



# Release Abatement Measure Completion Report

0 & 12-24 Fairmount Court  
Hyde Park, MA 02136  
RTN: 3-1616

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**woodardcurran.com**  
COMMITMENT & INTEGRITY DRIVE RESULTS

221375.07

**City of Boston  
Department of  
Neighborhood  
Development**

June 2013

## TABLE OF CONTENTS

SECTION	PAGE NO.
<b>1. INTRODUCTION .....</b>	<b>1-1</b>
<b>2. DESCRIPTION OF THE RELEASE, SITE CONDITIONS, AND SURROUNDING RECEPTORS .....</b>	<b>2-1</b>
2.1 Surrounding Receptors.....	2-1
2.2 Release History .....	2-1
<b>3. DESCRIPTION OF THE RELEASE ABATEMENT MEASURE .....</b>	<b>3-1</b>
<b>4. INVESTIGATION AND MONITORING DATA.....</b>	<b>4-1</b>
4.1 Subslab Vapor Removal Summary .....	4-1
4.2 Monitoring Data Summary.....	4-1
<b>5. REMEDIATION WASTE MANAGEMENT.....</b>	<b>5-1</b>
<b>6. RAM COMPLETION .....</b>	<b>6-1</b>
6.1 Findings and Conclusions of the RAM .....	6-1
6.2 Description of OnGoing Activities Related to the RAM.....	6-1
6.3 RAM Completion Statement.....	6-1
<b>7. REMEDIAL MONITORING REPORT.....</b>	<b>7-1</b>
7.1 General .....	7-1
7.2 SVE Routine Operation .....	7-1
7.3 Significant Operational Events .....	7-1
<b>8. LIMITATIONS.....</b>	<b>8-1</b>
<b>9. REFERENCES.....</b>	<b>9-1</b>

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## TABLES

Table 1:	TVOC Readings and Mass Removal Versus Time
Table 2:	Process Air Sampling Results Summary - October 2012
Table 3:	PCE and TCE Influent Process Air Sampling Results Summary – September 2010 to October 2012
Table 4:	Remedial Activities Summary

## FIGURES

Figure 1:	Site Locus
Figure 2:	Site Plan
Figure 3:	Mass Removal Graph

## APPENDICES

Appendix A:	Laboratory Analytical Reports
Appendix B:	SVE System Field Monitoring Reports
Appendix C:	Waste Disposal Documentation

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## 1. INTRODUCTION

This Release Abatement Measure (RAM) Completion Report has been prepared in accordance with the Massachusetts Contingency Plan (MCP), 310 CMR 40.0446, for the property located at 0 and 12-24 Fairmount Court in Hyde Park, Massachusetts (the Site). A Site Locus is provided as Figure 1.

The City of Boston, Massachusetts has assumed the role as the potentially responsible party (PRP) for the release, designated by Release Tracking Number (RTN) 3-1616 by the Massachusetts Department of Environmental Protection (MassDEP). The City of Boston implemented a RAM to address volatile organic compounds (VOCs) in soil and soil vapor present at the Site below the Site building foundation. The RAM activities include the operation and termination of a Soil Vapor Extraction (SVE) System at the Site. The original RAM Transmittal Forms (BWSC 106, 106A, and 106B) are being signed and submitted with this report via the eDEP filing system and will be available through eDEP.

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## **2. DESCRIPTION OF THE RELEASE, SITE CONDITIONS, AND SURROUNDING RECEPTORS**

The subject property, 30,592 square feet in size, is currently owned by the City of Boston and comprised of two parcels laid out in a rectangular manner. The smaller of the two parcels, comprising 6,338 square feet, is not improved. The larger parcel, comprising 24,254 square feet, is improved with a currently vacant three-story, 8,800-square foot (building footprint), former industrial building. The coordinates of the property are 42° 15' 10"N latitude, 71° 07' 11"W longitude. The Universal Transverse Mercator (UTM) coordinates are 4680042 Northing and 325153 Easting in Zone 19. A Site Plan is included as Figure 2.

### **2.1 SURROUNDING RECEPTORS**

The Site is located in a restricted manufacturing zoned area of Boston. Nearby properties are zoned commercial, restricted manufacturing, and residential and are developed as such. The nearest human receptors are residents living within 500 feet north and east of the Site across MBTA railroad lines, which run along the northern Site boundary. The Neponset River, which runs along the southern Site boundary, and the land situated adjacently southwest of the Site is identified as protected open space.

### **2.2 RELEASE HISTORY**

The Site has a history of industrial use and was formerly the location of the Lewis Chemical Company. Based on available information, the Site was utilized as a leather manufacturing company from 1940 to the early 1960's. Lewis Chemical operated the Site from 1963 until 1983 and collected, stored, transported, and processed hazardous waste. Lewis Chemical was forced to cease operations under a Court Order issued by MassDEP in 1983. The MassDEP subsequently listed the Site as a State disposal site in 1987 and issued release tracking number (RTN) 3-1616. The Site is currently listed as a Tier 1B disposal site. The City of Boston gained ownership of the property in October 2000 via tax foreclosure.

Several environmental investigations have been performed at the Site since 1986 and were detailed in the RAM Plan submitted to the MassDEP in July 2010 (Woodard & Curran, 2010). The most recent was a supplemental soil investigation conducted by Woodard & Curran for the City of Boston completed in 2008. The 2008 investigation conducted at the Site identified significant volatile organic compound (VOC) concentrations in soil below the building foundation. Notably, tetrachloroethene (PCE) and trichloroethene (TCE) were detected in maximum concentrations of 8,000 mg/Kg and 1,900 mg/Kg, respectively, in soil samples collected beneath the concrete slab floor at the western portion of the Site building.

### **3. DESCRIPTION OF THE RELEASE ABATEMENT MEASURE**

The RAM was implemented to reduce VOC concentrations in the subsurface below the building located at 12-24 Fairmount Court via the implementation of SVE.

The SVE system construction was completed at the Site on September 24, 2010. SVE system start-up also occurred on this day. The RAM Plan submitted to the MassDEP in July 2010 detailed the construction of the SVE system (Woodard & Curran, 2010). The SVE system was constructed in accordance with the RAM Plan. No significant changes in the system were made during construction. On October 20, 2010, as the result of process air monitoring being routinely performed on the system, it was determined that vinyl chloride, which was not present at elevated concentrations in the initial sub-slab vapor testing completed, as documented in the RAM Plan, was being extracted from the sub-slab soils but not being effectively removed from the extracted vapors. As a result, the SVE system was modified to include a potassium permanganate filter to extract the vinyl chloride from the system effluent vapors prior to discharge to the atmosphere (Woodard & Curran, 2011a). This addition to the potassium permanganate filter off-gas controls was documented in RAM Status Report 1.

The SVE system operated for a total of 649.6 days between September 2010 and February 2013. The system was off either by scheduled or unscheduled shutdowns for a total of approximately 230 days between September 2010 and February 2013. Scheduled shut down occurrences included carbon changes and monitoring for rebound. Unscheduled occurrences included the need to install additional off-gas controls, precipitation events that raised the groundwater table, and repair of the high water level switch inside the condensate knock-out drum.

Based upon the data and information collected during the operation of the SVE system during this reporting period, it was determined that the continued operation of the SVE system was not beneficial versus the cost of continued operation due to the measured decrease in mass removal since December 2012, as further discussed in Section 4.1 below. Based upon this information, the SVE system was permanently shut down on February 13, 2013 after the final SVE system monitoring round. The demolition of the Lewis Chemical building is scheduled for the summer of 2013.

SVE system dismantling commenced on April 4, 2013 and was completed on April 16, 2013. All components were disassembled with exception of the vertical SVE extraction wells. The wells were covered with protective road boxes with a concrete collar to prevent damage and allow for re-use of the wells as part of a future SVE system or Sub-Slab Depressurization System (SSDS), as the building floor slab will remain after the building is demolished.

## **4. INVESTIGATION AND MONITORING DATA**

### **4.1 SUBSLAB VAPOR REMOVAL SUMMARY**

Cumulative total volatile organic compounds (TVOC) mass removal accomplished through the end of this reporting period is shown in Table 1 and shown graphically in Figure 3. Approximately 1,500 pounds of VOCs have been removed from the subsurface from initial startup to system shutdown in February 2013.

During this most recent reporting period beginning on October 31, 2012, the VOC concentrations within the process air stream have significantly decreased since December 2012. Since December 2012 and up to the last monitoring event completed on February 13, 2013, the influent TVOC readings into the first carbon vessel, as measured with a photoionization detector (PID), have decreased from 22.8 parts per million by volume (ppmv) to 1.5 ppmv. The TVOC concentrations within the process air stream had remained relatively consistent prior to December 2012 with exception of a slight rebound during the 11-day period the SVE system was off due to automatic shutdown on September 2, 2012.

TVOC concentrations over time are graphically shown in Figure 3.

### **4.2 MONITORING DATA SUMMARY**

One SVE process air sampling event was completed during this final reporting period. The sampling event was conducted on October 31, 2012. The samples were submitted for VOC analysis via United States Environmental Protection Agency (USEPA) Method TO-15. Results indicated that a 96.4% TVOC removal efficiency was achieved. Additionally, vinyl chloride effluent concentrations continued to be reduced during system operation. Various laboratory reporting limits for non-detected compounds for the influent sample were elevated due to the dilution necessary for laboratory analysis. However, a conservative evaluation that is inclusive of the elevated laboratory detection limits for the influent sample indicates that a 96.4% TVOC removal efficiency was achieved. This indicates that if these non-detected compounds in the influent are present at levels at or below laboratory reporting limits, they are negligible with respect to maintaining TVOC removal efficiency. Furthermore, it is postulated that ethanol and methylene chloride were likely introduced into the sample as laboratory contaminants. This is based upon previous sampling results and the sporadic presence of these contaminants. The system efficiency for the removal of TVOCs based on the laboratory data obtained from the most recent SVE system process air sampling event on October 31, 2013 is shown on Table 2. Additionally, influent PCE and TCE concentrations obtained between September 2010 and October 2012 from process air sampling events is summarized in Table 3. The temporal results for these primary compounds indicate a significant decrease in concentrations since SVE was implemented in September 2010. Laboratory analytical reports for SVE process air sampling conducted on October 31, 2012 are provided in Appendix A. Analytical reports for process air sampling conducted prior to October 2012 were provided in previous RAM Status reports.

Previous SVE process air sampling events have been documented in previous RAM status reports submitted during RAM implementation. All laboratory reports for previous process air sampling events have also been included in previous RAM status reports. A greater than 95% TVOC removal efficiency has been maintained throughout the RAM, which is based upon laboratory data collected from the influent and effluent sample points of the SVE. When field PID readings taken during scheduled monitoring events suggested that potential breakthrough was occurring below 95% at the first 1,000-pound carbon vessel, a carbon change out would be scheduled. This protocol would insure that a minimum 95% removal efficiency was maintained.

Physical and chemical field measurements such as air flow rate, vacuum, temperature, and TVOC levels using a photoionization detector (PID) were collected at each monitoring point throughout the SVE system during monitoring events. SVE system monitoring data is provided on the field monitoring reports in Appendix B. TVOC concentrations over time, as measured with a PID, are graphically shown in Figure 3 and show that TVOC concentrations have steadily decreased over this final reporting period.



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## 5. REMEDIATION WASTE MANAGEMENT

Approximately 2,000 pounds of vapor phase granulated activated carbon (VGAC), which was utilized as an off-gas control, was transported off-site for reactivation during this reporting period. This will be the final shipment of VGAC, as the SVE system was permanently shut down on February 13, 2013. The VGAC and carbon vessels were removed on April 8, 2013. A carbon sample was previously collected from the off-gas controls and submitted for toxicity characteristic leaching procedure (TCLP) analysis via method 1311 on November 15, 2010 in order to assess the waste for toxicity characteristics during the period in which the highest TVOC concentration were present in the SVE process air stream. Based upon the laboratory results, the carbon waste is not considered hazardous and is able to be transported as non-hazardous and regenerated. The spent carbon was removed and transported to Carbon Activated in Blasdel, New York for regeneration by Carbon Filtrations Systems (CFS) of Johnston, Rhode Island. The laboratory report for the VGAC waste characterization sample was previously provided in RAM Status Report #1.

The Hydrosil International LTD HS-600 material (potassium permanganate filter) was also removed on April 8, 2013. Previous sampling of this media for laboratory TCLP analysis via method 1311 indicated that the material is not considered hazardous and is able to be transported as non-hazardous for reactivation. Disposal documentation is provided in Appendix C.

Two drums were transported for disposal on May 21, 2013. One drum contained investigatory derived waste from soil borings conducted at the Site and one drum contained water collected in the condensate knock-out drum of the SVE system. The drums were removed and transported to Vexor Technologies Inc. in Medina, Ohio for disposal by New England Disposal Technologies Inc. (NEDT) of Sutton, Massachusetts. The laboratory report for waste characterization of the water is included in Appendix A and the waste manifest for both drums is included in Appendix C. The waste characterization laboratory report for the soil drum was provided in the previous RAM status report.

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## **6. RAM COMPLETION**

### **6.1 FINDINGS AND CONCLUSIONS OF THE RAM**

The implementation of SVE has resulted in the removal of approximately 1,500 pounds of VOCs from the subsurface below the foundation slab. As noted above, the SVE system was in operation for 649.6 days between start-up in September 2010 and permanent shut down of the system in February 2013. The SVE system was dismantled in April 2013 in anticipation of the Lewis Chemical building being demolished. The goal of the RAM was to remove VOCs from the subsurface to a point where analysis of the cumulative mass removal curve indicated asymptotic conditions and it was no longer cost effective to operate the SVE system. These conditions are apparent during this most recent reporting period and are depicted in Figure 3.

Additionally, quarterly laboratory analysis of the process air stream has indicated that the main constituents (PCE and TCE) identified during historical subsurface evaluations were present in the process air stream during SVE implementation. Therefore, the SVE system was able to collect and capture the primary targeted constituents.

Based upon the information provided above and consistency with General Provisions for RAMs, 310 CMR 40.0441, requiring that a Release Abatement Measure shall “reduce risks at a disposal site”, the objectives of the RAM have been achieved.

### **6.2 DESCRIPTION OF ONGOING ACTIVITIES RELATED TO THE RAM**

Additional activities related to the RAM will not be conducted.

### **6.3 RAM COMPLETION STATEMENT**

The completed RAM activities are in general conformance with the tasks outlined in the RAM Plan. The seal and signature of Craig Blake, the Licensed Site Professional of Record for this Site, is provided and a copy of the RAM Transmittal Form has been submitted via eDEP concurrently with this report.

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## **7. REMEDIAL MONITORING REPORT**

### **7.1 GENERAL**

This is the fifth and final remedial monitoring report (RMR) to summarize the RAM activities conducted since the submission of the RAM Plan. A completed RMR BWSC form 106A and 106B is being submitted concurrently with this report via eDEP. The former SVE system layout is provided on the Site plan, which is provided as Figure 2. The following sections provide the information requested on the RMR checklist and describe the operation of the SVE system.

### **7.2 SVE ROUTINE OPERATION**

Woodard & Curran conducted a total of four Site visits since the previous RMR in November 2012 in order to conduct a full monitoring round to collect physical and chemical field measurements, such as air flow rate, vacuum, temperature, and TVOC levels using a photoionization detector (PID) at each monitoring point throughout the system. Table 4 summarizes the remedial activities conducted during the reporting period. Additional spot checks were also performed by Woodard & Curran personnel to ensure the system was running efficiently and to check for water in the condensate knock-out drum. Copies of the SVE field monitoring reports are provided in Appendix B.

Woodard & Curran collected process air samples from the SVE influent and effluent stream on October 31, 2013. Process air sampling was previously discussed in Section 2.3 of this report. The process air samples were submitted for EPA TO-15 analysis to Absolute Resource Associates of Portsmouth, New Hampshire and analyzed by EMSL Analytical Inc. of Cinnaminson, New Jersey. The purpose of these process air samples was to further characterize the sub slab soil gas in order to correlate PID readings to the laboratory data to assist in the mass removal estimation and also to confirm that a minimum 95% TVOC removal efficiency was maintained. The results are summarized in Table 2. The laboratory reports for the October 2012 sampling process air sampling events are provided in Appendix A.

### **7.3 SIGNIFICANT OPERATIONAL EVENTS**

The SVE system was permanently shut down on February 13, 2013. The system was subsequently dismantled as described in previous sections of the RAM completion report.

The SVE system automatically shut down due to a High Water Level Alarm for the moisture knock-out drum on November 14, 2012. The SVE system remained off for 7 days prior to discovery of this condition on November 21, 2012. Water was not observed in the knock-out drum and the alarm was determined to be an anomalous event. The system was reset and restarted on November 21, 2012.

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## 8. LIMITATIONS

The activities described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or limited is implied. These services were performed consistent with the agreement with our client. The conclusions presented in this Report were based upon the services described and not on scientific tasks or procedures beyond the scope of described services or time or budgetary constraints. Any statement or opinion contained in this report prepared by Woodard & Curran shall not be construed to create any warranty or representation that the property is free of pollution or complies with any or all applicable regulatory or statutory requirements; or that the property is fit for any particular purpose. Unless otherwise indicated in this Report, no attempt was made to check on the compliance of present or past owners of the Site with federal, state, or local laws and regulations. Woodard & Curran Inc. shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the evaluation was performed.

Results of the activities contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others or the use of segregated portions of this report.

This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

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## 9. REFERENCES

Woodard & Curran, Inc. (W&C) 2010. *Release Abatement Measure Plan*, 0 & 12-24 Fairmount Court, Hyde Park, Massachusetts, RTN 3-1616, July.

Woodard & Curran, Inc. (W&C) 2011a. *Release Abatement Measure Status Report #1*, 0 & 12-24 Fairmount Court, Hyde Park, Massachusetts, RTN 3-1616, May.

Woodard & Curran, Inc. (W&C) 2011b. *Release Abatement Measure Status Report #2*, 0 & 12-24 Fairmount Court, Hyde Park, Massachusetts, RTN 3-1616, November.

Woodard & Curran, Inc. (W&C) 2012. *Release Abatement Measure Status Report #3*, 0 & 12-24 Fairmount Court, Hyde Park, Massachusetts, RTN 3-1616, May.

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## TABLES

**TABLE 1**  
**TVOC Mass Removal Summary Versus Time**  
September 2010 to February 2013

DATE	FLOW (scfm)	TVOC-PID (ppmV)	Run Time (Days)	Mass Removed (Lbs)	Cum. Mass Removed (Lbs)	Cum. Run Time (Days)
9/24/10	81.0	410.5				
10/1/10	124.0	166.1	6.70	101.32	101.32	6.70
10/8/10	175.0	91.5	7.00	69.3	170.62	13.70
1/1/00	264.0	57.5	12.00	100.65	271.27	25.70
11/12/10	282.0	12.1	13.60	66.04	337.31	39.30
12/22/10	172.0	48.9	10.30	36.52	373.83	49.60
1/7/11	159.0	16.7	15.92	44.09	417.92	65.52
2/3/11	98.0	24.2	10.80	14.48	432.4	76.32
2/18/11	194.0	16.0	4.71	7.06	439.46	81.03
3/4/11	165.0	6.2	14.08	14.31	453.77	95.11
4/1/11	110.0	47.5	16.11	30.34	484.11	111.22
4/29/11	35.0	36.9	27.82	43.42	527.53	139.04
5/27/11	151.0	45.7	27.95	54.87	582.4	166.99
6/19/11	118.0	42.3	21.00	63.52	645.92	187.99
9/23/11	147.0	121.0	11.11	61.32	707.24	199.10
10/27/11	72.0	12.0	31.01	114.49	821.73	230.11
1/5/12	75.0	26.8	69.48	90.01	911.74	299.59
2/8/12	206.0	23.1	21.64	38.5	950.24	321.23
3/14/12	98.0	20.7	34.97	59.1	1009.34	356.20
4/20/12	100.0	32.1	36.92	49.01	1058.4	393.12
5/25/12	93.0	41.8	20.07	36.35	1094.7	413.19
7/6/12	108.0	43.0	41.65	90.15	1184.9	454.84
8/10/12	131.0	39.3	34.99	87.11	1272.0	489.83
9/13/12	69.0	78.3	33.34	99.25	1371.2	523.17
10/31/12	81.0	16.9	28.72	51.91	1423.1	551.89
11/21/12	87.0	22.8	13.91	9.59	1432.7	565.80
12/13/12	236.0	7.6	22.04	22.38	1455.1	587.84
1/16/13	65.0	4.6	34.01	12.91	1468.0	621.85
2/13/13	31.0	1.5	27.74	1.68	1469.68	649.59

Notes:

scfm= standard cubic feet per minute

ppmV= parts per million by volume

Lbs= pounds

**Table 2**  
**Process Air Sampling Results Summary**  
10/31/2012

LOCATION SAMPLING DATE		INFLUENT 10/31/2012	EFFLUENT 10/31/2012
CasNum			
MCP Volatile Organics in Air (ug/m3)			
Vinyl chloride	75-01-4	64	23
Ethanol	64-17-5	ND(28)	21
1,1-Dichloroethene	75-35-4	ND(59)	49
Methylene chloride	75-09-2	ND(52)	35
Carbon disulfide	75-15-0	ND(47)	23
1,1-Dichloroethane	75-34-3	ND(61)	39
cis-1,2-Dichloroethene	156-59-2	1,100	74
1,1,1-Trichloroethane	71-55-6	2,100	ND(27)
Trichloroethene	79-01-6	2,800	ND(27)
Toluene	108-88-3	140	ND(19)
Tetrachloroethene	127-18-4	4,600	ND(34)
Freon 113	76-13-1	850	160
SUM		11,654	424
Removal Efficiency (%)			96.36%

Notes:

Only laboratory detections are summarized in this table.

ND= Not detected above laboratory detection limit. Detection limit is provided in parenthesis.

ug/m3= microgram per cubic meter.

MCP= Massachusetts Contingency Plan.



**Table 3**  
**PCE and TCE Influent Process Air Sampling Results Summary**  
September 2010 to October 2012

LOCATION SAMPLING DATE	CasNum	Units	INFLUENT 9/24/2010	INFLUENT 10/1/2010	INFLUENT 10/8/2010	INFLUENT 10/29/2010	INFLUENT 3/4/2011	INFLUENT 10/27/2011	INFLUENT 2/8/2012	INFLUENT 8/1/2012	INFLUENT 8/28/2012	INFLUENT 10/31/2012
MCP Volatile Organics in Air												
Trichloroethene	79-01-6	ug/m3	489,000	158,000	42,300	107,000	11,400	10,000	20,000	16,000	45,000	2,800
Tetrachloroethene	127-18-4	ug/m3	631,000	198,000	76,300	103,000	10,300	15,000	33,000	13,000	31,000	4,600
<i>SUM</i>		ug/m3	<i>1,120,000</i>	<i>356,000</i>	<i>118,600</i>	<i>210,000</i>	<i>21,700</i>	<i>25,000</i>	<i>53,000</i>	<i>29,000</i>	<i>76,000</i>	<i>7,400</i>

Notes:  
ug/m3= microgram per cubic meter.  
MCP= Massachusetts Contingency Plan.

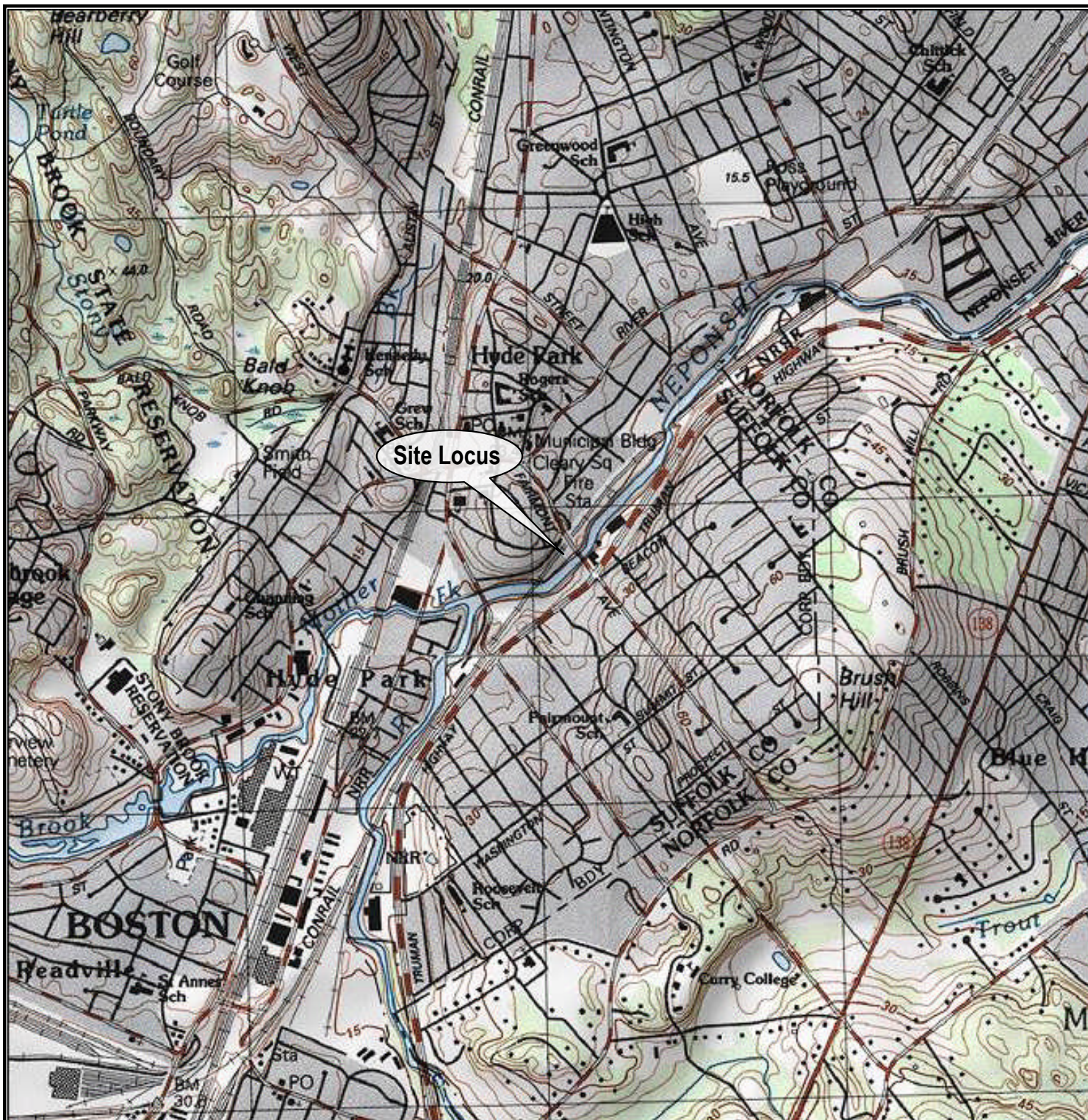
**Table 4: Remedial Activities Summary**

Item	Description
a.) Operating Status of the Active Remedial System Including Shutdowns	The SVE operated for a total of approximately 98 days between November 1, 2012 (beginning of reporting period) to February 13, 2013 (permanent shutdown of the SVE system). The SVE was shut down for approximately 7 days during this remedial monitoring period.
b.) Dates and Number of Monitoring Events	Five full Site monitoring events were conducted on the following dates: 11/21/2012, 12/13/2012, 1/16/2013, and 2/13/2013.
c.) Effluent Concentrations	The goal of the off-gas treatment controls is to maintain a removal efficiency of 95%. Based upon both the PID measurements obtained from the influent and effluent process air streams during SVE system monitoring events and the influent and effluent process air samples collected for TO-15 laboratory analysis, this goal has been achieved to date.
d.) Discharges Above Permissible Levels	Not applicable.
e.) Recovery Rates and/or Volumes	<p>Based on an average flowrate of 129 scfm and runtime of approximately 98 days, approximately 47 pounds of VOCs were removed between November 1, 2012 and February 13, 2013.</p> <p>Table 2 summarizes the system TVOC mass removal based on a total runtime of approximately 650 days from data collected over 28 total Site visits since startup. A graph showing the influent TVOC concentration over time and the cumulative mass removal by the SVE is provided in Figure 3.</p>
f.) Discharge Volumes	It is estimated that 42,704,480 standard cubic feet of air were discharged to the atmosphere since the SVE system was started on September 24, 2010. This estimate is lower than the volume reported in RAM Status Report #4. This is due to lower recorded flow rates during this reporting period that were included in the updated average flow rate used in the air discharge volume calculation.
g.) Remedial Additives	No remedial additives were applied.
h.) Related Maps, Graphs or Diagrams	SVE design drawings including a piping and well layout, piping and instrumentation diagram (P&ID), piping and well details were previously provided in the July 2010 RAM Plan.

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## FIGURES





MN ★ TN  
15½°

0 5 1 MILE  
0 1000 FEET 0 500 1000 METERS

Printed from TOPO! ©2000 Wildflower Productions (www.topo.com)

Base Map Source:  
TOPO!™ © 2000  
Wildflower Productions

LAT: 42°15'11.00"  
LONG: 71°07'10.09"

DES.BY: DR.BY: MES CK.BY: CB

12-24 Fairmount Court  
Hyde Park, MA 02136

## FIGURE 1 SITE LOCUS

SCALE: AS SHOWN JOB NO.: 221375.01  
DATE: JULY 2010 FILE NAME:

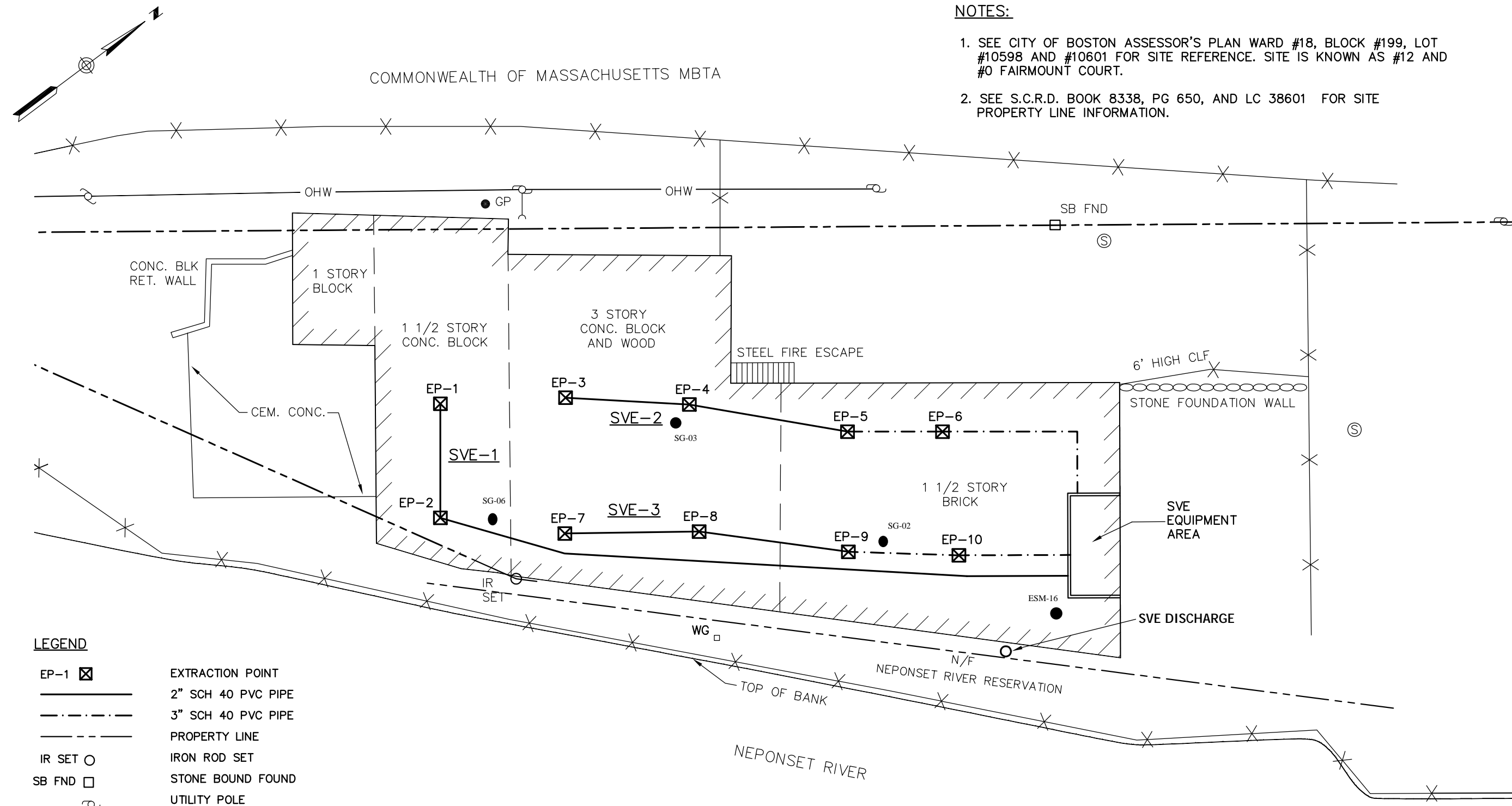


**COMMITMENT & INTEGRITY  
DRIVE RESULTS**

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- NOTES:**
1. SEE CITY OF BOSTON ASSESSOR'S PLAN WARD #18, BLOCK #199, LOT #10598 AND #10601 FOR SITE REFERENCE. SITE IS KNOWN AS #12 AND #0 FAIRMOUNT COURT.
  2. SEE S.C.R.D. BOOK 8338, PG 650, AND LC 38601 FOR SITE PROPERTY LINE INFORMATION.

- LEGEND**
- |                    |                   |
|--------------------|-------------------|
| EP-1               | EXTRACTION POINT  |
| 2" SCH 40 PVC PIPE |                   |
| 3" SCH 40 PVC PIPE |                   |
| PROPERTY LINE      |                   |
| IR SET             | IRON ROD SET      |
| SB FND             | STONE BOUND FOUND |
| UTILITY POLE       |                   |
| SEWER MANHOLE      |                   |
| HYDRANT            |                   |
| WG                 | WATER GATE        |
| GP                 | GATE POST         |
| RET.               | RETAINING         |
| CEM. CONC.         | CEMENT CONCRETE   |
| CONC. BLK          | CONCRETE BLOCK    |
| CHAIN LINK FENCE   |                   |
| OHW                | OVERHEAD WIRES    |



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DEDHAM, MASSACHUSETTS 02026  
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COMMITMENT & INTEGRITY DRIVE RESULTS

**SITE PLAN**

DESIGNED BY: DRC  
DRAWN BY: GA

CHECKED BY: SLD  
221375-SVE-Layout-FIG-1.dwg

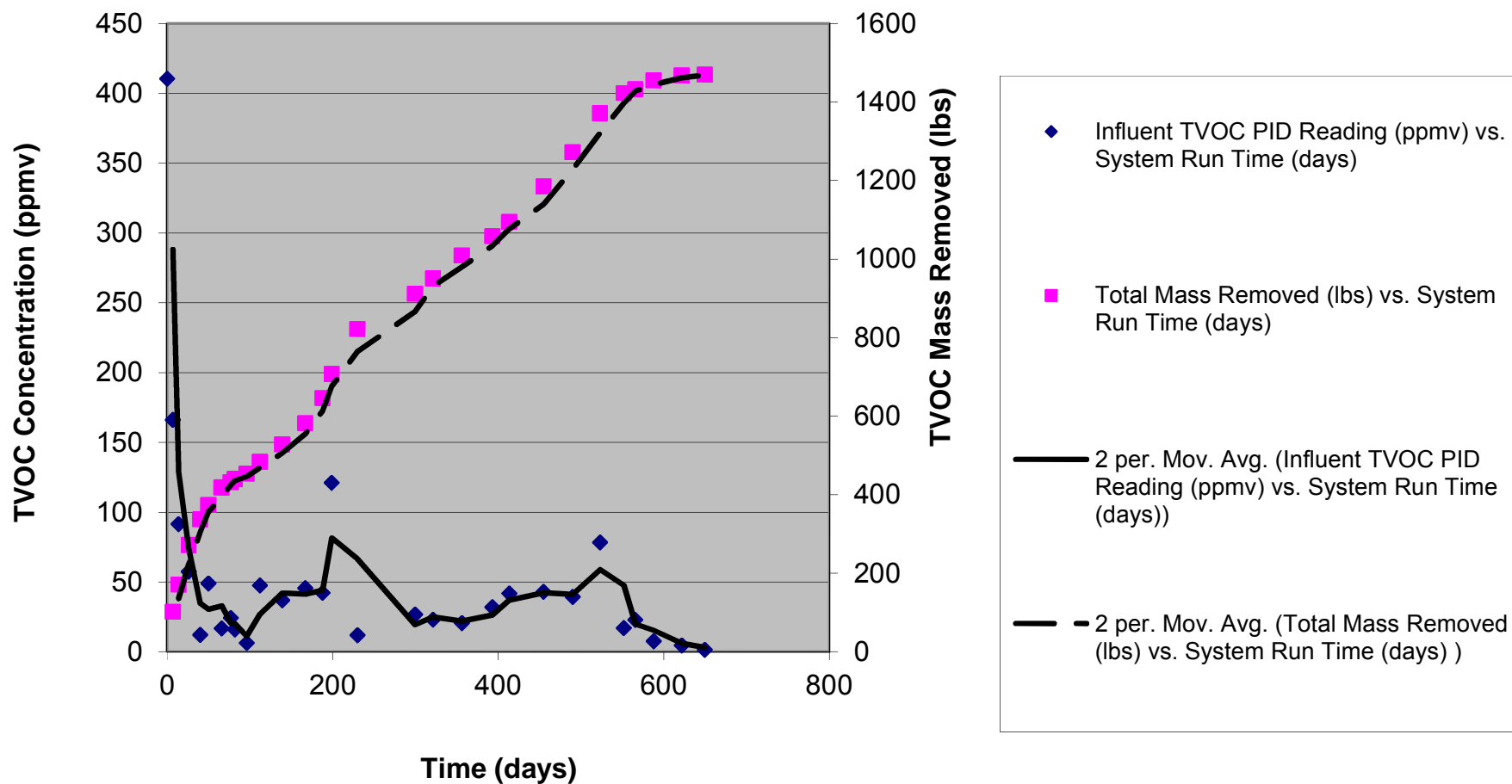
CITY OF BOSTON  
DEPARTMENT OF  
NEIGHBORHOOD DEVELOPMENT

FORMER LEWIS CHEMICAL SITE

JOB NO: 221375  
DATE: AUGUST 2009  
SCALE: 1" = 20'

**FIGURE - 2**

**Figure 3: TVOC Readings and Mass Removal Versus Time**



## **APPENDIX A: LABORATORY ANALYTICAL REPORTS**



ProjectID:

Report Date: 11/20/2012

## Page 1 of 1



**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077  
 Phone/Fax: (856)858-4800/ (856)858-4571  
<http://www.emsl.com> [mhowley@emsl.com](mailto:mhowley@emsl.com)

EMSL Order: 491201065  
 EMSL Sample ID: 491201065-1  
 Received Date: 11/01/2012  
 Report Date: 11/20/2012

Project: 221375/Hyde Park MH  
 Client Sample ID: Effluent

Sampling Date: 10/31/2012  
 Canister ID: HD0165

Lab File ID: M2591.D  
 Sample Vol(ml): 25  
 Dilution Factor: 10

Analysis Date: 11/19/2012  
 Instrument ID: 5973M  
 Analyst Initials: MTH

**Target Compound Results Summary**

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3
Propylene	115-07-1	58.08	ND	10		ND	24
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35
Chloromethane	74-87-3	50.49	ND	5.0		ND	10
n-Butane	106-97-8	58.12	ND	5.0		ND	12
Vinyl chloride	75-01-4	62.50	8.9	5.0		23	13
1,3-Butadiene	106-99-0	54.09	ND	5.0		ND	11
Bromomethane	74-83-9	94.94	ND	5.0		ND	19
Chloroethane	75-00-3	64.52	ND	5.0		ND	13
Ethanol	64-17-5	46.07	11	5.0		21	9.4
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	ND	5.0		ND	12
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	21	5.0		160	38
Acetone	67-64-1	58.08	ND	5.0		ND	12
1,1-Dichloroethene	75-35-4	96.94	12	5.0		49	20
Acetonitrile	75-05-8	41.00	ND	5.0		ND	8.4
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16
Carbon disulfide	75-15-0	76.14	7.3	5.0		23	16
Methylene chloride	75-09-2	84.94	10	5.0		35	17
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20
n-Hexane	110-54-3	86.17	ND	5.0		ND	18
1,1-Dichloroethane	75-34-3	98.96	9.5	5.0		39	20
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18
2-Butanone(MEK)	78-93-3	72.10	ND	5.0		ND	15
cis-1,2-Dichloroethene	156-59-2	96.94	19	5.0		74	20
Ethyl acetate	141-78-6	88.10	ND	5.0		ND	18

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Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3
Chloroform	67-66-3	119.4	ND	5.0		ND	24
Tetrahydrofuran	109-99-9	72.11	ND	5.0		ND	15
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27
Cyclohexane	110-82-7	84.16	ND	5.0		ND	17
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31
n-Heptane	142-82-5	100.2	ND	5.0		ND	20
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20
Benzene	71-43-2	78.11	ND	5.0		ND	16
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33
1,4-Dioxane	123-91-1	88.12	ND	5.0		ND	18
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	5.0		ND	20
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23
Toluene	108-88-3	92.14	ND	5.0		ND	19
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23
Ethylbenzene	100-41-4	106.2	ND	5.0		ND	22
Xylene (p,m)	1330-20-7	106.2	ND	10		ND	43
Xylene (Ortho)	95-47-6	106.2	ND	5.0		ND	22
Styrene	100-42-5	104.1	ND	5.0		ND	21
Isopropylbenzene (cumene)	98-82-8	120.19	ND	5.0		ND	25
Bromoform	75-25-2	252.8	ND	5.0		ND	52
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34

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**Target Compound Results Summary**

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53
Naphthalene	91-20-3	128.17	ND	5.0		ND	26

ND = Non Detect

**Surrogate**

4-Bromofluorobenzene

**Result**

10.3

**Spike**

10

**Recovery**

103%

**Qualifier Definitions**

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.



NJDEP Certification #: 03036

Please visit our website at <http://www.emsl.com>

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<http://www.emsl.com> [mhowley@emsl.com](mailto:mhowley@emsl.com)

EMSL Order: 491201065  
 EMSL Sample ID: 491201065-2  
 Received Date: 11/01/2012  
 Report Date: 11/20/2012

Project: 221375/Hyde Park MH  
 Client Sample ID: Influent

Sampling Date: 10/31/2012  
 Canister ID: HD2251

Lab File ID: M2592.D  
 Sample Vol(ml): 25  
 Dilution Factor: 30

Analysis Date: 11/19/2012  
 Instrument ID: 5973M  
 Analyst Initials: MTH

**Target Compound Results Summary**

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3
Propylene	115-07-1	58.08	ND	30		ND	71
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	15		ND	74
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	15		ND	100
Chloromethane	74-87-3	50.49	ND	15		ND	31
n-Butane	106-97-8	58.12	ND	15		ND	36
Vinyl chloride	75-01-4	62.50	25	15		64	38
1,3-Butadiene	106-99-0	54.09	ND	15		ND	33
Bromomethane	74-83-9	94.94	ND	15		ND	58
Chloroethane	75-00-3	64.52	ND	15		ND	40
Ethanol	64-17-5	46.07	ND	15		ND	28
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	15		ND	66
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	15		ND	84
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	ND	15		ND	37
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	110	15		850	110
Acetone	67-64-1	58.08	ND	15		ND	36
1,1-Dichloroethene	75-35-4	96.94	ND	15		ND	59
Acetonitrile	75-05-8	41.00	ND	15		ND	25
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	15		ND	45
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	15		ND	66
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	15		ND	47
Carbon disulfide	75-15-0	76.14	ND	15		ND	47
Methylene chloride	75-09-2	84.94	ND	15		ND	52
Acrylonitrile	107-13-1	53.00	ND	15		ND	33
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	15		ND	54
trans-1,2-Dichloroethene	156-60-5	96.94	ND	15		ND	59
n-Hexane	110-54-3	86.17	ND	15		ND	53
1,1-Dichloroethane	75-34-3	98.96	ND	15		ND	61
Vinyl acetate	108-05-4	86.00	ND	15		ND	53
2-Butanone(MEK)	78-93-3	72.10	ND	15		ND	44
cis-1,2-Dichloroethene	156-59-2	96.94	270	15		1100	59
Ethyl acetate	141-78-6	88.10	ND	15		ND	54

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Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3
Chloroform	67-66-3	119.4	ND	15		ND	73
Tetrahydrofuran	109-99-9	72.11	ND	15		ND	44
1,1,1-Trichloroethane	71-55-6	133.4	390	15		2100	82
Cyclohexane	110-82-7	84.16	ND	15		ND	52
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	15		ND	70
Carbon tetrachloride	56-23-5	153.8	ND	15		ND	94
n-Heptane	142-82-5	100.2	ND	15		ND	61
1,2-Dichloroethane	107-06-2	98.96	ND	15		ND	61
Benzene	71-43-2	78.11	ND	15		ND	48
Trichloroethene	79-01-6	131.4	510	15		2800	81
1,2-Dichloropropane	78-87-5	113.0	ND	15		ND	69
Methyl Methacrylate	80-62-6	100.12	ND	15		ND	61
Bromodichloromethane	75-27-4	163.8	ND	15		ND	100
1,4-Dioxane	123-91-1	88.12	ND	15		ND	54
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	15		ND	61
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	15		ND	68
Toluene	108-88-3	92.14	38	15		140	57
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	15		ND	68
1,1,2-Trichloroethane	79-00-5	133.4	ND	15		ND	82
2-Hexanone(MBK)	591-78-6	100.1	ND	15		ND	61
Tetrachloroethene	127-18-4	165.8	670	15		4600	100
Dibromochloromethane	124-48-1	208.3	ND	15		ND	130
1,2-Dibromoethane	106-93-4	187.8	ND	15		ND	120
Chlorobenzene	108-90-7	112.6	ND	15		ND	69
Ethylbenzene	100-41-4	106.2	ND	15		ND	65
Xylene (p,m)	1330-20-7	106.2	ND	30		ND	130
Xylene (Ortho)	95-47-6	106.2	ND	15		ND	65
Styrene	100-42-5	104.1	ND	15		ND	64
Isopropylbenzene (cumene)	98-82-8	120.19	ND	15		ND	74
Bromoform	75-25-2	252.8	ND	15		ND	160
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	15		ND	100



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Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3
4-Ethyltoluene	622-96-8	120.2	ND	15		ND	74
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	15		ND	74
2-Chlorotoluene	95-49-8	126.6	ND	15		ND	78
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	15		ND	74
1,3-Dichlorobenzene	541-73-1	147.0	ND	15		ND	90
1,4-Dichlorobenzene	106-46-7	147.0	ND	15		ND	90
Benzyl chloride	100-44-7	126.0	ND	15		ND	77
1,2-Dichlorobenzene	95-50-1	147.0	ND	15		ND	90
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	15		ND	110
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	15		ND	160
Naphthalene	91-20-3	128.17	ND	15		ND	79

ND = Non Detect

**Surrogate**

4-Bromofluorobenzene

**Result**

10.2

**Spike**

10

**Recovery**

102%

**Qualifier Definitions**

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.



NJDEP Certification #: 03036

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EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

# USEPA TO-15

## External Chain of Custody/ Field Test Data Sheet

EMSL Analytical, Inc.  
200 Route 130 North  
Cinnaminson, NJ 08077  
Ph. (800) 220-3675  
Fax (856) 786-0327

EMSL Order Number (Lab Use Only):

491201065

Report To Contact Name: Don Clinton

Bill To Company: Absolute Resource Associates

Sampled By (Sign):

Company Name: Woodward-Clyde Inc

Attention To:

Sampled By (Name): Don Clinton

Address 1: 980 Washington St Suite 305

Address 1: Portsmouth NH 03801

Total # of Samples: 2

Address 2: Dedham, MA

Address 2:

Date Shipped: 10/31/12

Phone No.: 781-929-6176 Fax:

Phone No.: 603.436.2001 Fax:

Sample Collection Zip Code: 02136

Email Results To: dclinton@woodward-clayton.com

Project Name: 221375/Hyde Park MA

Purchase Order:

Turnaround Time (in Business Days): 10 Day Standard

Reporting Format: Results Only (Standard Lab Report)

☐ 5 Day

☐ 4 Day

☐ 3 Day

☐ Full Deliverables (Surcharge may apply)

☐ 2 Day

☐ 1 Day

☐ Other

☐ Other

Field Use - All Information Required!

Lab Use Only

Analysis

Matrix

USEPA TO-15

NJDEP LL TO-15

LIBRARY SEARCH

Other (Specify)

Indoor/ Ambient Air

Soil Gas

Landfill/ Vent

Client Field  
Sample  
Identification

Sampling Start Information

Sampling Stop Information

Canister Information

Flow Controller

Barometric Pres. ("Hg):

Barometric Pres. ("Hg):

Start Date

Time (24  
hr clock)

Canister  
Pressure  
("Hg)

Interior  
Temp.  
(F)

Stop Date

Time (24  
hr clock)

Canister  
Pressure  
("Hg)

Interior  
Temp.  
(F)

Canister ID

Size  
(L)

Can Cert  
Batch ID

Outgoing  
Pressure  
("Hg)

Incoming  
Pressure  
("Hg)

Reg. ID

Cal Flow  
(ml/min)

Influent  
Effluent

10/31/12

1255

-26

85

10/31/12

1304

-3

85

HD165

1.4

HD100

-30.0

+13

3690

79.30

10/31/12

1255

-28

65

10/31/12

1309

-3

65

HD2251

↓

↓

↓

+1

3653

80.88

HD165

HD2251

-2.0

-1.0

Comments:

Matrix is SVE process air Inf = 20.4 ppm  
Effluent = 0.3 ppm

Lab Canister Certification

Analyst Signature (TO-15):

Relinquished by:

Date/ Time

Received by:

Date/ Time

Affixed Seal #

Reason for Exchange (circle appropriate)

Patricia  
Coleman UPS

10/26/12 1610  
10/31/12 1445  
11/1/12

Patricia  
Coleman UPS

10/29/11 1000  
11/1/12 0915  
11/2/12 1305

913  
—

Shipping Courier Receiving Sampling Other:  
Shipping Courier Receiving Sampling Other:  
Shipping Courier Receiving Sampling Other: AN  
Shipping Courier Receiving Sampling Other:  
Shipping Courier Receiving Sampling Other:

491201065

## TO-15 Sample Information

Please fill out this worksheet in addition to the Chain of Custody form. This information helps us to best analyze your samples and achieve requested TAT

Company:

Contact Person:

Name:

E-mail:

Additional E-mail:

Telephone #:

Fax:

Do you want your results emailed? ☒ YES ☐ NO

Library Search requested: ☐ YES ☒ NO

A library search will identify up to 20 of the largest, non-target peaks that are not part of the standard TO-15 list of 74 compounds. If you are performing an Indoor Air Quality or odor investigation the library search is recommended. If you will need help interpreting your report the library search is REQUIRED.

Sample Type:

- ☐ Indoor Air Quality (Home/Office)  
☐ IAQ (Industrial)

- ☐ Vent Gas ☐ Soil Gas  
☒ Other: SVE PROCESS AIR

Description of sample (Important for the lab to achieve your requested turnaround time):

Are there any special detection limits, specific set of compounds, or any other specifics you need in your report?

- ☐ Permissible Exposure Limits  
☐ TVOC  
☐ Other (Please list or attach separate sheet)

☒ NO

Do you need any additional analysis on the canister sample? (additional charges will apply)

Draeger CMS Analyzer:

CO ; CO<sub>2</sub> ; SO<sub>2</sub> ; EtO ; NH<sub>3</sub> ; Cl<sub>2</sub> ; H<sub>2</sub>S ; NO<sub>2</sub> ; NO<sub>x</sub> ; O<sub>2</sub> ; Pet. Hydrocarbs ; Phosgene ; Phosphene

US EPA TO-3:

C<sub>1</sub>-C<sub>6</sub> hydrocarbons ; Methane only

ASTM-D5504:

Sulfur Scan (H<sub>2</sub>S, COS, MeSH, EtSH, DMS) ; H<sub>2</sub>S only

**Sample Retention Policy:** All canisters are guaranteed to be retained for one day after results are reported. Please review your results promptly to ensure that your project scope is fully addressed. Cans may be retained for a longer period of time but arrangements to hold your cans must be made through your customer account representative quickly. Thank you.



# Laboratory Report



**Absolute Resource** *associates*

124 Heritage Avenue Portsmouth NH 03801

Dan Clinton  
Woodard & Curran  
980 Washington St  
Suite 325N  
Dedham, MA 02026

PO Number: None  
Job ID: 26416  
Date Received: 4/9/13

Project: Lewis Chemical 221375.08

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,  
Absolute Resource Associates

A handwritten signature in black ink, appearing to read "Sue Sylvester" followed by "(for)".

Sue Sylvester  
Principal, General Manager

Date of Approval: 4/16/2013  
Total number of pages: 6

## Absolute Resource Associates Certifications

New Hampshire 1732  
Maine NH903

Massachusetts M-NH902

**Project ID:** Lewis Chemical 221375.08

**Job ID:** 26416

**Sample#:** 26416-001

**Sample ID:** Liquid Drum 1

**Matrix:** Water

**Sampled:** 4/4/13 14:00

Parameter	Result	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
		Limit	Units	Factor				Batch	Date	Time	
dichlorodifluoromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
chloromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
vinyl chloride	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
bromomethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
chloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
trichlorofluoromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
diethyl ether	< 5	5	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
acetone	< 50	50	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1-dichloroethene	< 1	1	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
methylene chloride	7	5	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
carbon disulfide	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
methyl t-butyl ether (MTBE)	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
trans-1,2-dichloroethene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1-dichloroethane	4	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
2-butanone (MEK)	18	10	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
2,2-dichloropropane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
cis-1,2-dichloroethene	11	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
chloroform	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
bromochloromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
tetrahydrofuran (THF)	< 10	10	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1,1-trichloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1-dichloropropene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
carbon tetrachloride	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2-dichloroethane	3	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
benzene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
trichloroethene	12	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2-dichloropropane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
bromodichloromethane	< 1	1	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
dibromomethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
4-methyl-2-pentanone (MIBK)	< 10	10	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
cis-1,3-dichloropropene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
toluene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
trans-1,3-dichloropropene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
2-hexanone	< 10	10	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1,2-trichloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,3-dichloropropane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
tetrachloroethene	10	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
dibromochloromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2-dibromoethane (EDB)	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
chlorobenzene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1,1,2-tetrachloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
ethylbenzene	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B
m&p-xylenes	< 2	2	ug/L	1		LMM		1300767	4/11/13	12:38	SW5030B8260B

**Project ID:** Lewis Chemical 221375.08

**Job ID:** 26416

**Sample#:** 26416-001

**Sample ID:** Liquid Drum 1

**Matrix:** Water

**Sampled:** 4/4/13 14:00

Parameter	Reporting		Units	Instr Dil'n	Analyst	Prep Date	Analysis			Reference
	Result	Limit					Batch	Date	Time	
o-xylene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
styrene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
bromoform	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
isopropylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,1,2,2-tetrachloroethane	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2,3-trichloropropane	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
n-propylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
bromobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,3,5-trimethylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
2-chlorotoluene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
4-chlorotoluene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
tert-butylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2,4-trimethylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
sec-butylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,3-dichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
4-isopropyltoluene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,4-dichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2-dichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
n-butylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2-dibromo-3-chloropropane (DBCP)	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2,4-trichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
hexachlorobutadiene	< 0.5	0.5	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
naphthalene	< 5	5	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
1,2,3-trichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
<b>Surrogate Recovery</b>		<b>Limits</b>								
dibromofluoromethane SUR	<b>102</b>	78-114	%	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
toluene-D8 SUR	<b>101</b>	88-110	%	1	LMM		1300767	4/11/13	12:38	SW5030B8260B
4-bromofluorobenzene SUR	<b>97</b>	86-115	%	1	LMM		1300767	4/11/13	12:38	SW5030B8260B

**Project ID:** Lewis Chemical 221375.08

**Job ID:** 26416

**Sample#:** 26416-002

**Sample ID:** Trip Blank

**Matrix:** Water

**Sampled:** 4/4/13 0:00

Parameter	Result	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
		Limit	Units	Factor				Batch	Date	Time	
dichlorodifluoromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
chloromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
vinyl chloride	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
bromomethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
chloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
trichlorofluoromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
diethyl ether	< 5	5	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
acetone	< 50	50	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1-dichloroethene	< 1	1	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
methylene chloride	< 5	5	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
carbon disulfide	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
methyl t-butyl ether (MTBE)	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
trans-1,2-dichloroethene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1-dichloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
2-butanone (MEK)	< 10	10	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
2,2-dichloropropane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
cis-1,2-dichloroethene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
chloroform	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
bromochloromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
tetrahydrofuran (THF)	< 10	10	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1,1-trichloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1-dichloropropene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
carbon tetrachloride	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2-dichloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
benzene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
trichloroethene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2-dichloropropane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
bromodichloromethane	< 1	1	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
dibromomethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
4-methyl-2-pentanone (MIBK)	< 10	10	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
cis-1,3-dichloropropene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
toluene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
trans-1,3-dichloropropene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
2-hexanone	< 10	10	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1,2-trichloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,3-dichloropropane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
tetrachloroethene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
dibromochloromethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2-dibromoethane (EDB)	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
chlorobenzene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1,1,2-tetrachloroethane	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
ethylbenzene	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B
m&p-xylenes	< 2	2	ug/L	1		LMM		1300767	4/11/13	10:54	SW5030B8260B

**Project ID:** Lewis Chemical 221375.08

**Job ID:** 26416

**Sample#:** 26416-002

**Sample ID:** Trip Blank

**Matrix:** Water

**Sampled:** 4/4/13 0:00

Parameter	Reporting		Units	Instr Dil'n	Analyst	Prep Date	Analysis			Reference
	Result	Limit					Batch	Date	Time	
o-xylene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
styrene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
bromoform	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
isopropylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,1,2,2-tetrachloroethane	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2,3-trichloropropane	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
n-propylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
bromobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,3,5-trimethylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
2-chlorotoluene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
4-chlorotoluene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
tert-butylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2,4-trimethylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
sec-butylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,3-dichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
4-isopropyltoluene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,4-dichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2-dichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
n-butylbenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2-dibromo-3-chloropropane (DBCP)	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2,4-trichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
hexachlorobutadiene	< 0.5	0.5	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
naphthalene	< 5	5	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
1,2,3-trichlorobenzene	< 2	2	ug/L	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
<b>Surrogate Recovery</b>		<b>Limits</b>								
dibromofluoromethane SUR	<b>102</b>	78-114	%	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
toluene-D8 SUR	<b>103</b>	88-110	%	1	LMM		1300767	4/11/13	10:54	SW5030B8260B
4-bromofluorobenzene SUR	<b>96</b>	86-115	%	1	LMM		1300767	4/11/13	10:54	SW5030B8260B



124 Heritage Avenue #16  
Portsmouth, NH 03801  
603-436-2001  
solutesourceassociates.com

**CHAIN-OF-CUSTODY RECORD  
AND ANALYSIS REQUEST**


26416

## ANALYSIS REQUEST

Company Name: Woodward + Curran	Project Name: Lewis Chemical
Company Address: 980 Washington St, Suite 325	Project #: 221375.08
Report To: Don Clinton	Project Location: NH MA ME VT Other
Phone #: 781-251-0200	Protocol: RCRA SDWA NPDES MCP NHDES OTHER
Invoice To: Don Clinton	Reporting QAPP GW-1 S-1 Limits: EPA DW Other
	Quote # <input type="checkbox"/> NH GREE/ODD Fund Pricing
	PO #

[illegible][illegible]

<b>TAT REQUESTED</b> Priority (24 hr)* <input type="checkbox"/> Expedited (48 hr)* <input type="checkbox"/> Standard (10 Business Days) <input checked="" type="checkbox"/> *Date Needed _____	See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.	<b>SPECIAL INSTRUCTIONS</b> Sample for waste disposal - CAM not required			
<b>REPORTING INSTRUCTIONS</b>			PDF (e-mail address) <u>dclinton@woodwardclinton.com</u>		RECEIVED ON ICE <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO TEMPERATURE <u>6</u> °
<input type="checkbox"/> HARD COPY REQUIRED <input type="checkbox"/> FAX (FAX#) _____ <input type="checkbox"/> OTHER (specify) _____					

<b>CUSTODY RECORD</b>  <small>QSD-01 Revision 08/23/12</small>	Relinquished by Sampler:	Date <u>4/9/13</u>	Time <u>1210</u>	Received by: 	Date <u>4/9/13</u>	Time <u>1210</u>
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by:	Date	Time	Received by Laboratory:	Date	Time

## **APPENDIX B: SVE SYSTEM FIELD MONITORING REPORTS**

**TABLE B-1**  
**Soil Vapor Extraction System Checklist**  
Former Lewis Chemical Site Hyde Park, Massachusetts

Operator: DC/BG

Date: 11/21/2012

Location	Time	Vacuum/Pressure	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Temperature
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(deg - F)
Knock-Out Drum Inlet	13:51	-13			22.5	
SVE Blower Inlet	13:53	-14.5	1770	87	22.8	49.2
SVE Blower Outlet	14:00	14	2150	188	8.6	78.4
VGAC #1 Outlet	14:02	11			0.3	
VGAC #2 Outlet	14:04	8			0	
Post MnO4/Discharge	14:06	0.78	3700	323	0	45.3

Knockout Drum Water Vol.	(gallons)	0.19		
SVE Blower Runtime	(Time)	14:07	(hours)	13594.5

Extraction Point ID	Time	Vacuum	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Status
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(ON/OFF)
SVE-1	13:39	-12	2255	49	53.6	ON
EP-1	13:20	-9.50	615	13	103	ON
EP-2	13:17	-9.00	890	19	17.8	ON
SVE-2	13:40	-12.5	1403	69	9.3	ON
EP-3	13:23	-11.5	712	16	12.9	ON
EP-4	13:35	-11	790	17	3.1	ON
EP-5	13:37	-	-	-	0.6	OFF
EP-6	13:38	-	-	-	1.7	OFF
SVE-3	13:41	-12.5	680	33	4.5	ON
EP-7	13:33	-10.5	500	11	6.2	ON
EP-8	13:30	-2.5	268	6	5.2	ON
EP-9	13:47	-6.0	470	10	2.2	ON
EP-10	13:49	-	-	-	8.9	OFF

\*To calculate the flowrate, multiply the measured velocity by [0.021817 for 2-inch pipe] [0.049087 for 3-inch pipe] [0.087266 for 4-inch pipe]  
(Q = 3.14 (2/12)^2 \* V)

Vapor Probe ID	Time	Vacuum	TVOC-PID Concentration
		(in-W.C.)	(ppm <sub>v</sub> )
SG-02	13:47	-0.01	See Note 2
SG-03	13:30	-2	See Note 2
ESM-16	13:55	-0.01	6.4

Notes:

- 1) SG-01, SG-04, and SG-05 are destroyed and will not be included in future monitoring sheets.
- 2) No Flow at SG-02 or SG-03 to collect PID sample.



**TABLE B-1**  
**Soil Vapor Extraction System Checklist**  
Former Lewis Chemical Site Hyde Park, Massachusetts

Operator: DC/RS

Date: 12/13/2012

Location	Time	Vacuum/Pressure	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Temperature
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(deg - F)
Knock-Out Drum Inlet	14:38	-14			7.6	
SVE Blower Inlet	14:40	-16	4800	236	7.6	43.8
SVE Blower Outlet	14:48	14	1737	152	3.4	71.4
VGAC #1 Outlet	14:50	12.5			1.3	
VGAC #2 Outlet	14:51	8			0.1	
Post MnO4/Discharge	14:55	1	2200	192	0.2	55.8

Knockout Drum Water Vol.	(gallons)	0.8		
SVE Blower Runtime	(Time)	15:01	(hours)	14123.5

Extraction Point ID	Time	Vacuum	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Status
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(ON/OFF)
SVE-1	14:25	-14	10800	236	17	ON
EP-1	13:30	-5.00	408	9	35.3	ON
EP-2	13:36	-5.00	793	17	2.5	ON
SVE-2	14:20	-14	9000	442	4.1	ON
EP-3	13:53	-12	724	16	13.5	ON
EP-4	14:07	-12.5	1004	22	3.9	ON
EP-5	14:13	-	-	-	1.5	OFF
EP-6	14:15	-	-	-	1.5	OFF
SVE-3	14:28	-14	6100	299	4.2	ON
EP-7	14:03	-11.5	525	11	8.9	ON
EP-8	13:55	-1.0	220	5	7	ON
EP-9	14:30	-6.5	408	9	2	ON
EP-10	14:32	-	-	-	4.2	OFF

\*To calculate the flowrate, multiply the measured velocity by [0.021817 for 2-inch pipe] [0.049087 for 3-inch pipe] [0.087266 for 4-inch pipe]  
(Q = 3.14 (2/12)<sup>2</sup> \* V)

Vapor Probe ID	Time	Vacuum	TVOC-PID Concentration
		(in-W.C.)	(ppm <sub>v</sub> )
SG-02	14:20	-0.01	See Note 1
SG-03	13:55	-3	See Note 1
ESM-16	14:42	-0.01	6.4

Notes:

1) No air flow to collect PID sample.

**TABLE B-1**  
**Soil Vapor Extraction System Checklist**  
Former Lewis Chemical Site Hyde Park, Massachusetts

Operator: RS/AR

Date: 1/16/12

Location	Time	Vacuum/Pressure	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Temperature
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(deg - F)
Knock-Out Drum Inlet	15:45	-14			4.7	
SVE Blower Inlet	15:47	-15.5	1330	65	4.6	41.7
SVE Blower Outlet	15:50	12.5	2340	204	1.8	66.5
VGAC #1 Outlet	15:58	12.5			1.1	
VGAC #2 Outlet	16:00	8.25			0.1	
Post MnO4/Discharge	16:05	0.84	2320	202	0	54.6

Knockout Drum Water Vol.	(gallons)	0		
SVE Blower Runtime	(Time)	16:11	(hours)	14939.8

Extraction Point ID	Time	Vacuum	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Status
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(ON/OFF)
SVE-1	15:25	-14	1354	30	14	ON
EP-1	14:55	-5.50	290	6	25.3	ON
EP-2	14:45	-6.75	485	11	3.9	ON
SVE-2	15:22	-14	1315	65	1.9	ON
EP-3	15:00	-12	465	10	3.7	ON
EP-4	15:12	-12.5	720	16	1.3	ON
EP-5	15:15	-	-	0	0.4	OFF
EP-6	15:18	-	-	0	1.4	OFF
SVE-3	15:35	-14	515	25	1.5	ON
EP-7	15:07	-12.5	563	12	2	ON
EP-8	15:05	-3.5	228	5	2.6	ON
EP-9	15:30	-6.5	440	10	1.1	ON
EP-10	15:32	-	-	0	3.4	OFF

\*To calculate the flowrate, multiply the measured velocity by [0.021817 for 2-inch pipe] [0.049087 for 3-inch pipe] [0.087266 for 4-inch pipe]  
(Q = 3.14 (2/12)<sup>2</sup> \* V)

Vapor Probe ID	Time	Vacuum	TVOC-PID Concentration
		(in-W.C.)	(ppm <sub>v</sub> )
SG-02	15:00	0	See Note 2
SG-03	15:10	-2.5	See Note 2
ESM-16	15:40	0	See Note 2

Notes:

- 1) SG-01, SG-04, SG-05, and SG-06 are destroyed and will not be included in future monitoring sheets.
- 2) No air flow to collect PID sample at SG-02 or ESM-16.

**TABLE B-1**  
**Soil Vapor Extraction System Checklist**  
Former Lewis Chemical Site Hyde Park, Massachusetts

Operator: RS/AR

Date: 2/13/13

Location	Time	Vacuum/Pressure	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Temperature
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(deg - F)
Knock-Out Drum Inlet	9:30	-1.10			1.6	
SVE Blower Inlet	9:33	-27.0	625	31	1.5	40.8
SVE Blower Outlet	9:37	13.5	1805	158	0.1	71.0
VGAC #1 Outlet	9:43	10.0			0.7	
VGAC #2 Outlet	9:45	7.0			0.0	
Post MnO4/Discharge	9:48	0.68	2500	218	0.0	53.2

Knockout Drum Water Vol.	(gallons)	9.0		
SVE Blower Runtime	(Time)	9:52	(hours)	15605.5

Extraction Point ID	Time	Vacuum	Measured Velocity	Flow Rate*	TVOC-PID Concentration	Status
		(in-W.C.)	(ft/min)	(scf/min)	(ppm <sub>v</sub> )	(ON/OFF)
SVE-1	9:17	-1.10	215	5	0.6	ON
EP-1	8:50	-0.18	0	0	11.7	ON
EP-2	8:45	-1.0	235	5	0.3	ON
SVE-2	9:15	-1.10	325	16	1.7	ON
EP-3	8:54	-1.25	280	6	3.5	ON
EP-4	9:02	-1.1	215	5	1.0	ON
EP-5	9:09	0.0	0	0	0.1	OFF
EP-6	9:12	0.0	0	0	0.5	OFF
SVE-3	9:28	-1.5	205	10	1.5	ON
EP-7	9:00	-1.5	345	8	3.1	ON
EP-8	8:57	-0.55	200	4	1.4	ON
EP-9	9:20	-0.85	200	4	0.1	ON
EP-10	9:25	0.0	0	0	1.1	OFF

\*To calculate the flowrate, multiply the measured velocity by [0.021817 for 2-inch pipe] [0.049087 for 3-inch pipe] [0.087266 for 4-inch pipe]  
(Q = 3.14 (2/12)<sup>2</sup> \* V)

Vapor Probe ID	Time	Vacuum	TVOC-PID Concentration
		(in-W.C.)	(ppm <sub>v</sub> )
SG-02	9:22	0.0	See Note 2
SG-03	9:05	0.0	See Note 2
ESM-16	Not measured		

**Notes:**

- 1) SG-01, SG-04, and SG-05 are destroyed and will not be included in future monitoring sheets.
- 2) No Flow at SG-02 or SG-03 to collect PID sample.
- 3) ESM-15 is a future monitoring point to be constructed.

## **APPENDIX C: WASTE DISPOSAL DOCUMENTATION**

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number MP 617 635 3880		2. Page 1 of 1		3. Emergency Response Phone 800-695-1865		4. Manifest Tracking Number 011409060 JJK				
5. Generator's Name and Mailing Address City of Boston - Dept. of Neighborhood Development 26 Court Street - 9th Floor Boston MA 02108 Generator's Phone: 617 635-3880						Generator's Site Address (if different than mailing address) Former Lewis Chemical Site 12 - 14 Fairmont Court Hyde Park MA 02138						
6. Transporter 1 Company Name New England Disposal Technologies, Inc.						U.S. EPA ID Number MAC300008059						
7. Transporter 2 Company Name New England Disposal Technologies, Inc.						U.S. EPA ID Number MAC300008059						
8. Designated Facility Name and Site Address Veto Technology, Inc. 955 West Smith Road Medina OH 44256 Facility's Phone: 330 721-9773						U.S. EPA ID Number OHD07772885						
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))				10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		1. Non-RCRA, non-DOT Regulated Material (soil borings)				No.	Type					
		2. Non-RCRA, non-DOT Regulated Material (water)										
	3.											
	4.											
14. Special Handling Instructions and Additional Information VEX23237 2VEX23238 IXSS Job# 01-14542												
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.												
Generator's/Offor's Printed/Typed Name Y. Daniel C. [Signature]						Signature [Signature]		Month Day Year 10/29/13				
INT'L	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:											
	17. Transporter Acknowledgment of Receipt of Materials											
TRANSPORTER	Transporter 1 Printed/Typed Name Shaun M. Ford						Signature [Signature]		Month Day Year 10/29/13			
	Transporter 2 Printed/Typed Name						Signature		Month Day Year			
DESIGNATED FACILITY	18. Discrepancy											
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection											
	Manifest Reference Number:											
	18b. Alternate Facility (or Generator)						U.S. EPA ID Number					
	Facility's Phone:											
18c. Signature of Alternate Facility (or Generator)									Month Day Year			
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)												
1.			2.			3.			4.			
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a												
Printed/Typed Name						Signature		Month Day Year				

Thanks DAN  
(U)

I'm sorry about  
Address

9B2446/B3878 CVT 4/99

3-PART STOCK FORM NO. B-3876

STRAIGHT BILL OF LADING - SHORT FORM

ORIGINAL - NOT NEGOTIABLE

Shipper's No. \_\_\_\_\_

Carrier's Name: \_\_\_\_\_

Carrier's No. \_\_\_\_\_

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of lading,

(Date) February 2013 FBOM Carbon Filtration Syst  
the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown, marked, consigned, and destined as shown below, which shall copy the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agree to carry to the usual place of delivery or said destination, if on its own railroad, under line, highway route or routes, or within the territory of its highway operations, otherwise in delivery to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in the Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address for purposes of notification only)

Consigned TO Woodward + Curran

On Collect on Delivery Shipments, the initials "C.O.D." must appear before consignee's name or as otherwise provided in Item 430, Sec. 1.

Destination Street - A Fairmount Court City Hyde Park State MA Zip 02119  
County Denbury Address ★

Route \_\_\_\_\_ (A To be filled in only when shipper desires and governing tariffs provide for delivery thereat.)

Delivering Carrier \_\_\_\_\_ Car or Vehicle Initials and No. \_\_\_\_\_

Collect on Delivery \$ \_\_\_\_\_ And Remit to \_\_\_\_\_

Street		City	State		
No. Packages	H.M.	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight (Subject to Correction)	Class or Rate	Check Column
		Pick up 1 drum of HS-600 non HAZ material and sent to Carbon Activated Corp for reactivation:			
		3774 Hoover Rd			
		Blasdell NY 14219			

\*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is carrier's or shipper's weight.  
NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Shipper, Per \_\_\_\_\_ Agent \_\_\_\_\_

Permanent post-office address of shipper, 108 Mill ST Per \_\_\_\_\_

Township NY 14219

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following document:  
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges:

(Signature of consignor)

C. O. D. Charges to be Paid by  
☐ Shipper ☐ Consignee

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received \$ \_\_\_\_\_ to apply in payment of the charges on the property described hereon.

Agent or Clerk

For (The signature here acknowledges only the amount prepaid.)

Charges Advanced:

1 "The free containers used for this shipment conform to the specifications set forth in the box maker's certificate thereon and all other requirements of Rule 41 of the Uniform Freight Classification and Rule 5 of the National Motor Freight Classification."

2 Shipper's imprint in lieu of stamp; not a part of bill of lading approved by the Interstate Commerce Commission.