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)

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**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:

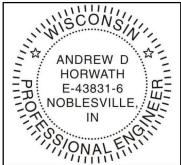
http://dnr.wi.gov/topic/Brownfields/documents/regs/NR700progreport.pdf

Section GI - General Site Info A. General Information	ormation		_	_	_	_		_	_	_
1. Site name										
One Hour Martinizing - Oco	nomowoc	Γ			_					
	01/01/2018	2023	5/30/2018 Days in period: 181							
3. Regulatory agency (enter DN	R, DATCP and/or o	other) 4	. BRRTS	ID No	. (2 digit pr	ogram-2	digit	county-6	digit site:	specific)
DNR		C	2-68-55	1911						
5. Site location										
Region	County		Address	5						
Southeast Region Waukesha 36				Plank	Road					
Municipality name   City	Town Village				Township	Range	<b>⊙</b> E	Section	1/4	1/4 1/4
Oconomowoc Lake					07 N	17	$\bigcirc W$	3	NW	NW
6. Responsible party			7. Consu	ltant						•
Name					e following	informat	ion h	as change	ed since t	he last
Brian Cass			☐ subm	nittal						
Mailing address			Company	y nam	е					
W229 N2494 County Road I	F, Waukesha, WI	53186			ics, LLC					
Phone number			Mailing a	ddres	S			P	hone nun	nber
	521-9710		N16 W2	23390	Stone Ri	dge Dr.	Suite	e G	(262) 29	0-4001
8. Contaminants PCE										
9. Soil types (USCS or USDA) Silty Sand										
10. Hydraulic conductivity(cm/se	ec):		11. Avera	age lin	ear velocit	y of grou	ındwa	ter (ft/yr)		
0.02			355							
12. If soil is treated ex situ, is the	e treatment location	off site?	Yes 🔘 N	10						
If yes, give location: Region				Count	ty					
Municipality name City	◯ Town ◯ Villag	е			Township	Range	OE	Section	1/4	1/4 1/4
					N		OW			

Site name: One Hour Martinizing - Oconomowoc	Remediation Site Operation	
Reporting period from: <u>01/01/2018</u> To: <u>06/30/2018</u>	Monitoring & Optimization F Form 4400-194 (R 11/14)	Report Page 2 of 28
Days in period: 181	FOIII 4400-194 (K 11/14)	Page 2 01 20
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		
Soil venting (including soil vapor extraction building venting and biove		
Soil natural attenuation (submit a completed Section IS-2).	chang submit a completed decator le 1).	
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 subse	ection.	
_	s O No	
If the answer is no, explain whether or not modifications are necessar	y to achieve the goal that was previously e	stablished in design.
<ul> <li>2. Are modifications to the system warranted to improve effectiveness If yes, explain:</li> <li>3. Is natural attenuation an effective low cost option at this time?</li> <li>4. Is closure sampling warranted at this time?  Yes ● No</li> <li>5. Are there any modifications that can be made to the remediation to im If yes, explain:</li> </ul>	<ul><li>Yes ● No</li><li>Yes ● No</li><li>prove cost effectiveness?</li></ul>	No
D. Economic and Cost Data to Date  1. Total investigation cost: \$411,100.00		
2. Implementation costs (design, capital and installation costs, excluding	investigation costs: \$225,500.00	
3. Total costs during the previous reporting period: \$22,190.00		
4. Total costs during this reporting period: \$55,100.00		
5. Total anticipated costs for the next reporting period: \$35,000.	00	
6. Are any unusual or one-time costs listed in the reporting periods cover	red by D.3., D.4. or D.5. above? • Y	es 🔘 No
If yes, explain: Soil samples were collected from the area of influence to evalu	ate current residual concentrations.	
7. If closure is anticipated within 12 months, estimated costs for project of	eloseout:	

Site name: <u>One Hour Martinizing - Oconon</u>	nowoc	Remediation Site Operation, Maintenance
Reporting period from: <u>01/01/2018</u>	To: <u>06/30/2018</u>	Monitoring & Optimization Report
Days in period: 181		Form 4400-194 (R 11/14) Page 3 of 2
E. Name(s), Signature(s) and Date	of Person(s) Submitting	Form
	tion, monitoring or an inves	mit reports under ch. NR 712 Wis. Adm. Code are to sign this form for tigation. Other persons may sign this form for sites with no response
Registered Professional Engineers	:	
of ch. A-E 4, Wis. Adm. Code; that this	s document has been preparest of my knowledge, all info	e State of Wisconsin, registered in accordance with the requirements ared in accordance with the rules of Professional Conduct in ch. A-E ormation contained in this document is correct and the document was IR 700 to 726, Wis. Adm. Code.
Print name		Title
Andrew Horwath		Senior Engineer
Signature Andrew D. House		Date 7/26/2018
Hydrogeologists:		
	n this document is correct a	in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my and the document was prepared in compliance with all applicable
Print name		Title
Brian Kappen		Project Manager
Signature Big Tay	~	Date 7/26/2018
Scientists:		
	nent is correct and the docu	NR 712.03(3), Wis. Adm. Code, and that, to the best of my knowledge, iment was prepared in compliance with all applicable requirements in
Print name		Title
Signature		Date
Other Persons:		
Print name		Title
Signature		Date
Professional Seal(s), if applicable:		
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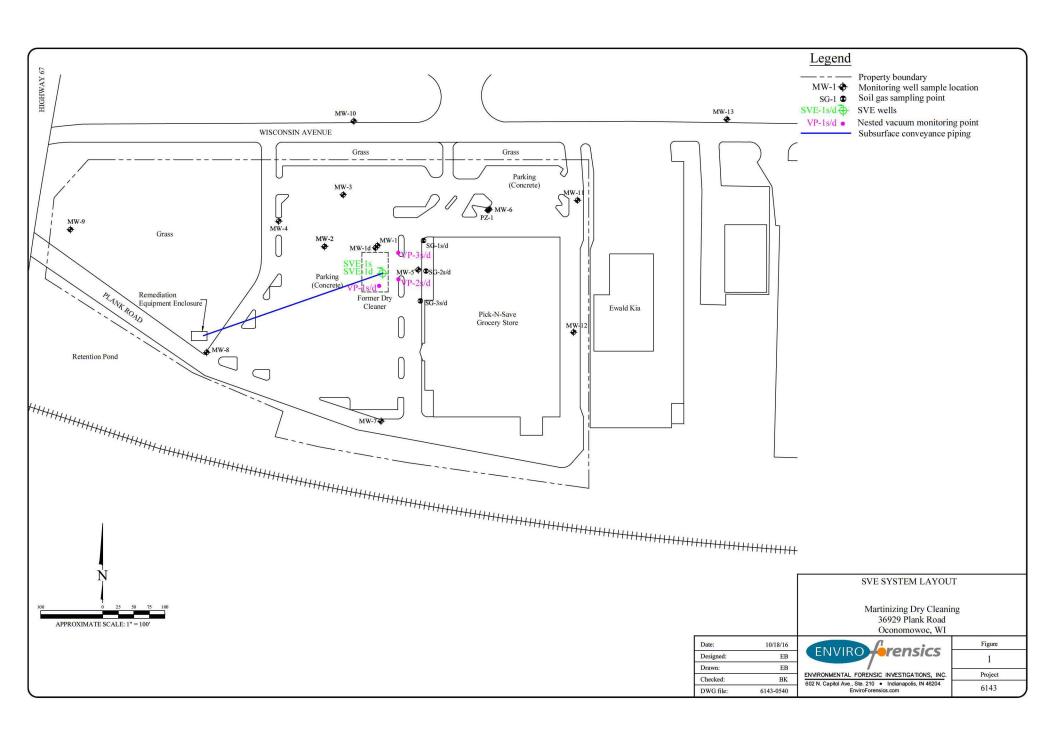
Site name: One Hour Martinizing - Oconom	owoc	Remediation Site	Operation, Maintenance,
Reporting period from: 01/01/2018	To: 06/30/2018	Monitoring & Opt	imization Report
Days in period: 181		Form 4400-194 (R 11/14)	Page 9 of 28
Section IS-1, Soil Venting (Includin	ng Soil Vapor Extraction	, Building Venting and Bioven	ting)
A. Soil Venting Operation			
<b>Note:</b> This form is not required for buil and are not considered part of ongoing		ms that are installed proactively to	protect building occupants/users
1. Number of air extraction wells availa	ble and number of wells ac	tually in use during the period:	1
<ol> <li>Number of days of operation (only list 156.8</li> </ol>	st the number of days the s	ystem actually operated, if unknow	/n explain):
3. System utilization in percent (days o $86.6\ \%$	f operation divided by repor	ting time period multiplied by 100)	). If < 80%, explain:
4. Average depth to groundwater:	27.99 gpm		
B. Building Basement/Subslab Ven	ting System Operation		
1. Number of venting points available a	and number of points actual	ly in use during the period:	
2. Number of days of operation (only lis	st the number of days the s	ystem actually operated, if unknow	/n explain):
3. System utilization in percent (days o	of operation divided by repo	rting time period multiplied by 100	). If < 80%, explain:
C. Effectiveness Evaluation			
1. Average contaminant removal rate f	or the entire system:	0.012 pounds per d	ay
2. Average contaminant removal rate p	per well or venting point:	0.012 pounds pe	er day
<ol><li>If the average contaminant removal rate per well is less than one tenth o</li></ol>	· ·	The state of the s	f the average contaminant removal
a. If contaminants are aerobically bi	odegradable and confirmati	on borings have not been drilled ir	n the past year:
i. Oxygen levels in extracted air:	percent		
ii. Methane levels in extracted air	(ppm <sub>V</sub> ) If over 10 ppm <sub>V</sub> , ex	kplain:	

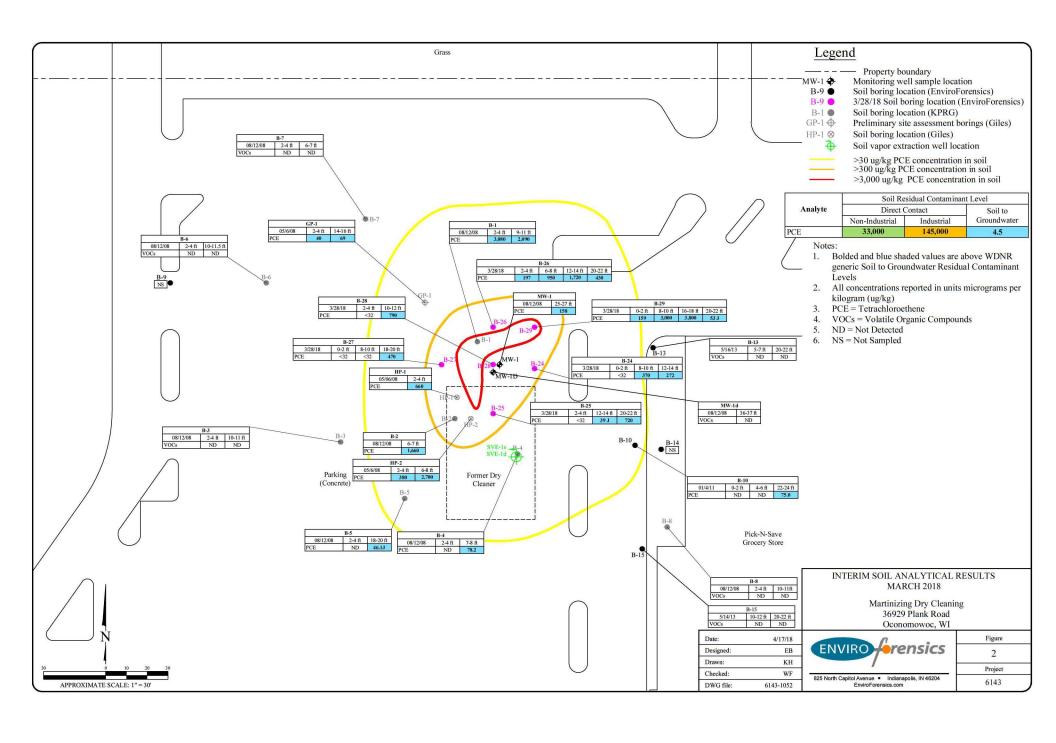
- iii. If methane is not present above 10 ppm<sub>V</sub> and if oxygen is greater than 20 percent in extracted air, you should either:
  - o Drill confirmation borings during the next reporting period, if the entire site should be considered for closure.
  - Or, perform an in situ respirometry test 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.

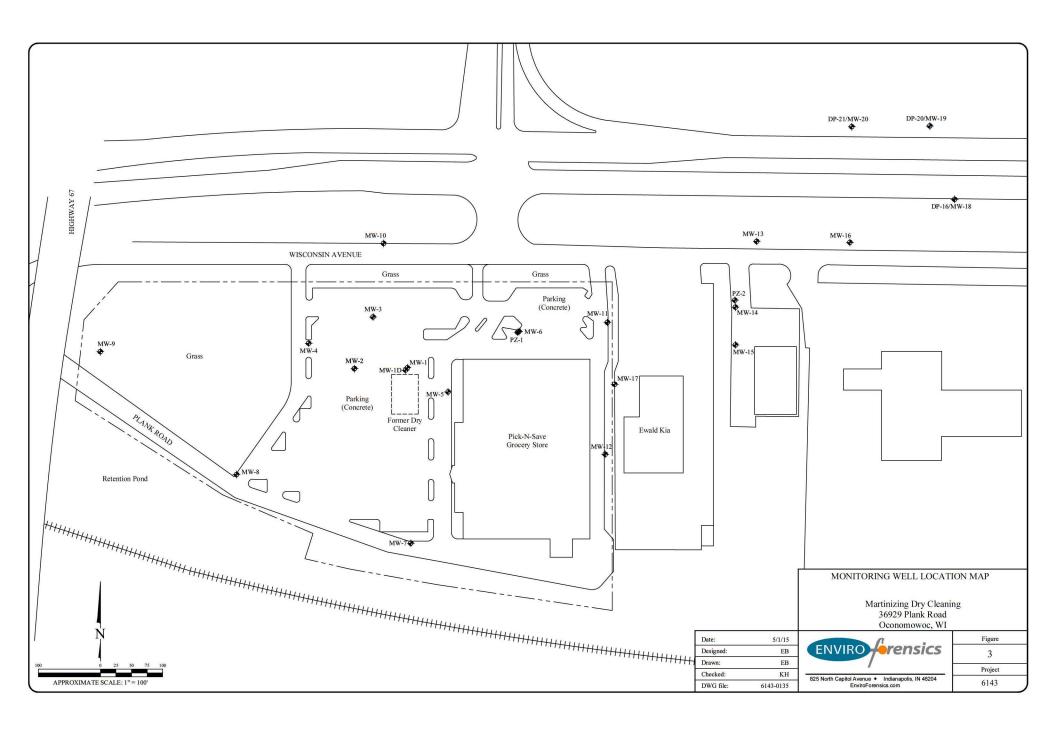
#### D. Additional Attachments

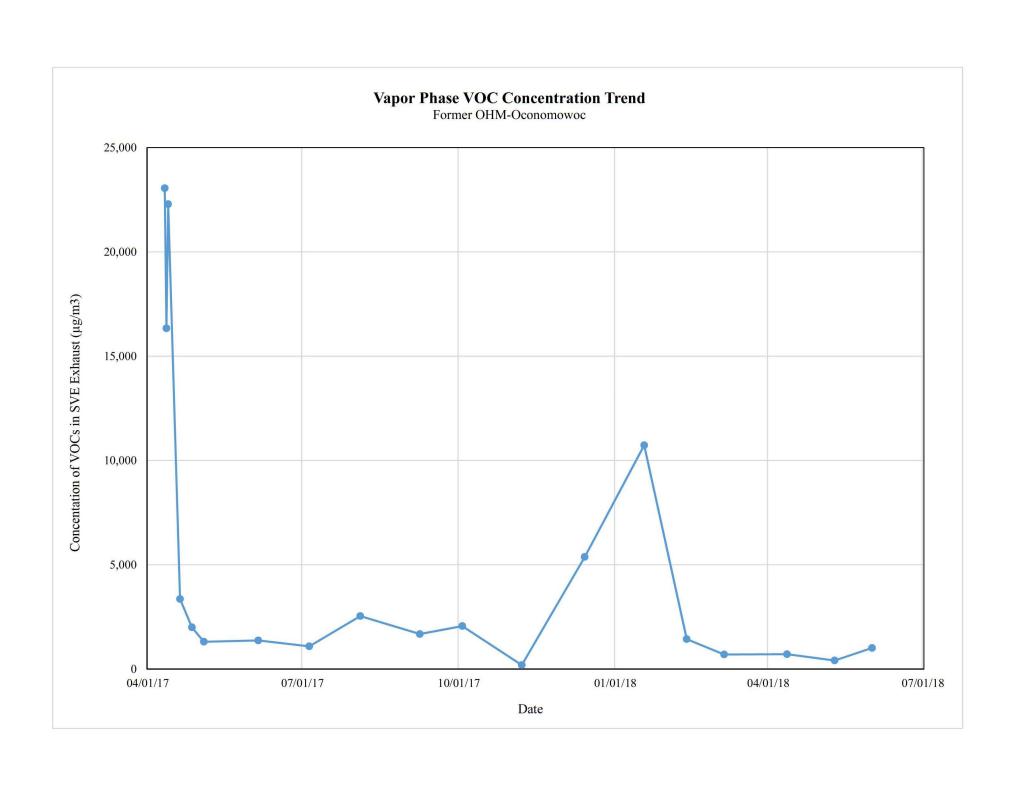
Attach the following to this form:

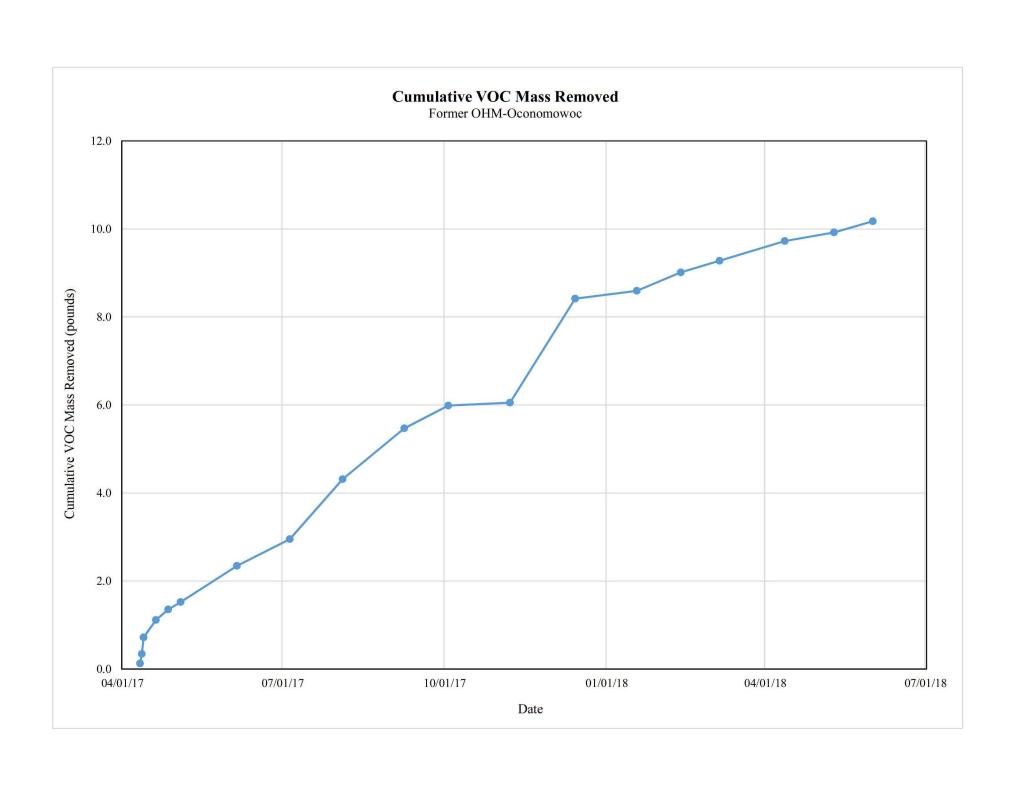
- Well and soil sample location map indicating all air extraction wells. If forced air injection wells are also in use, identify those
  wells.
- If water table monitoring wells are present at the site, a map of well locations.
- Time versus vapor phase contaminant concentration graph.
- Time versus 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.
- System operational data table.











### Table 2 **Summary of Groundwater Elevation Data**Former One Hour Martinizing Cleaners

Oconomowoc, Wisconsin

Well ID	Date	TOC Elevation (feet AMSL)	Depth to Water	Groundwater Elevation (feet AMSL)
	11/04/15	892.88	29.28	863.60
	10/10/16	892.88	28.13	864.75
MW-1	03/28/17	892.88	28.34	864.54
	09/07/17	892.88	27.97	864.91
	05/17/18	892.88	28.35	864.53
	11/04/15	892.58	45.80	846.78
	10/10/16	892.58	27.77	864.81
MW-1D	03/28/17	892.58	27.97	864.61
	09/07/17	892.58	26.92	865.66
	05/17/18	892.58	28.09	864.49
	11/04/15	891.27	27.42	863.85
	10/10/16	891.27	26.13	865.14
MW-2	03/28/17	891.27	26.37	864.90
	09/07/17	891.27	25.93	865.34
	05/17/18	891.27	26.41	864.86
	11/04/15	892.88	29.06	863.82
	10/10/16	892.88	27.86	865.02
MW-3	03/28/17	892.88	28.06	864.82
	09/07/17	892.88	27.63	865.25
	05/17/18	892.88	28.11	864.77
	11/04/15	891.72	27.71	864.01
	10/10/16	891.72	26.38	865.34
MW-4	03/28/17	891.72	26.64	865.08
	09/07/17	891.72	26.10	865.62
	05/17/18	891.72	26.22	865.50
	11/04/15	893.69	30.23	863.46
	10/10/16	893.69	29.15	864.54
MW-5	03/28/17	893.69	29.33	864.36
	09/07/17	893.69	29.03	864.66
	05/17/18	893.69	29.35	864.34
	11/04/15	893.57	30.30	863.27
	10/10/16	893.57	29.25	864.32
MW-6	03/28/17	893.57	29.42	864.15
	09/07/17	893.57	29.20	864.37
	05/17/18	893.57	29.40	864.17
	11/04/15	891.51	27.55	863.96
MW-7	10/10/16	891.51	26.27	865.24
111 11 /	03/28/17	891.51	26.55	864.96
	09/07/17	891.51	26.05	865.46
	11/04/15	887.73	23.95	863.78
MW-8	10/10/16	887.73	22.80	864.93
171 17 -0	03/28/17	887.73	22.85	864.88
	09/07/17	887.73	22.26	865.47
	11/04/15	889.32	25.90	863.42
MW-9	10/10/16	889.32	24.50	864.82
TAT AA _3	03/28/17	889.32	24.72	864.60
	09/07/17	889.32	24.04	865.28



### Table 2 **Summary of Groundwater Elevation Data**Former One Hour Martinizing Cleaners

Oconomowoc, Wisconsin

Well ID	Date	TOC Elevation (feet AMSL)	Depth to Water	Groundwater Elevation (feet AMSL)
	11/04/15	895.61	31.69	863.92
MW 10	10/10/16	895.61	30.50	865.11
MW-10	03/28/17	895.61	30.65	864.96
	09/07/17	895.61	30.29	865.32
	11/04/15	893.44	30.38	863.06
	10/10/16	893.44	29.47	863.97
MW-11	03/28/17	893.44	29.55	863.89
	09/07/17	893.44	29.46	863.98
	05/17/18	893.44	29.42	864.02
	11/04/15	893.05	29.86	863.19
107/10	10/10/16	893.05	28.90	864.15
MW-12	03/28/17	893.05	29.04	864.01
	09/07/17	893.05	28.92	864.13
	11/04/15	892.12	29.71	862.41
) W. 10	10/10/16	892.12	29.13	862.99
MW-13	03/28/17	892.12	28.92	863.20
	09/07/17	892.12	29.78	862.34
MW-14	11/04/15	894.00	31.30	862.70
	10/10/16	894.00	30.58	863.42
	03/28/17	894.00	30.51	863.49
	09/07/17	894.00	30.78	863.22
	05/17/18	894.00	30.29	863.71
	11/04/15	893.89	31.12	862.77
	10/10/16	893.89	30.35	863.54
MW-15	03/28/17	893.89	30.32	863.57
	09/07/17	893.89	30.36	863.53
	11/04/15	890.67	28.52	862.15
	10/10/16	890.67	28.03	862.64
MW-16	03/28/17	890.67	27.72	862.95
	09/07/17	890.67	27.92	862.75
	05/11/18	890.67	27.33	863.34
	11/04/15	895.63	32.50	863.13
	10/10/16	895.63	31.65	863.98
MW-17	03/28/17	895.63	31.71	863.92
	09/07/17	895.63	31.59	864.04
MW-18	09/07/17	882.37	19.66	862.71
	09/07/17	883.02	20.40	862.62
MW-19	05/17/18	883.02	19.82	863.20
	09/07/17	886.11	23.81	862.30
MW-20	05/17/18	886.11	23.00	863.11
	11/04/15	893.57	32.14	861.43
	10/10/16	893.57	29.07	864.50
PZ-1	03/28/17	893.57	29.23	864.34
	09/07/17	893.57	28.33	865.24



#### Table 2

### **Summary of Groundwater Elevation Data**

Former One Hour Martinizing Cleaners Oconomowoc, Wisconsin

Well ID	Date	TOC Elevation (feet AMSL)	Depth to Water	Groundwater Elevation (feet AMSL)
PZ-2	11/04/15	894.01	30.78	863.23
	10/10/16	894.01	29.80	864.21
	03/28/17	894.01	29.94	864.07
	09/07/17	894.01	29.93	864.08

#### Notes:

All measurements recorded in feet

TOC = Top of Casing

MSL = Mean Seal Level

NA = not available



# **Table 3 Summary of Soil Analytical Results**

Former One Hour Martinizing Cleaners Oconomowoc, Wisconsin

Soil Boring Identification	Sample Depth (feet BGS)	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
Direct (	Contact Industrial	RCL*	145,000	8,410	2,340,000	1,850,000	2,080
Direct C	ontact Residentia	l RCL*	33,000	1,300	156,000	1,560,000	67.0
Soil to	o Groundwater R	CL*	4.5	3.6	41.2	62.6	0.10
HP-1	2-4	05/06/08	660	<27	<26	<26	<37
	2-4	05/06/08	380	<27	<26	<26	<37
HP-2	6-8	05/06/08	2,700	<27	<26	<26	<37
	2-4	05/06/08	40	<27	<26	<26	<37
GP-1	14-16	05/06/08	69	<27	<26	<26	<37
B-1	2-4	08/12/08	3,080	<25	<25	<25	<25
	9-11	08/12/08	2,090	<25	<25	<25	<25
B-2	6-7	08/12/08	1,660	<25	<25	<25	<25
D 2	2-4	08/12/08	<25	<25	<25	<25	<25
B-3	10-11	08/12/08	<25	<25	<25	<25	<25
D 4	2-4	08/12/08	<25	<25	<25	<25	<25
B-4	7-8	08/12/08	78.2	<25	<25	<25	<25
D 5	2-4	08/12/08	<25	<25	<25	<25	<25
B-5	18-20	08/12/08	46.1 J	<25	<25	<25	<25
D.C	2-4	08/12/08	<25	<25	<25	<25	<25
B-6	10-11.5	08/12/08	<25	<25	<25	<25	<25
B-7	2-4	08/12/08	<25	<25	<25	<25	<25
B-/	6-7	08/12/08	<25	<25	<25	<25	<25
D o	2-4	08/12/08	<25	<25	<25	<25	<25
B-8	10-11	08/12/08	<25	<25	<25	<25	<25
MW-1	25-27	08/12/08	158	<25	<25	<25	<25
MW-1D	36-37	08/12/08	<25	<25	<25	<25	<25
	0-2	01/04/11	<26	<26	<26	<26	<37
B-10	4-6	01/04/11	<26	<26	<26	<26	<36
	22-24	01/04/11	75	<26	<26	<26	<36
B-13	5-7	05/16/13	<16	<18	<12	<24	<10
D-13	20-22	05/16/13	<16	<17	<12	<23	<9.7
B-15	10-12	05/14/13	<12	<14	<9.0	<18	<7.6
D-13	20-22	05/14/13	<14	<15	<10	<21	<8.6



## **Table 3 Summary of Soil Analytical Results**

Former One Hour Martinizing Cleaners Oconomowoc, Wisconsin

Soil Boring Identification	Sample Depth (feet BGS)	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
Direct (	Direct Contact Industrial RCL*			8,410	2,340,000	1,850,000	2,080
Direct Contact Residential RCL*			33,000	1,300	156,000	1,560,000	67.0
Soil to Groundwater RCL*		4.5	3.6	41.2	62.6	0.10	
	0-2	03/28/18	<32	<41	<32	<28	<19
B-24	8-10	03/28/18	370	<41	<32	<28	<19
	12-14	03/28/18	272	<41	<32	<28	<19
	2-4	03/28/18	<32	<41	<32	<28	<19
B-25	12-14	03/28/18	39 J	<41	<32	<28	<19
	20-22	03/28/18	720	<41	<32	<28	<19
	2-4	03/28/18	197	<41	<32	<28	<19
B-26	6-8	03/28/18	950	<41	<32	<28	<19
D-20	12-14	03/28/18	1,720	<41	<32	<28	<19
_	20-22	03/28/18	430	<41	<32	<28	<19
	0-2	03/28/18	<32	<41	<32	<28	<19
B-27	8-10	03/28/18	<32	<41	<32	<28	<19
	18-20	03/28/18	470	<41	<32	<28	<19
B-28	2-4	03/28/18	<32	<41	<32	<28	<19
~ ~~	10-12	03/28/18	790	<41	<32	<28	<19
	0-2	03/28/18	159	<41	<32	<28	<19
B-29	8-10	03/28/18	3,000	<41	<32	<28	<19
22	16-18	03/28/18	3,800	<41	<32	<28	<19
	20-22	03/28/18	53 J	<41	<32	<28	<19

#### Notes:

\* = WDNR Residual Contaminant Level (RCL) based on United States Environmental Protection Agency Region 3, 6, and 9 Regional Screening Levels (November 2017) according to WDNR Publication RR-890.

All concentrations reported in units of micrograms per kilogram (µg/kg)

**Bolded** and blue shaded values are above WDNR Soil to Groundwater Residual Contaminant Level.

BGS = below ground surface

RCL = Residual Contaminant Level



## TABLE 5 SOIL VAPOR EXTRACTION SYSTEM OPERATIONAL DATA

Former OHM-Oconomowoc

36929 Plank Road, Oconomowoc, Wisconsin

Date	Time	Operating Zone	System Runtime	System Vacuum	Effluent Flow Rate	Effluent VOC Concentration	Inlet Temperature	Exhaust Temperature	Dilution
			Hours	inHg	cfm	$\mu g/m^3$	°F	°F	(%)
4/11/2017	1820	shallow + deep	4.4	-13.0	185	23,052	50	185	30
4/12/2017	1339	shallow + deep	23.0	-17.0	190	16,337	65	205	30
4/13/2017	1035	shallow + deep	45.8	-11.0	198	22,289	53	165	40
4/20/2017	1037	shallow + deep	210.6	-12.0	190	3,360	65	180	40
4/27/2017	1102	shallow + deep	378.7	-12.0	190	2,000	50	170	40
5/4/2017	852	shallow + deep	540.5	-9.0	210	1,310	55	133	50
6/5/2017	1512	shallow + deep	1,314.3	-7.0	207	1,372	62	145	60
7/5/2017	1718	shallow + deep	2,036.5	-10.0	206	1,090	80	155	60
8/4/2017	946	shallow + deep	2,724.4	-7.0	208	2,541	70	130	50
9/8/2017	1330	shallow + deep	3,566.1	-6.5	218	1,680	65	130	50
10/3/2017	1541	shallow + deep	3,918.7	-8.0	190	2,060	85	135	50
11/7/2017	1240	shallow	4,493.8	-10.5	160	193	< 50	175	30
12/14/2017	1115	deep	5,376.0	-11.5	133	5,375	< 50	190	35
1/18/2018	1217	deep	5,409.2	-8.0	133	10,731	< 50	165	30
2/12/2018	1332	deep	5,819.7	-9.0	190	1,436	70	163	50
3/6/2018	1535	deep	6,349.3	-9.5	190	699	75	180	50
4/12/2018	1340	deep	7,232.8	-11.0	190	712	75	180	50
5/10/2018	1147	deep	7,902.8	-9.0	190	411	65	170	50
6/1/2018	1201	deep	8,315.3	-11.0	162	1,012	75	180	50

#### Notes:

-- = Reading not recorded

inHg = inches of mercury

cfm = cubic feet per minute

 $\mu g/m^3 = micrograms per cubic meter$ 

