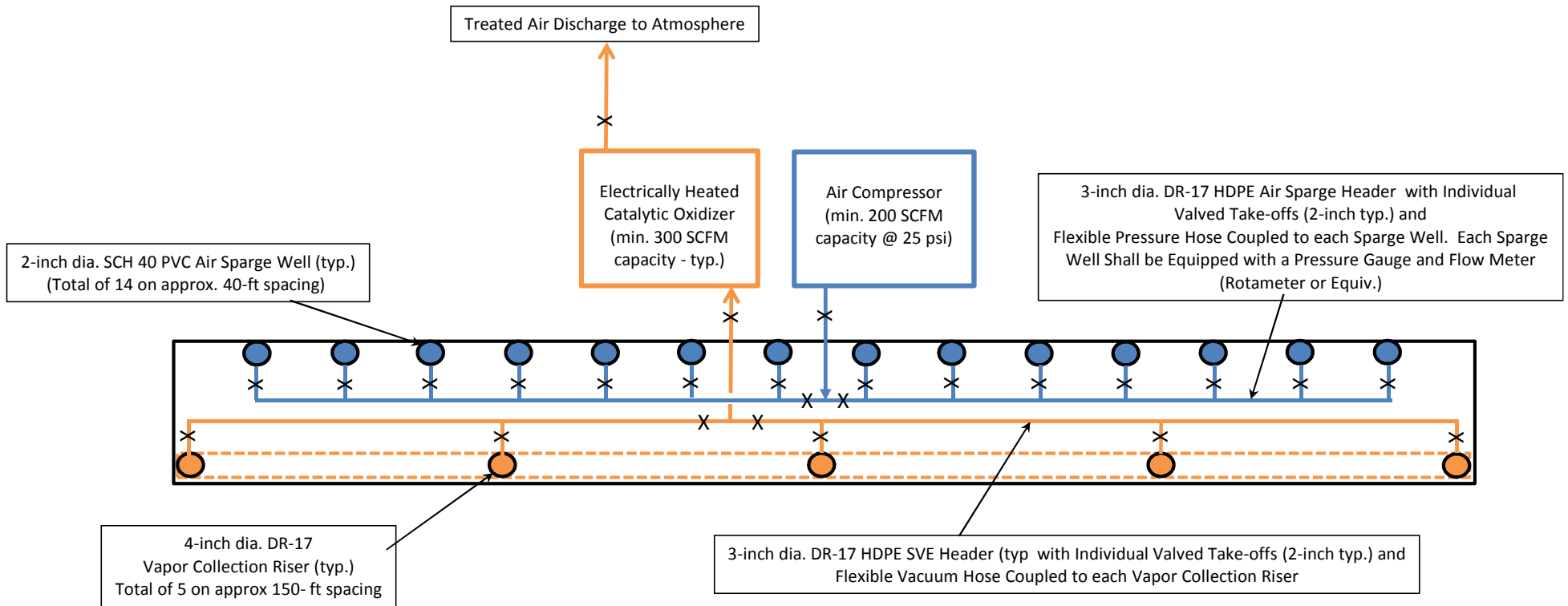
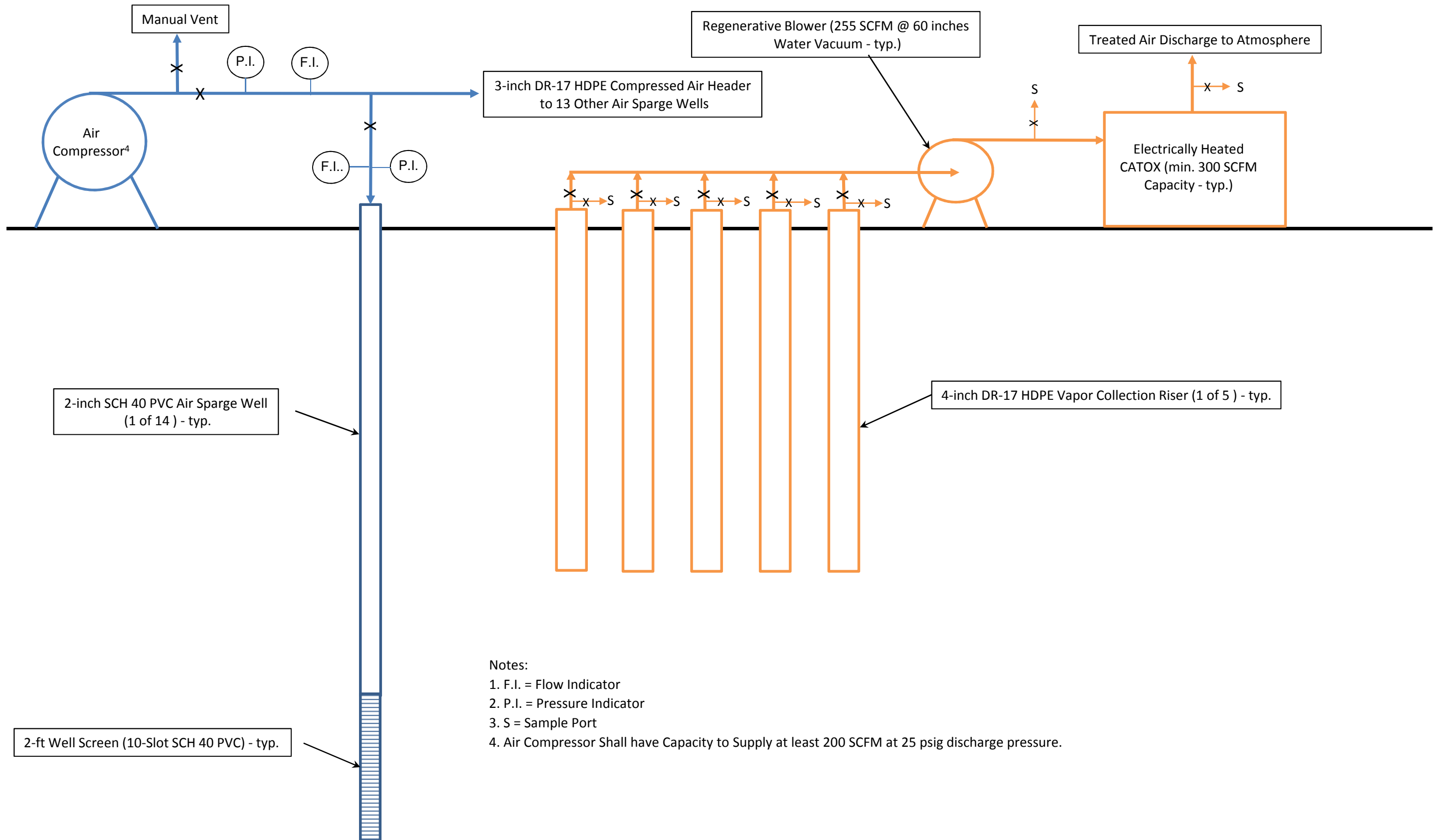


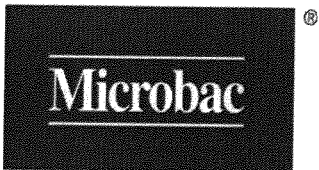
Figure 4
Simplified Process Flow Diagram
Cell 3 AS/SVE System
Former Coke Oven Area IM
Severstal Sparrows Point, LLC



Notes:

1. F.I. = Flow Indicator
2. P.I. = Pressure Indicator
3. S = Sample Port
4. Air Compressor Shall have Capacity to Supply at least 200 SCFM at 25 psig discharge pressure.

Attachment 1



Microbac Laboratories, Inc.

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

URS-Gaithersburg
200 Orchard Ridge Dr.
Gaithersburg, MD 20878

Project: Severstal VOC Wells - Biweekly
Project Number: Sparrows Point
Project Manager: Bill Eaton

Report: 11B0774
Reported: 02/17/2011 10:16

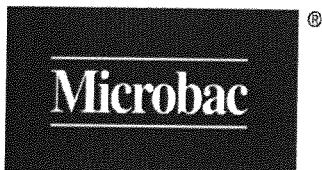
SAMPLE SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
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MW-CELL3-2	11B0774-02	GW	Grab	02/14/2011 11:03	02/14/2011 15:21
MW-CELL3-3	11B0774-03	GW	Grab	02/14/2011 10:15	02/14/2011 15:21
MW-CELL3-4	11B0774-04	GW	Grab	02/14/2011 09:22	02/14/2011 15:21
C030-PZM015	11B0774-05	GW	Grab	02/14/2011 14:08	02/14/2011 15:21
C032-PZM004	11B0774-06	GW	Grab	02/14/2011 13:10	02/14/2011 15:21

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Mark B. Horan For Melanie C. Duszynski, Project Manager



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Project Number: Sparrows Point
Project Manager: Bill Eaton

Report: 11B0774
Reported: 02/17/2011 10:16

MW-CELL3-1

11B0774-01 (GW) Sampled: 02/14/2011 11:58; Type: Grab

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
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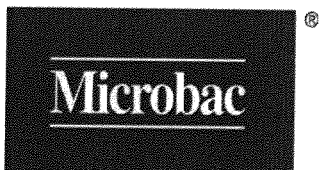
Volatile Organic Compounds by EPA Method 8260B

Vinyl chloride	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Chloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
1,1-Dichloroethene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Acetone	ND	12000	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Carbon disulfide	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	VI, U
Methylene Chloride	ND	2500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
trans-1,2-Dichloroethene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
1,1-Dichloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
2-Butanone (MEK)	ND	2500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	VI, U
Chloroform	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
1,1,1-Trichloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Carbon Tetrachloride	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	VI, U
Benzene	32000	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	
1,2-Dichloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Trichloroethene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
1,2-Dichloropropane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Methyl Isobutyl Ketone	ND	2500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
cis-1,3-Dichloropropene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Toluene	2200	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	
trans-1,3-Dichloropropene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
1,1,2-Trichloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
2-Hexanone (MBK)	ND	2500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Tetrachloroethene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Chlorobenzene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
1,1,1,2-Tetrachloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	VI, U
Ethylbenzene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
m,p-Xylenes	ND	1000	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
o-Xylene	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U
Bromoform	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	VI, U
1,1,2,2-Tetrachloroethane	ND	500	ug/L	021611 0845	021611 0845	MBH	EPA 8260B	U

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URS-Gaithersburg
200 Orchard Ridge Dr.
Gaithersburg, MD 20878

Project: Severstal VOC Wells - Biweekly
Project Number: Sparrows Point
Project Manager: Bill Eaton

Report: 11B0774
Reported: 02/17/2011 10:16

MW-CELL3-2

11B0774-02 (GW) Sampled: 02/14/2011 11:03; Type: Grab

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
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Volatile Organic Compounds by EPA Method 8260B

Vinyl chloride	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Chloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
1,1-Dichloroethene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Acetone	ND	12000	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Carbon disulfide	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	VI, U
Methylene Chloride	ND	2500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
trans-1,2-Dichloroethene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
1,1-Dichloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
2-Butanone (MEK)	ND	2500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	VI, U
Chloroform	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
1,1,1-Trichloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Carbon Tetrachloride	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	VI, U
Benzene	28000	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	
1,2-Dichloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Trichloroethene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
1,2-Dichloropropane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Methyl Isobutyl Ketone	ND	2500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
cis-1,3-Dichloropropene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Toluene	2000	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	
trans-1,3-Dichloropropene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
1,1,2-Trichloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
2-Hexanone (MBK)	ND	2500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Tetrachloroethene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Chlorobenzene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
1,1,1,2-Tetrachloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	VI, U
Ethylbenzene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
m,p-Xylenes	ND	1000	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
o-Xylene	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U
Bromoform	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	VI, U
1,1,2,2-Tetrachloroethane	ND	500	ug/L	021611 0915	021611 0915	MBH	EPA 8260B	U

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MW-CELL3-3

11B0774-03 (GW) Sampled: 02/14/2011 10:15; Type: Grab

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
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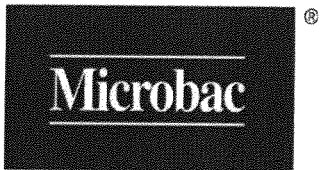
Volatile Organic Compounds by EPA Method 8260B

Vinyl chloride	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Chloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
1,1-Dichloroethene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Acetone	ND	12000	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Carbon disulfide	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	VI, U
Methylene Chloride	ND	2500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
trans-1,2-Dichloroethene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
1,1-Dichloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
2-Butanone (MEK)	ND	2500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	VI, U
Chloroform	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
1,1,1-Trichloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Carbon Tetrachloride	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	VI, U
Benzene	47000	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	
1,2-Dichloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Trichloroethene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
1,2-Dichloropropane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Methyl Isobutyl Ketone	ND	2500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
cis-1,3-Dichloropropene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Toluene	4200	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	
trans-1,3-Dichloropropene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
1,1,2-Trichloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
2-Hexanone (MBK)	ND	2500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Tetrachloroethene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Chlorobenzene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
1,1,1,2-Tetrachloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	VI, U
Ethylbenzene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
m,p-Xylenes	1200	1000	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	
o-Xylene	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U
Bromoform	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	VI, U
1,1,2,2-Tetrachloroethane	ND	500	ug/L	021611 0945	021611 0945	MBH	EPA 8260B	U

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Report: 11B0774
Reported: 02/17/2011 10:16

MW-CELL3-4

11B0774-04 (GW) Sampled: 02/14/2011 09:22; Type: Grab

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
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Microbac Laboratories, Inc., Baltimore Division

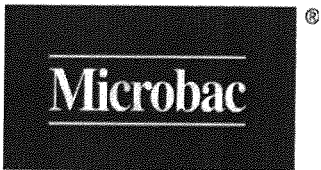
Volatile Organic Compounds by EPA Method 8260B

Vinyl chloride	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Chloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
1,1-Dichloroethene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Acetone	ND	25	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Carbon disulfide	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	VI, U
Methylene Chloride	ND	5.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
trans-1,2-Dichloroethene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
1,1-Dichloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
2-Butanone (MEK)	ND	5.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	VI, U
Chloroform	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
1,1,1-Trichloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Carbon Tetrachloride	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	VI, U
Benzene	1500	500	ug/L	021611 1015	021611 1015	MBH	EPA 8260B	
1,2-Dichloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Trichloroethene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
1,2-Dichloropropane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Methyl Isobutyl Ketone	ND	5.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
cis-1,3-Dichloropropene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Toluene	120	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	
trans-1,3-Dichloropropene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
1,1,2-Trichloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
2-Hexanone (MBK)	ND	5.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Tetrachloroethene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
Chlorobenzene	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	VI, U
Ethylbenzene	2.6	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	
m,p-Xylenes	23	2.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	
o-Xylene	11	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	
Bromoform	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	VI, U
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	021611 1719	021611 1719	MBH	EPA 8260B	U

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Mark B. Horan For Melanie C. Duszynski, Project Manager



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CERTIFICATE OF ANALYSIS

URS-Gaithersburg 200 Orchard Ridge Dr. Gaithersburg, MD 20878	Project: Severstal VOC Wells - Biweekly Project Number: Sparrows Point Project Manager: Bill Eaton	Report: 11B0774 Reported: 02/17/2011 10:16
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C030-PZM015

11B0774-05 (GW) Sampled: 02/14/2011 14:08; Type: Grab

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
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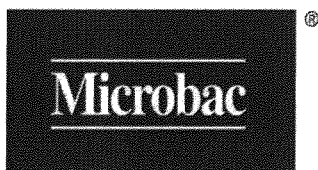
Volatile Organic Compounds by EPA Method 8260B

Vinyl chloride	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Chloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
1,1-Dichloroethene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Acetone	ND	25000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Carbon disulfide	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	VI, U
Methylene Chloride	ND	5000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
trans-1,2-Dichloroethene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
1,1-Dichloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
2-Butanone (MEK)	ND	5000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	VI, U
Chloroform	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
1,1,1-Trichloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Carbon Tetrachloride	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	VI, U
Benzene	80000	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	
1,2-Dichloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Trichloroethene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
1,2-Dichloropropane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Methyl Isobutyl Ketone	ND	5000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
cis-1,3-Dichloropropene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Toluene	6000	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	
trans-1,3-Dichloropropene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
1,1,2-Trichloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
2-Hexanone (MBK)	ND	5000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Tetrachloroethene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Chlorobenzene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
1,1,1,2-Tetrachloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	VI, U
Ethylbenzene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
m,p-Xylenes	ND	2000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
o-Xylene	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U
Bromoform	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	VI, U
1,1,2,2-Tetrachloroethane	ND	1000	ug/L	021611 1046	021611 1046	MBH	EPA 8260B	U

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Mark B. Horan For Melanie C. Duszynski, Project Manager

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CERTIFICATE OF ANALYSIS

URS-Gaithersburg 200 Orchard Ridge Dr. Gaithersburg, MD 20878	Project: Severstal VOC Wells - Biweekly Project Number: Sparrows Point Project Manager: Bill Eaton	Report: 11B0774 Reported: 02/17/2011 10:16
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C032-PZM004

11B0774-06 (GW) Sampled: 02/14/2011 13:10; Type: Grab

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
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Volatile Organic Compounds by EPA Method 8260B

Vinyl chloride	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Chloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
1,1-Dichloroethene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Acetone	ND	25	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Carbon disulfide	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	VI, U
Methylene Chloride	ND	5.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
trans-1,2-Dichloroethene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
1,1-Dichloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
2-Butanone (MEK)	ND	5.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	VI, U
Chloroform	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
1,1,1-Trichloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Carbon Tetrachloride	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	VI, U
Benzene	5.1	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	
1,2-Dichloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Trichloroethene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
1,2-Dichloropropane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Methyl Isobutyl Ketone	ND	5.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
cis-1,3-Dichloropropene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Toluene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
trans-1,3-Dichloropropene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
1,1,2-Trichloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
2-Hexanone (MBK)	ND	5.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Tetrachloroethene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Chlorobenzene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	VI, U
Ethylbenzene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
m,p-Xylenes	ND	2.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
o-Xylene	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U
Bromoform	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	VI, U
1,1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	021611 1748	021611 1748	MBH	EPA 8260B	U

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