April 3, 2018

Dee Lance
Department of Natural Resources
473 Griffith Avenue
Wisconsin Rapids, WI 54494

Re: Status Report, Remediation System O&M Report, Remediation System Shutdown
Monroe Center Store, 999 CTH Z, Arkdale, WI
BRRTS# 03-01-175845, PECFA # 54613-9736-99-A

Dear Dee:

This report summarizes the activities at the site listed above from November 18, 2017 through March 30, 2018.

Timeline of activities since the December 1, 2017 Status Report:

- An air discharge sample was collected on December 12, 2018
- Groundwater samples were collected from the monitoring wells on February 1, 2018. A water sample was also collected from the water supply well at 1906 Blackhawk Avenue.
- Monthly system checks have been performed throughout this period.
- The remediation system was shut down on March 22, 2018.

System Operation and Monitoring Data

Attached are two tables outlining the operation and monitoring data collected from the first day of startup on March 29th through March 22, 2018. The tables outline the operating parameters for the system, along with the SVE wells in operation and vacuums measured at monitoring wells at the site.

Monthly system check visits were performed to evaluate system performance, measure discharge concentrations, and perform routine maintenance as needed. Initial total VOC discharge concentrations in 2017 exceeded 3 pounds of VOCs per hour, but gradually decreased to less than 0.5 pounds per hour through early 2018. The entire SVE system and air sparge system was operation throughout this period. No system shutdowns occurred.

No free product has been detected at the site since sampling in 2014 prior to system installation and operation.

An air discharge sample was collected on carbon and analyzed for benzene concentration on December 12, 2018. The laboratory results are attached. The benzene concentration decreased an order of magnitude

from the previous sample. Based on discharge concentrations, approximately 284 pounds of benzene have been discharged at the site through March 22, 2018. The total VOC concentration is measured onsite with a PID, and based on discharge measurements, approximately 6,730 pounds of VOCs have been discharged by the system through March 22, 2018. These concentrations are within DNR regulatory air discharge limits.

Groundwater Sampling Results

The February 2018 sample results have been compiled with previous data on the attached table (Laboratory Results – Groundwater). The results are summarized below:

- Concentrations at monitoring well MW-1, located in the former tank bed, have decreased to less than the enforcement standard for all compounds except benzene. The benzene concentration decreased from a high of 1,100 ug/L in July 2012 to 6.6 ug/L in February 2018.
- Concentrations remain high at well MW-2, located in the right of way of Blackhawk Avenue.
- Concentrations at MW-3, a sidegradient well, have decreased to below the laboratory detection limit.
- Concentrations at MW-4, a downgradient well, have decreased to below Wisconsin Administrative Code NR 140 water quality standards.
- The furthest downgradient well, MW-6, located west of the house at 1906 Blackhawk Avenue, still had enforcement standard exceedances for benzene, ethylbenzene, trimethylbenzenes, and naphthalene.

Recommendations

This report completes the approved scope of work at this site. MSA will prepare a final invoice in the next few weeks. At that time, MSA will evaluate the budget for the site in respect to the remaining PECFA eligibility, and contact you to discuss and develop the next scope of work.

Please contact me with any questions or if you need additional information.

Sincerely,

MSA Professional Services, Inc.

Jayne A. Englebert

Jayne A. Englebert, P.G.
Senior Hydrogeologist

Enc.
Cc: Patricia Hennessy, representative for the Estate of James Crosse, Jr.
Carla Plantz, owner, 1906 Blackhawk Avenue
Richard Lyster, MSA

Soil Vapor Extraction System Operation and Emissions Data
Monroe Center Store, Arkdale, WI

Date	Hours	Interval Time (hours)	Flow Rate (CFM)	VOC Concen-tration (ppm)	VOC Discharge Rate (lbs/hour)	VOCs Removed (lbs)	Cumulative VOCs Removed (lbs)	Benzene Concen-tration lbs/cuft	Benzene Discharge Rate (lbs/hour)	Benzene Removed (lbs)	Cumulative Benzene Removed (lbs)
29-Mar-17	6091	0	130	1805	3.407	0.00	**0**	8.62E-05	6.72E-01	0.00	**0.00**
30-Mar-17	6112	21	130	1854	3.500	71.83	**72**	8.62E-05	6.72E-01	13.99	**13.99**
31-Mar-17	6134	22	125	1747	3.171	73.37	**145**	8.62E-05	6.47E-01	14.22	**28.21**
31-Mar-17	6135	1	130	1449	2.735	2.95	**148**	8.62E-05	6.72E-01	0.67	**28.88**
8-Apr-17	6309	174	120	1040	1.812	395.61	**544**	4.40E-05	3.17E-01	55.12	**84.01**
8-Apr-17	6311	2	125	1163	2.111	3.92	**548**	4.40E-05	3.30E-01	0.66	**84.67**
15-Apr-17	6495	184	122	764	1.353	318.71	**866**	1.70E-06	1.24E-02	2.29	**86.96**
22-Apr-17	6670	175	120	772	1.345	236.12	**1103**	1.70E-06	1.22E-02	2.14	**89.10**
26-May-17	7474	804	120	548	0.955	924.59	**2027**	1.70E-06	1.22E-02	9.84	**98.94**
30-Jun-17	8312	838	120	386	0.673	681.88	**2709**	1.70E-06	1.22E-02	10.26	**109.20**
18-Jul-17	8744	432	125	218.5	0.397	230.94	**2940**	1.69E-06	1.27E-02	5.48	**114.67**
18-Jul-17	Started up air sparging system										
18-Jul-17	8745	1	130	412.9	0.779	0.59	**2941**	1.69E-06	1.32E-02	0.01	**114.69**
24-Jul-17	8893	149	130	947	1.788	162.72	**3103**	8.04E-06	6.27E-02	9.34	**124.02**
30-Aug-17	9323	430	130	730	1.378	680.58	**3783**	8.04E-06	6.27E-02	26.97	**150.98**
30-Aug-17	System not running upon arrrival, re-started system, readings below were taken 30 minutes after re-start.										
30-Aug-17	9323	0	130	3872	7.309	0.00	**3783**	8.04E-06	6.27E-02	0.00	**150.98**
2-Sep-17	9400	77	130	730	1.378	333.57	**4117**	8.04E-06	6.27E-02	4.82	**155.80**
9-Sep-17	9563	163	130	822	1.552	238.76	**4355**	8.04E-06	6.27E-02	10.22	**166.02**
17-Sep-17	9755	192	130	573.8	1.083	253.46	**4609**	8.04E-06	6.27E-02	12.07	**178.09**
22-Oct-17	10594	839	128	321	0.597	704.30	**5313**	8.04E-06	6.17E-02	51.78	**229.87**
17-Nov-17	11222	628	125	206	0.374	304.73	**5618**	8.04E-06	6.03E-02	37.87	**267.74**
12-Dec-17	11822	600	130	237	0.447	246.38	**5864**	7.13E-07	5.56E-03	3.34	**271.07**
3-Jan-18	12338	516	130	211	0.398	218.18	**6082**	7.13E-07	5.56E-03	2.87	**273.94**
1-Feb-18	13034	696	130	195	0.368	266.70	**6349**	7.13E-07	5.56E-03	3.87	**277.81**
22-Mar-18	14207	1173	130	148	0.279	379.73	**6729**	7.13E-07	5.56E-03	6.52	**284.34**
22-Mar-18	Shut down air sparging system after initial discharge reading.										
22-Mar-18	14210	3	130	390	0.736	1.52	**6730**	7.13E-07	5.56E-03	0.02	**284.35**
22-Mar-18	14210	System shutdown									

VOC Concentration is measured with a PID at the system discharge.
Benzene Concentration is based on a NIOSH 1501 charcoal tube laboratory analysis.

Laboratory Results - Groundwater (VOCs)
Monroe Center Store, Arkdale, WI

	Benzene	Toluene	Ethyl-benzene	Total Tri-methyl-benzenes	Total Xylenes	Methyl- tert-butyl-ether	Naph-thalene	1,2-Dichloro-ethane	1,2-Dibromo-ethane	Dissolved Lead	Free Product Thickness	Groundwater Elevation in site datum
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	feet	feet
NR 140 ES	5	800	700	480	2000	60	100	5	0.05	15		
NR 140 PAL	0.5	160	140	96	400	12	10	0.5	0.005	1.5		
MW-1			TOC = 101.01 feet site datum									
31-Jul-12	**1100**	**14000**	**5800**	**12200**	**23800**	<200	**5100**	<150	<150	9.6	0.63	84.56
8-Aug-12	no sample										0.35	84.63
14-Sep-12	no sample										0.26	84.51
9-Jul-14	**500**	**3200**	**1800**	**3350**	**9200**	<10	**790**	<10	<20		0.07	85.79
6-Oct-14	**760**	**5200**	**2500**	**4500**	**15000**	<80	**1000**				0.18	85.63
30-Aug-17	**19**	12	28	*311*	224	<0.30	*43*				0	
1-Feb-18	**6.6**	5.4	12	*311*	66	6.2	*12*				0	
MW-2			TOC = 103.78 feet site datum									
31-Jul-12	**1200**	**8000**	**2400**	**2060**	**9500**	<0.40	**510**	<0.30	<0.30	**25**	0	84.92
8-Aug-12	no sample										0	84.78
9-Jul-14	**1100**	**10000**	**2600**	**3180**	**10600**	<10	**820**	<10	<20		0.59	85.19
6-Oct-14	**200**	**2600**	**930**	**1250**	**3800**	<40	**310**				0.47	85.23
30-Aug-17	**810**	**10000**	**2900**	**3670**	**12500**	<75	**670**				0	85.69
1-Feb-18	**800**	**13000**	**3200**	**3520**	**13600**	<200	**750**				0	85.57
MW-3			TOC = 108.80 feet site datum									
31-Jul-12	**67**	3.2	15	5.9	26.9	<0.40	11	2.3	<0.30	3.2	0	84.83
8-Aug-12	no sample										0	84.71
9-Jul-14	**22**	1.5	1.3	<1.10	5.8	0.55	0.68	0.84	<0.40		0	85.59
6-Oct-14	**61**	<0.50	<0.50	<1.10	2.0	1.2	4.7				0	85.55
30-Aug-17	<0.24	<0.30	<0.30	<0.80	<0.90	<0.30	<0.70				0	85.50
1-Feb-18	<0.40	<0.40	<0.40	<0.80	<1.20	<0.40	<0.90				0	85.24
MW-4			TOC = 105.69 feet site datum									
31-Jul-12	**61**	740	240	*348*	1120	<0.40	64	<0.30	**0.46**	3.7	0.11	84.72
8-Aug-12	no sample										0.10	84.60
14-Sep-12	no sample										0.53	84.08
9-Jul-14	**870**	**12000**	**1200**	**2270**	**5500**	<10	**360**	<10	<20		0.00	85.58
6-Oct-14	**890**	**5800**	**1000**	**2390**	**5800**	<8.0	**420**				0.02	85.53
30-Aug-17	**510**	**2000**	*200*	*450*	*1410*	3.6	*74*				0.00	85.65
1-Feb-18	<0.40	<0.40	<0.40	1.03	<1.20	<0.40	<0.90				0.00	85.41
PZ-1			TOC = 105.78 feet site datum									
31-Jul-12	<0.30	4.2	1.2	0.83	5.0	<0.40	<0.30	<0.30	<0.30	3.1	0	84.84
8-Aug-12	no sample										0	84.70
9-Jul-14	<0.25	<0.50	<0.50	<1.10	<1.50	<0.20	<0.50	<0.20	<0.40		0	85.60
6-Oct-14	<0.50	<0.50	<0.50	<1.10	<1.50	<0.40	<1.2				0	85.56
30-Aug-17	<0.24	0.36	<0.30	3.18	1.87	<0.30	0.75				0	85.47
1-Feb-18	<0.40	<0.40	<0.40	<0.80	<1.20	<0.40	<0.90				0	85.20

Laboratory Results - Groundwater (VOCs)
Monroe Center Store, Arkdale, WI

	Benzene	Toluene	Ethyl-benzene	Total Tri-methyl-benzenes	Total Xylenes	Methyl- tert-butyl-ether	Naph-thalene	1,2-Dichloro-ethane	1,2-Dibromo-ethane	Dissolved Lead	Free Product Thickness	Groundwater Elevation in site datum
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	feet	feet
NR 140 ES	5	800	700	480	2000	60	100	5	0.05	15		
NR 140 PAL	0.5	160	140	96	400	12	10	0.5	0.005	1.5		
MW-5			TOC = 108.26 feet site datum									
9-Jul-14	<0.25	<0.50	<0.50	<1.10	<1.50	<0.20	<0.50	<0.20	<0.40		0	85.37
6-Oct-14	<0.50	<0.50	<0.50	<1.10	<1.50	<0.40	<1.2				0	85.36
30-Aug-17	<0.24	<0.30	<0.30	<0.80	<0.90	<0.30	<0.70				0	85.24
1-Feb-18	<0.40	<0.40	<0.40	<0.80	<1.20	<0.40	<0.90				0	85.01
MW-6			TOC = 102.38 feet site datum									
9-Jul-14	**420**	42	*400*	307	1310	1.9	66	1.1	<0.40		0	85.20
6-Oct-14	**1300**	39	**1300**	**970**	**5100**	<4.0	**250**				0	85.21
30-Aug-17	**18**	0.31	22	8.9	16.6	<0.30	9.6				0	85.04
1-Feb-18	**300**	27	**880**	**578**	*1250*	<2.0	**190**				0	84.84
B-7												
12-Jun-14	<0.25	<0.50	<0.50	<1.10	<1.50	<0.20	<0.50	<0.20	<0.40		0	
Olson MW-2			TOC = 101.35 feet site datum									
9-Jul-14	no sample										0	86.06
Olson MW-5			TOC = 102.75 feet site datum									
16-Nov-11	<0.41	<0.67	<0.54	<1.8	<2.63	<0.61	0.11			2.0	0	
15-Mar-12	<0.39	<0.42	<0.41	<0.83	<1.3	<0.38	<0.40			<1.7	0	
27-Jun-12	<0.39	<0.42	<0.41	<0.83	<1.3	<0.38	<0.40			2.5	0	
27-Sep-12	0.40	<0.42	<0.41	<0.83	<1.3	<0.61	<0.40				0	
9-Jul-14	no sample										0	85.96
30-Aug-17	no sample										0	85.89
1-Feb-18	no sample										0	85.57
Olson MW-6			TOC = 101.65 feet site datum									
16-Nov-11	**74.7**	*240*	47	33.1	227.9	<0.61	2.6			1.6		
15-Mar-12	**150**	**935**	*288*	*165.7*	*969*	5.1	*25.4*			<1.7		
31-Jul-12	no sample										0	85.13
9-Jul-14	no sample										0	85.88
30-Aug-17	**14**	7.2	100	*153*	108	<0.30	*53*				0	85.92
1-Feb-18	<0.40	0.42	12	17	8.2	<0.40	*13*				0	85.54
Onsite Water Well												
31-Jul-12	<0.30	<0.30	<0.30	<0.80	<0.90	<0.40	<0.30	<0.30	<0.30			
9-Jul-14	No access for sampling											
6-Oct-14	No access for sampling											
30-Aug-17	Attempted to collect sample, circuit breaker kept tripping, pump not working...											

Laboratory Results - Groundwater (VOCs)
Monroe Center Store, Arkdale, WI

	Benzene	Toluene	Ethyl-benzene	Total Tri-methyl-benzenes	Total Xylenes	Methyl- tert-butyl-ether	Naph-thalene	1,2-Dichloro-ethane	1,2-Dibromo-ethane	Dissolved Lead	Free Product Thickness	Groundwater Elevation in site datum
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	feet	feet
NR 140 ES	5	800	700	480	2000	60	100	5	0.05	15		
NR 140 PAL	0.5	160	140	96	400	12	10	0.5	0.005	1.5		
1906 Blackhawk Ave.												
11-Jan-11	**67**	100	8	26	106	1.9	11	0.15	<0.15			
31-Jul-12	<0.30	<0.30	<0.30	<0.80	<0.90	<0.40	<0.30	<0.30	<0.30			
9-Jul-14	No power to well											
6-Oct-14	<0.25	<0.50	<0.50	<1.10	<1.50	<0.20	<0.50	<0.20	<0.40			
	New well installed in 2015											
30-Aug-17	<0.24	<0.30	<0.30	<0.80	<0.90	<0.30	<0.70					
1-Feb-18	<0.40	<0.40	<0.40	<0.80	<1.20	<0.40	<0.90					
1896 CTH C												
15-Feb-11	<0.15	<0.15	<0.15	<0.30	<0.30	<0.15	<0.15	<0.15	<0.15			

Blank = not analyzed
Bold Values exceed the NR 140 enforcement standard

Vacuum Measurements During Remediation System Operation
Monroe Center Store, 999 CTH Z, Arkdale, WI

Date	3/29/2017	3/29/2017	0/2017	9/17/2017	11/17/2017	1/3/2018	2/1/2018
Description	Pre-Startup	Post-Startup	onthly	Monthly	Monthly	Monthly	Monthly
SVE Wells In Operation	None	1, 2	All	All	All	All	All
Dilution CFM	0	0	35	35	35	35	35
Vacuum Measurement (in inches of water)							
MW-1	0		-4.5	-3	-10	-8.5	-10
MW-2	0	-7.5	10.5	-10	-8.5	-9	-9
MW-3	+0-0.01		-5.5	-5.5	-5.5	-5	-5
MW-4	0	-5.0	-11	-11	-10	-10	-10
MW-5	0		-1	-1	-1	-1	-1
MW-6	0		0.75	-0.5	-0.05	-0.5	-0.5
Olson MW-5	0	-7.0	-4	-4	-3.5	-3.5	-3.5
Olson MW-6	0	-20	-7	-7	-6	-6	-6
Depth to Groundwater (in feet below top of casing)							
MW-1	15.02		3.13				13.98
MW-2	19.00		8.09				18.21
MW-3	23.14		23.3				23.56
MW-4	20.01		0.04				20.28
MW-5	22.88		3.02				23.25
MW-6	17.22		7.34				17.54
Olson MW-5	16.68		6.86				17.18
Olson MW-6	15.65		5.73				16.11
Free Product Thickness (in feet)							
MW-1	0		0				0
MW-2	0		0				0
MW-3	0		0				0
MW-4	0		0				0
MW-5	0		0				0
MW-6	0		0				0
Olson MW-5	0		0				0
Olson MW-6	0		0				0

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Remediation Site Operation, Maintenance, Monitoring & Optimization Report

Form 4400-194 (R 11/14)

GENERAL INSTRUCTIONS, PURPOSE AND APPLICABILITY OF THIS FORM: Completion of this form is required under s. NR 724.13(3), Wis. Adm. Code. A narrative report or letter containing the equivalent information required in this form may be submitted in lieu of the actual form. Failure to submit this form as required is a violation of s. NR 724.13(3), Wis. Adm. Code, and is subject to the penalties in s. 292.99, Wis. Stats. This form must be submitted every six months for soil or groundwater remediation projects that report operation and maintenance progress in accordance with s. NR 724.13(3), Wis. Adm. Code.

Note: Long-term monitoring results submitted in accordance with s. NR 724.17(3), Wis. Adm. Code are required to be submitted within 10 business days of receiving sampling results and are not required to be submitted using this form. However, portions of this form require monitoring data summary information that may be based on information previously submitted in accordance with s. NR 724.17(3), Wis. Adm. Code.

Note: Responsible parties should check with the State Project Manager assigned to the site to determine if this form is required to be submitted at sites responded to under the Federal Comprehensive Environmental Response and Compensation Act (commonly known as Superfund) or an equivalent State lead Superfund response.

Note: Responsible parties should check with the State Project Manager assigned to the site to determine if any of the information required in this form may be omitted or changed and obtain prior written approval for any omissions or changes.

Submittal of this form is not a substitute for reporting required by Department programs such as Waste Water or Air Management. Personally identifiable information on this form is not intended to be used for any other purpose than tracking progress of the remediation by the Bureau for Remediation and Redevelopment.

Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.). Unless otherwise noted, all citations refer to Wisconsin Administrative Code.

Note: There is a separate semi-annual report required under s. NR 700.11(1), Wis. Adm. Code. Reporting under that provision is through an internet-based form:

http://dnr.wi.gov/topic/Brownfields/documents/regs/NR700progreport.pdf

Section GI - General Site Information

A. General Information

1. Site name
Monroe Center Store

2. Reporting period from:	11/18/2017	To:	03/22/2018	Days in period:	125

3. Regulatory agency (enter DNR, DATCP and/or other)	4. BRRTS ID No. (2 digit program-2 digit county-6 digit site specific)
DNR	03-01-175845

5. Site location

Region	County	Address
West Central Region	Adams	999 CTH Z

Municipality name ○ City ◉ Town ○ Village	Township	Range ◉E ○W	Section	¼	¼ ¼
Monroe	19 N	5	18	SE	SE

6. Responsible party	7. Consultant
Name: Estate of James Crosse Jr.	☐ Select if the following information has changed since the last submittal
Mailing address: 11037 Eaton Court, Westchester, IL 60154	Company name: MSA Professional Services, Inc.
Phone number: (708) 712-1858	Mailing address: 1230 South Blvd., Baraboo, WI 53913
	Phone number: (608) 355-8860

8. Contaminants
gasoline

9. Soil types (USCS or USDA)
SP, SM, CL

10. Hydraulic conductivity(cm/sec):	11. Average linear velocity of groundwater (ft/yr)

12. If soil is treated ex situ, is the treatment location off site? ○ Yes ○ No

If yes, give location: Region	County

Municipality name ○ City ○ Town ○ Village	Township	Range ○E ○W	Section	¼	¼ ¼
	N				

B. Remediation Method

Only submit sections that apply to an individual site. Check all that apply:

- ☐ Groundwater extraction (submit a completed Section GW-1).
- ☐ Free product recovery (submit a completed Section GW-1).
- ☒ In situ air sparging (submit a completed Section GW-2).
- ☐ Groundwater natural attenuation (submit a completed Section GW-3).
- ☐ Other groundwater remediation method (submit a completed Section GW-4).
- ☒ Soil venting (including soil vapor extraction building venting and bioventing submit a completed Section IS-1).
- ☐ Soil natural attenuation (submit a completed Section IS-2).
- ☐ Other in situ soil remediation method (submit a completed Section IS-3).
- ☐ Biopiles (submit a completed Section ES-1).
- ☐ Landspreading/thinspreading of petroleum contaminated soil (submit a completed Section ES-2).
- ☐ Other ex situ remediation method (submit a completed Section ES-3).
- ☐ Site is a landfill (submit a completed Section LF-1).

C. General Effectiveness Evaluation for All Active Systems

If the remediation is active (not natural attentuation), complete this subsection.

1. Is the system operating at design rates and specifications? ◉ Yes ○ No
   If the answer is no, explain whether or not modifications are necessary to achieve the goal that was previously established in design.
   Was operating as designed until shut down on 3-22-2018

2. Are modifications to the system warranted to improve effectiveness ○ Yes ◉ No
   If yes, explain:

3. Is natural attenuation an effective low cost option at this time? ◉ Yes ○ No
4. Is closure sampling warranted at this time? ○ Yes ◉ No
5. Are there any modifications that can be made to the remediation to improve cost effectiveness? ○ Yes ◉ No
   If yes, explain:

D. Economic and Cost Data to Date

1. Total investigation cost: _____
2. Implementation costs (design, capital and installation costs, excluding investigation costs: _____
3. Total costs during the previous reporting period: _____
4. Total costs during this reporting period: _____
5. Total anticipated costs for the next reporting period: _____
6. Are any unusual or one-time costs listed in the reporting periods covered by D.3., D.4. or D.5. above? ○ Yes ○ No
   If yes, explain:

7. If closure is anticipated within 12 months, estimated costs for project closeout: _____

E. Name(s), Signature(s) and Date of Person(s) Submitting Form

Legibly print name, date and sign. Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form for sites with any ongoing active remediation, monitoring or an investigation. Other persons may sign this form for sites with no response activities during the six month reporting period.

Registered Professional Engineers:

I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Signature	Date

Hydrogeologists:

I hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Jayne Englebert	Senior Hydrogeologist
Signature Jayne Englebert	Date 4-3-2018

Scientists:

I hereby certify that I am a scientist as that term is defined in s. NR 712.03(3), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Signature	Date

Other Persons:

Print name	Title
Signature	Date

Professional Seal(s), if applicable:

Section GW-2, In Situ Air Sparging Systems

A. In Situ Air Sparging System Operation

1. Number of air injection wells at the site and the number actually in use during the period: 6
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain):
   125
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain:

   100%

B. System Effectiveness Evaluation

1. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in B.1.a.

   a. Contaminant: benzene at MW-2

   b. Percent reduction necessary to reach ch. NR 140 ES and PAL: 99 %

   c. Maximum contaminant concentration level in any monitoring well: 800 µg/L

2. Is there any evidence that air is short circuiting through natural or man-made pathways? ○ Yes ◉ No
   If yes, explain:

3. Is the size of the plume: ○ Increasing ◉ Stabalized ○ Decreasing ?
   If increasing, explain:

C. Additional Attachments

Attach the following to this form:

- Groundwater contour map.
- Groundwater contaminant distribution map (may be combined with contour map).
- When contaminants are aerobically biodegradable, attach a dissolved oxygen in groundwater map (dissolved oxygen may be combined with the contaminant data on a single map).
- Site map with all air injection wells and groundwater monitoring points.
- Graph of contaminant concentrations versus time for the contaminant listed in B.1.a. (above) for the monitoring point with the greatest level of contamination.
- Groundwater contaminant chemistry table.
- Groundwater elevations table.

Remediation Site Operation, Maintenance, Monitoring & Optimization Report

Section IS-1, Soil Venting (Including Soil Vapor Extraction, Building Venting and Bioventing)

A. Soil Venting Operation

Note: This form is not required for building vapor mitigation systems that are installed proactively to protect building occupants/users and are not considered part of ongoing active soil remediation.

1. Number of air extraction wells available and number of wells actually in use during the period: 10
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain):
   125
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain:
   100%
4. Average depth to groundwater: 15 gpm

B. Building Basement/Subslab Venting System Operation

1. Number of venting points available and number of points actually in use during the period:
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain):
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain:

C. Effectiveness Evaluation

1. Average contaminant removal rate for the entire system: 8.89 pounds per day
2. Average contaminant removal rate per well or venting point: 0.889 pounds per day
3. If the average contaminant removal rate is less than one pound per day for the entire system, or if the average contaminant removal rate per well is less than one tenth of a pound per day, evaluate the following:
   a. If contaminants are aerobically biodegradable and confirmation borings have not been drilled in the past year:
      i. Oxygen levels in extracted air: percent
      ii. Methane levels in extracted air (ppm_V) If over 10 ppm_V, explain:
      iii. If methane is not present above 10 ppm_V and if oxygen is greater than 20 percent in extracted air, you should either:
      - Drill confirmation borings during the next reporting period, if the entire site should be considered for closure.
      - Or, perform an in situ respirometry test in a zone of high contamination. Do not perform the test in an air extraction well, use a gas probe or water table well. If a zero order rate of decay based on oxygen depletion is less than 2 mg/kg per day, then you should drill confirmation borings, if the entire site should be considered for closure. If the rate of decay is between 2 and 10 mg/kg, operate for one more reporting period before evaluating further. If the zero order rate of decay is greater than 10 mg/kg total hydrocarbons, continue operating the system in a manner than maximizes aerobic biodegradation.

   b. If contaminants are not aerobically biodegradable and confirmation borings have not been recently drilled during the past year, you should drill confirmation borings during the next reporting period if the entire site should be considered for closure.
   c. If soil borings were drilled during the past year and soil contamination remains above acceptable levels, explain if the system effectiveness can be increased and/or if other options need to be considered to achieve cleanup criteria.

D. Additional Attachments

Attach the following to this form:

- Well and soil sample location map indicating all air extraction wells. If forced air injection wells are also in use, identify those wells.
- If water table monitoring wells are present at the site, a map of well locations.
- Time versus vapor phase contaminant concentration graph.
- Time versus cumulative contaminant removal graph.
- Groundwater elevations table, if water table wells are present at the site; also list screen lengths and elevations.
- Table of soil contaminant chemistry data.
- Soil gas data, if gas probes are used to monitor subsurface conditions in locations other than where air is extracted.

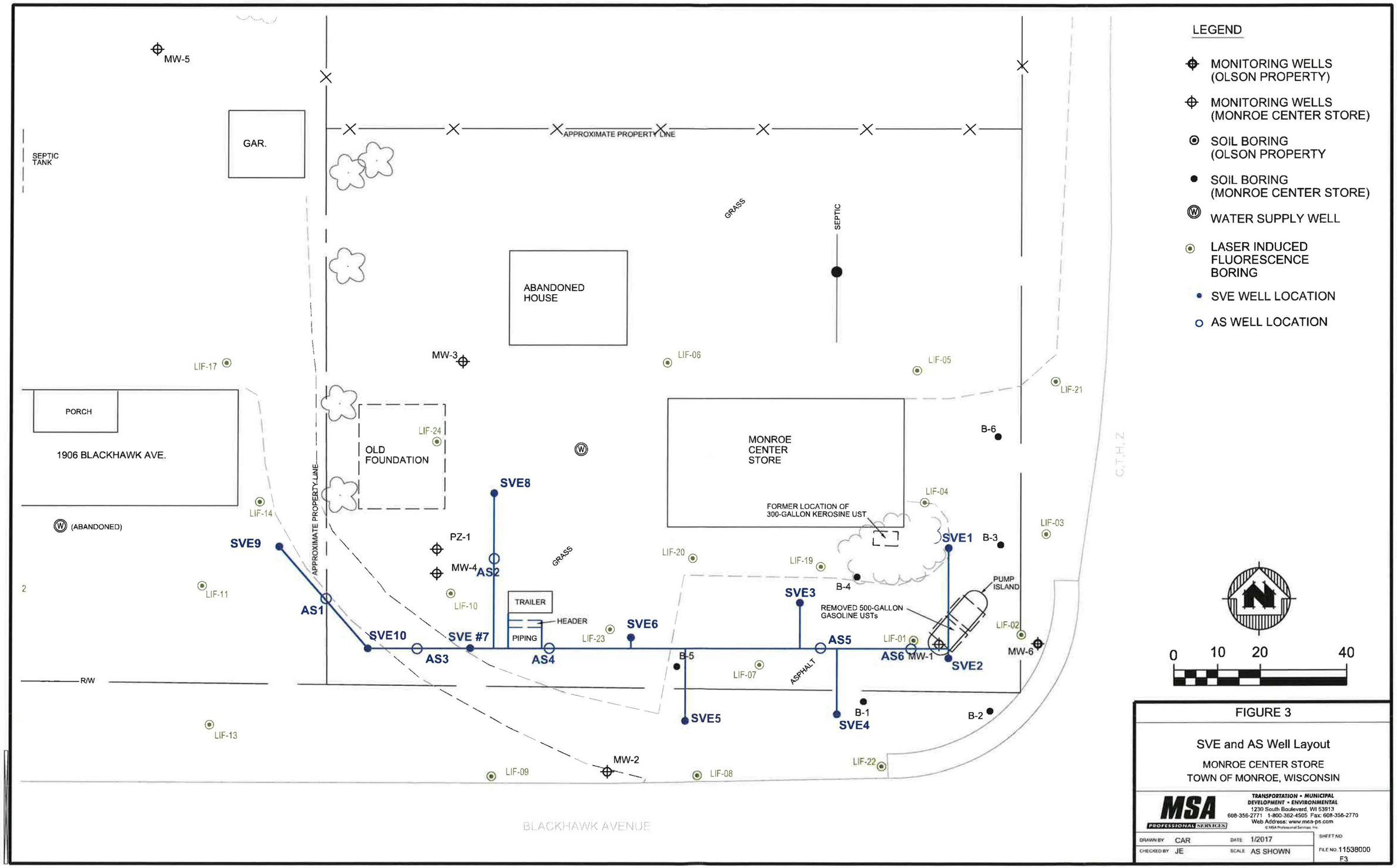

FIGURE 3

SVE and AS Well Layout

MONROE CENTER STORE

TOWN OF MONROE, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard, WI 53813
608-356-2771 1-800-362-4505 Fax: 608-356-2770
Web Address: www.msa-ps.com

DRAWN BY	CAR	DATE	1/2017
CHECKED BY	JE	SCALE	AS SHOWN

SHEET NO
FILE NO. 11538000
F3

11538000 F3 SVE&AS Well Layout.dgn 1/6/2017 12:24:57 PM crooyakkers

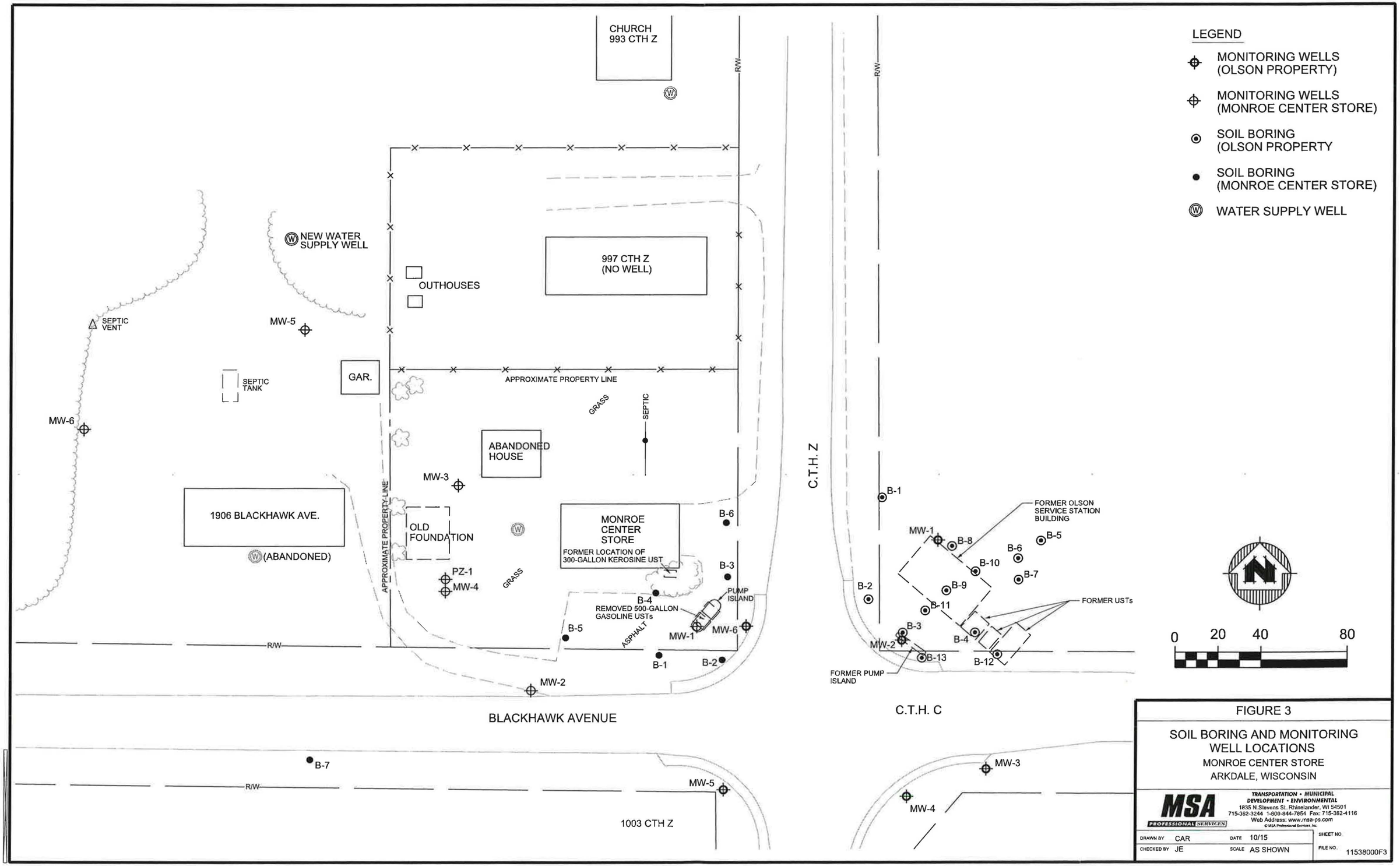

FIGURE 3

SOIL BORING AND MONITORING WELL LOCATIONS

MONROE CENTER STORE

ARKDALE, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL
1835 N.Stevens St. Rhinelander, WI 54501
715-362-3244 1-800-844-7854 Fax: 715-362-4116
Web Address: www.msa-ps.com

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CHECKED BY	JE	SCALE	AS SHOWN

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FILE NO. 11538000F3

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ANALYTICAL REPORT

MSA PROFESSIONAL SERVICES
JAYNE ENGLEBERT
1230 SOUTH BLVD
BARABOO, WI 53913

Project Name: MONROE CENTER
Project Phase:
Contract #: 2054
Project #: 11538000
Folder #: 133894
Purchase Order #:

Arrival Temperature: See COC
Report Date: 02/15/2018
Date Received: 02/01/2018
Reprint Date: 02/15/2018

CT LAB Sample#: 979466 Sample Description: MW-1 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	**220**	ug/L	4.0	13	10			02/06/2018 22:52	MDS	EPA 8021B
1,3,5-Trimethylbenzene	**91**	ug/L	4.0	14	10			02/06/2018 22:52	MDS	EPA 8021B
Benzene	**6.6**	ug/L	4.0 *	13	10			02/06/2018 22:52	MDS	EPA 8021B
Ethylbenzene	**12**	ug/L	4.0 *	14	10			02/06/2018 22:52	MDS	EPA 8021B
m & p-Xylene	**43**	ug/L	8.0	28	10			02/06/2018 22:52	MDS	EPA 8021B
Methyl tert-butyl ether	**6.2**	ug/L	4.0 *	13	10			02/06/2018 22:52	MDS	EPA 8021B
Naphthalene	**12**	ug/L	9.0 *	29	10			02/06/2018 22:52	MDS	EPA 8021B
o-Xylene	**23**	ug/L	4.0	14	10			02/06/2018 22:52	MDS	EPA 8021B
Toluene	**5.4**	ug/L	4.0 *	14	10			02/06/2018 22:52	MDS	EPA 8021B

CT LAB Sample#: 979467 Sample Description: MW-2 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB Sample#: 979467 Sample Description: MW-2 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
1,2,4-Trimethylbenzene	**2700**	ug/L	200	650	500			02/07/2018 00:35	MDS	EPA 8021B
1,3,5-Trimethylbenzene	**820**	ug/L	200	700	500			02/07/2018 00:35	MDS	EPA 8021B
Benzene	**800**	ug/L	200	650	500			02/07/2018 00:35	MDS	EPA 8021B
Ethylbenzene	**3200**	ug/L	200	700	500			02/07/2018 00:35	MDS	EPA 8021B
m & p-Xylene	**9600**	ug/L	400	1400	500			02/07/2018 00:35	MDS	EPA 8021B
Methyl tert-butyl ether	<200	ug/L	200	650	500			02/07/2018 00:35	MDS	EPA 8021B
Naphthalene	**750**	ug/L	450	1500	500			02/07/2018 00:35	MDS	EPA 8021B
o-Xylene	**4000**	ug/L	200	700	500			02/07/2018 00:35	MDS	EPA 8021B
Toluene	**13000**	ug/L	200	700	500			02/07/2018 00:35	MDS	EPA 8021B

CT LAB Sample#: 979468 Sample Description: MW-3 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 13:37	MDS	EPA 8021B
1,3,5-Trimethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 13:37	MDS	EPA 8021B
Benzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 13:37	MDS	EPA 8021B
Ethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 13:37	MDS	EPA 8021B
m & p-Xylene	<0.80	ug/L	0.80	2.8	1			02/06/2018 13:37	MDS	EPA 8021B
Methyl tert-butyl ether	<0.40	ug/L	0.40	1.3	1			02/06/2018 13:37	MDS	EPA 8021B
Naphthalene	<0.90	ug/L	0.90	2.9	1			02/06/2018 13:37	MDS	EPA 8021B
o-Xylene	<0.40	ug/L	0.40	1.4	1			02/06/2018 13:37	MDS	EPA 8021B
Toluene	<0.40	ug/L	0.40	1.4	1			02/06/2018 13:37	MDS	EPA 8021B

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB Sample#: 979469 Sample Description: MW-4 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	**0.59**	ug/L	0.40 *	1.3	1			02/07/2018 16:41	MDS	EPA 8021B
1,3,5-Trimethylbenzene	**0.44**	ug/L	0.40 *	1.4	1			02/07/2018 16:41	MDS	EPA 8021B
Benzene	<0.40	ug/L	0.40	1.3	1			02/07/2018 16:41	MDS	EPA 8021B
Ethylbenzene	<0.40	ug/L	0.40	1.4	1			02/07/2018 16:41	MDS	EPA 8021B
m & p-Xylene	<0.80	ug/L	0.80	2.8	1			02/07/2018 16:41	MDS	EPA 8021B
Methyl tert-butyl ether	<0.40	ug/L	0.40	1.3	1			02/07/2018 16:41	MDS	EPA 8021B
Naphthalene	<0.90	ug/L	0.90	2.9	1			02/07/2018 16:41	MDS	EPA 8021B
o-Xylene	<0.40	ug/L	0.40	1.4	1			02/07/2018 16:41	MDS	EPA 8021B
Toluene	<0.40	ug/L	0.40	1.4	1			02/07/2018 16:41	MDS	EPA 8021B

CT LAB Sample#: 979470 Sample Description: MW-4P Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 14:12	MDS	EPA 8021B
1,3,5-Trimethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:12	MDS	EPA 8021B
Benzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 14:12	MDS	EPA 8021B
Ethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:12	MDS	EPA 8021B
m & p-Xylene	<0.80	ug/L	0.80	2.8	1			02/06/2018 14:12	MDS	EPA 8021B
Methyl tert-butyl ether	<0.40	ug/L	0.40	1.3	1			02/06/2018 14:12	MDS	EPA 8021B
Naphthalene	<0.90	ug/L	0.90	2.9	1			02/06/2018 14:12	MDS	EPA 8021B
o-Xylene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:12	MDS	EPA 8021B
Toluene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:12	MDS	EPA 8021B

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB Sample#: 979471 Sample Description: MW-5 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 14:46	MDS	EPA 8021B
1,3,5-Trimethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:46	MDS	EPA 8021B
Benzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 14:46	MDS	EPA 8021B
Ethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:46	MDS	EPA 8021B
m & p-Xylene	<0.80	ug/L	0.80	2.8	1			02/06/2018 14:46	MDS	EPA 8021B
Methyl tert-butyl ether	<0.40	ug/L	0.40	1.3	1			02/06/2018 14:46	MDS	EPA 8021B
Naphthalene	<0.90	ug/L	0.90	2.9	1			02/06/2018 14:46	MDS	EPA 8021B
o-Xylene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:46	MDS	EPA 8021B
Toluene	<0.40	ug/L	0.40	1.4	1			02/06/2018 14:46	MDS	EPA 8021B

CT LAB Sample#: 979472 Sample Description: MW-6 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	**480**	ug/L	20	65	50			02/07/2018 14:59	MDS	EPA 8021B
1,3,5-Trimethylbenzene	**98**	ug/L	2.0	7.0	5			02/06/2018 22:17	MDS	EPA 8021B
Benzene	**300**	ug/L	20	65	50			02/07/2018 14:59	MDS	EPA 8021B
Ethylbenzene	**880**	ug/L	20	70	50			02/07/2018 14:59	MDS	EPA 8021B
m & p-Xylene	**1100**	ug/L	40	140	50			02/07/2018 14:59	MDS	EPA 8021B
Methyl tert-butyl ether	<2.0	ug/L	2.0	6.5	5			02/06/2018 22:17	MDS	EPA 8021B
Naphthalene	**190**	ug/L	4.5	15	5			02/06/2018 22:17	MDS	EPA 8021B
o-Xylene	**150**	ug/L	2.0	7.0	5			02/06/2018 22:17	MDS	EPA 8021B
Toluene	**27**	ug/L	2.0	7.0	5			02/06/2018 22:17	MDS	EPA 8021B

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB Sample#: 979473 Sample Description: OMW-6 Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	**13**	ug/L	0.40	1.3	1			02/07/2018 12:43	MDS	EPA 8021B
1,3,5-Trimethylbenzene	**5.0**	ug/L	0.40	1.4	1			02/07/2018 12:43	MDS	EPA 8021B
Benzene	<0.40	ug/L	0.40	1.3	1			02/07/2018 12:43	MDS	EPA 8021B
Ethylbenzene	**12**	ug/L	0.40	1.4	1			02/07/2018 12:43	MDS	EPA 8021B
m & p-Xylene	**3.2**	ug/L	0.80	2.8	1			02/07/2018 12:43	MDS	EPA 8021B
Methyl tert-butyl ether	<0.40	ug/L	0.40	1.3	1			02/07/2018 12:43	MDS	EPA 8021B
Naphthalene	**13**	ug/L	0.90	2.9	1			02/07/2018 12:43	MDS	EPA 8021B
o-Xylene	**5.0**	ug/L	0.40	1.4	1			02/07/2018 12:43	MDS	EPA 8021B
Toluene	**0.42**	ug/L	0.40 *	1.4	1			02/07/2018 12:43	MDS	EPA 8021B

CT LAB Sample#: 979474 Sample Description: 1906 BLACKHAWK WELL Sampled: 02/01/2018

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
1,2,4-Trimethylbenzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 15:21	MDS	EPA 8021B
1,3,5-Trimethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 15:21	MDS	EPA 8021B
Benzene	<0.40	ug/L	0.40	1.3	1			02/06/2018 15:21	MDS	EPA 8021B
Ethylbenzene	<0.40	ug/L	0.40	1.4	1			02/06/2018 15:21	MDS	EPA 8021B
m & p-Xylene	<0.80	ug/L	0.80	2.8	1			02/06/2018 15:21	MDS	EPA 8021B
Methyl tert-butyl ether	<0.40	ug/L	0.40	1.3	1			02/06/2018 15:21	MDS	EPA 8021B
Naphthalene	<0.90	ug/L	0.90	2.9	1			02/06/2018 15:21	MDS	EPA 8021B
o-Xylene	<0.40	ug/L	0.40	1.4	1			02/06/2018 15:21	MDS	EPA 8021B
Toluene	<0.40	ug/L	0.40	1.4	1			02/06/2018 15:21	MDS	EPA 8021B

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

Notes: * Indicates a value in between the LOD (limit of detection) and the LOQ (limit of quantitation). All LOD/LOQs are adjusted to reflect dilution and also any differences in the sample weight / volume as compared to standard amounts.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

Submitted by: Eric T. Korthals
Project Manager
608-356-2760

QC Qualifiers

Code	Description
B	Analyte detected in the associated Method Blank.
C	Toxicity present in BOD sample.
D	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
I	BOD incubator temperature was outside acceptance limits during test period.
J	Estimated value.
L	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
O	Complete BOD oxygen depletion.
P	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
U	Analyte concentration was below detection limit.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
X	Analyte exceeded calibration range.
Y	Replicate/Duplicate precision outside acceptance limits.
Z	Specified calibration criteria was not met.

Current CT Laboratories Certifications

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 105-289
Louisiana NELAP (primary) ID# ACC20160002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
Maryland Lab ID# WI00061
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20160002
Pennsylvania NELAP Lab ID# 68-04201, # 008

Rev. 02/2017

CHAIN OF CUSTODY

Page 1 of 1

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Company: MSA
Project Contact: Jayne Englebert
Telephone: 608-356-2771
Project Name: Monroe Center
Project #: 11538000
Location: WI
Sampled By: David Fitzsimmons

Folder #: 133894
Company: MSA PROFESSIONAL S
Project: MONROE COUNTY
Logged By: BNA PM: ET

SDWA NPDES
Other

Report To:
EMAIL:
Company: MSA
Address: 1230 South Blvd, Baraboo WI 53913

Invoice To:*
EMAIL:
Company: Same
Address:

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

Client Special Instructions

PECFA
Trip Blank Temp + Bottle Vial

Matrix:
GW – groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

Collection Date	Collection Time	Matrix	Grab/ Comp	Sample #	Sample ID Description	Filtered? Y/N	ANALYSES REQUESTED: PVOC + Naphth.	Total # Containers	Designated MS/MSD	CT Lab ID # (Lab use only)
							Fill in Spaces with Bottles per Test			
2/1/18		GW	G		MW-1	N	X	3		979466
					MW-2		X	3		979467
					MW-3		X	3		979468
					MW-4		X	3		979469
					MW-4P		X	3		979470
					MW-5		X	3		979471
					MW-6		X	3		979472
					OMW-1		X	3		979473
					1926 Blank Tank Well		X	3		979474

Turnaround Time
~~Normal~~ RUSH*
Date Needed: _____
Rush analysis requires prior CT Laboratories' approval
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	2/1/18	[signature]	2-1-18 1440
Received by:	Date/Time	Received for Laboratory by:	Date/Time
		[signature]	2-1-18 1448

Lab Use Only
Ice Present (Yes) No
Temp 1-9 IR Gun 16
Cooler # 6085

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-120998-1
TestAmerica Sample Delivery Group: #11538000
Client Project/Site: Benzene, Monroe Center

For:
MSA Professional Services, Inc
1230 South Blvd
Baraboo, Wisconsin 53913

Attn: Ms. Jayne Englebert

Authorized for release by:
12/21/2017 11:25:06 AM

Brian Graettinger, Manager of Project Management
(319)277-2401
brian.graettinger@testamericainc.com

Unless otherwise noted, analyses included in this report were performed by TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613.

TestAmerica Cedar Falls (Lab ID 101044) is accredited by the American Industrial Hygiene Association Laboratory Accreditation Programs (AIHA-LAP),LLC in the industrial hygiene program for the analytical techniques noted on the scope of accreditation for the following methods: NIOSH 0500, NIOSH 0600, NIOSH 1003, NIOSH 1005, NIOSH 1022, NIOSH 1300, NIOSH 1500, NIOSH 1501, NIOSH 1615, OSHA 07, NIOSH 7303 and NIOSH 9102. Volatile Organic Compounds accredited for Solid Sorbent Tubes and 3M Organic Vapor Monitors.

Method Modifications: TestAmerica Cedar Falls performs NIOSH 9102 Elements on Wipes with the following method modification – HNO_3 is used as the digestion acid with no $HClO_4$ utilized at any time during the analysis.

Unless otherwise noted, all method blanks and laboratory control spikes met method and/or laboratory quality control objectives for the analyses included in this report. Gravimetric analyses are not mathematically adjusted for blank values. Unless otherwise noted, all other sample results have been mathematically adjusted for blank values. The methods utilized for the analyses are fit for the intended use.

Brian Graettinger
Manager of Project Management
12/21/2017 11:25:06 AM

Table of Contents

Case Narrative

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Job ID: 310-120998-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-120998-1

Comments
No additional comments.

Receipt
The sample was received on 12/19/2017 8:45 AM in good condition.

Industrial Hygiene
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-120998-1	Discharge Effluent	Air	12/12/17 00:00	12/19/17 08:45

Detection Summary

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Client Sample ID: Discharge Effluent — Lab Sample ID: 310-120998-1

Analyte	Result ug/Sample	Result mg/m3	Result ppm	Qualifier	RL ug/Sample	Dil Fac	Method	Prep Type
Benzene	28	12	3.6		11	1	1501 Sum	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Client Sample ID: Discharge Effluent
Date Collected: 12/12/17 00:00
Date Received: 12/19/17 08:45
Sample Air Volume: 2.45 L

Lab Sample ID: 310-120998-1
Matrix: Air
Sample Container: IH - Coconut Shell Charcoal Tube, 150 mg

Method: 1501 Sum - NIOSH Method 1501 (Modified)

Analyte	Result ug/Sample	Result mg/m3	Result ppm	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Benzene	28	12	3.6		11		12/20/17 13:31	1

$$\frac{28\ ug}{2.45\ L} \times \frac{1g}{1\times10^{6}\ ug} \times \frac{1lb}{453.59g} = \frac{5.98\times10^{-8}\ lbs}{L} \times \frac{L}{0.03532\ CF}$$

$$= 7.13 \times 10^{-7}\ lbs/CF$$

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Method: 1501 Front - NIOSH Method 1501 (Modified)

Lab Sample ID: MB 310-189342/1-A
Matrix: Air
Analysis Batch: 189360

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 189342

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<11		11		ug/Sample		12/18/17 09:14	12/19/17 10:37	1

Lab Sample ID: LCS 310-189342/2-A
Matrix: Air
Analysis Batch: 189360

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 189342

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	250	297		ug/Sample		119	85 - 125

Lab Sample ID: LCSD 310-189342/3-A
Matrix: Air
Analysis Batch: 189360

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 189342

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	250	262		ug/Sample		105	85 - 125	12	20

QC Association Summary

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

IH - GC VOA

Prep Batch: 189342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-189342/1-A	Method Blank	Total/NA	Air	Tube prep/Back	
LCS 310-189342/2-A	Lab Control Sample	Total/NA	Air	Tube prep/Back	
LCSD 310-189342/3-A	Lab Control Sample Dup	Total/NA	Air	Tube prep/Back	

Analysis Batch: 189360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-189342/1-A	Method Blank	Total/NA	Air	1501 Front	189342
LCS 310-189342/2-A	Lab Control Sample	Total/NA	Air	1501 Front	189342
LCSD 310-189342/3-A	Lab Control Sample Dup	Total/NA	Air	1501 Front	189342

Analysis Batch: 189668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-120998-1	Discharge Effluent	Total/NA	Air	1501 Sum	

Lab Chronicle

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Client Sample ID: Discharge Effluent
Date Collected: 12/12/17 00:00
Date Received: 12/19/17 08:45

Lab Sample ID: 310-120998-1
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1501 Sum		1	189668	12/20/17 13:31	JCM	TAL CF

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Laboratory: TestAmerica Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-18
Georgia	State Program	4	IA100001 (OR)	09-29-18
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-17 *
Kansas	NELAP	7	E-10341	01-31-18
Minnesota	NELAP	5	019-999-319	12-31-17 *
Minnesota (Petrofund)	State Program	1	3349	08-22-18
North Dakota	State Program	8	R-186	09-29-18
Oregon	NELAP	10	IA100001	09-29-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: MSA Professional Services, Inc
Project/Site: Benzene, Monroe Center

TestAmerica Job ID: 310-120998-1
SDG: #11538000

Method	Method Description	Protocol	Laboratory
1501 Front	NIOSH Method 1501 (Modified)	NIOSH	TAL CF
1501 Sum	NIOSH Method 1501 (Modified)	NIOSH	TAL CF

Protocol References:

NIOSH = NIOSH Manual Of Analytical Methods, National Institute For Occupational Safety And Health, 4th Edition, August 1994.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

TestAmerica

Laboratory Chain of Custody Form

310-120998 Chain of Custody

Fax: (319) 277-2425
www.testamericainc.com

Send Report To: Jaime Englebert
Send Invoice To: Jaime Englebert
Company: MSA Professional Services
Address: 1230 South Blvd.
City,State, Zip: Baraboo, WI 53913
Phone: 608-356-2771 Fax: _____ Email Address: _____

Page: 1 of 1
Sampler: DF Project Name: Monroe Center Project No.: 115380DD P.O. #: _____

Lab Number (Internal use Only)	Date Sampled	Sample Identification	Media Type (Filter, Tube, Passive Monitor)	Analysis Method(s)/Analytes(s)	Sampling Time (Minutes)	Air Volume (Liters)	Pump ID
	12/12/17	Discharge Effluent	Tube	T. Benzene	12.00	2.45	

Sample Receipt

Temperature _____ °C
Sample Seals: Yes _____ No _____
Sample Seals Intact: Yes _____ No _____
Total # of Samples: _____

Reporting/Deliverables

Hardcopy Results: Yes _____ No _____
E-Mail Results: Yes _____ No _____
EDD: Yes _____ No _____ Type _____
Data Package: Standard Level II _____
Level III _____ Level IV _____

Turn Around Time Requested

_____ Next Day by 6pm _____ 2 Business Days
_____ 3 Business Days _____ 4 Business Days
_____ Standard 7 Business Days
RUSH Charges Authorized _____ Yes _____ No
Subject to scheduling and availability (RUSH surcharges apply)

Instructions / Special Requirements:

Date	Time	Samples Relinquished By	Received By
12/15/17			12-19-17 0845

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
704 Enterprise Drive • Cedar Falls, IA 50613
Tel 319-277-2401 • Fax 319-277-2425

IH Sample Receipt Form

Client: MSA professional services Project: Monroe County

City: Baraboo WI

Date: 12-19-17 Receiver's Initials: JD Time (Delivered): 0845

COC completed correctly? ☒ Yes ☐ No
(Cite inconsistencies below)

Sample Checklist (Mark non-conformance or acceptance)

	Received Broken		Information Missing
	Improper Media		Missing Sample
	Missing Label		Sample Past Hold Date
	Temperature		Extra Sample
	COC Discrepancy		Insufficient Sample Volume
	Other:		

Couriers

X	UPS		TA Courier
	FedEx		Client
	FedEx Ground		Other:
	USPS		
	Spee-Dee		

X	Samples not received in a cooler
X	Temperature not taken

☒ The samples, as received, are acceptable for analysis

Reviewed by: SLL Date: 12/19/17

Comments OK

Login Sample Receipt Checklist

Client: MSA Professional Services, Inc

Job Number: 310-120998-1
SDG Number: #11538000

Login Number: 120998
List Number: 1
Creator: Dralle, Steve L

List Source: TestAmerica Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

Laboratory Chain of Custody Form

310-120998 Chain of Custody

Fax: (319) 277-2425
www.testamericainc.com

Page: 1 of 1

Send Report To: Jaime Englebert
Send Invoice To: Jaime Englebert
Company: MSA Professional Services
Address: 1230 South Blvd.
City,State, Zip: Baraboo, WI 53913
Phone: 608-356-2771 Fax: _____ Email Address: _____
Sampler: DF Project Name: Monroe Center Project No.: 11538000 P.O. #: _____

Lab Number (Internal use Only)	Date Sampled	Sample Identification	Media Type (Filter, Tube, Passive Monitor)	Analysis Method(s)/Analytes(s)	Sampling Time (Minutes)	Air Volume (Liters)	Pump ID
	12/12/17	Discharge Effluent	Tube	T. Benzene	12.00	2.45	

Sample Receipt

Temperature _____ °C
Sample Seals: Yes _____ No _____
Sample Seals Intact: Yes _____ No _____
Total # of Samples: _____

Reporting/Deliverables

Hardcopy Results: Yes _____ No _____
E-Mail Results: Yes _____ No _____
EDD: Yes _____ No _____ Type _____
Data Package: Standard Level II _____
Level III _____ Level IV _____

Turn Around Time Requested

_____ Next Day by 6pm _____ 2 Business Days
_____ 3 Business Days _____ 4 Business Days
_____ Standard 7 Business Days
RUSH Charges Authorized _____ Yes _____ No
Subject to scheduling and availability (RUSH surcharges apply)

Instructions / Special Requirements:

Date	Time	Samples Relinquished By	Received By
12/15/17			12-14-17 0545

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
704 Enterprise Drive • Cedar Falls, IA 50613
Tel 319-277-2401 • Fax 319-277-2425

IH Sample Receipt Form

Client: MSA Professional Services Project: Monroe County

City: Baraboo WI

Date: 12-19-17 Receiver's Initials: JD Time (Delivered): 0845

COC completed correctly? ☒ Yes ☐ No
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	Other:		

Couriers

X	UPS		TA Courier
	FedEx		Client
	FedEx Ground		Other:
	USPS		
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X	Samples not received in a cooler
X	Temperature not taken

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Reviewed by: SLL Date: 12/19/17

Comments ok