

December 4, 2018



Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, Wisconsin 54313

Attention: Mr. Tauren Beggs
Telephone: 920.662.5178
E-mail: Tauren.Beggs@wisconsin.gov

RE: **Supplemental Site Investigation Work Plan**
Smoke-Out Cleaners
1631 Brookfield Avenue, Unit D-4
Howard, Wisconsin ("Property")
BRRTS #02-05-552214
Terracon Project No. 58187103

Dear Mr. Beggs:

On behalf of Smoke-Out Cleaners (Smoke-Out), Terracon Consultants, Inc. (Terracon) has prepared this Supplemental Site Investigation Work Plan (SSIWP) for the above-referenced project in general conformance with Wisconsin Administrative Code (WAC), Chapter NR 716. A brief project background, proposed scope of services, and tentative schedule are provided in the following sections. In addition, due to the shallow groundwater, an alternative construction of the proposed observation well will be required. As such, Terracon is requesting approval of a monitoring well construction variance.

1.0 BACKGROUND

The Smoke-Out site is located at 1631 Brookfield Avenue, Unit D-4, Howard, Wisconsin. The site lies within a commercial business park, which is in an area of mixed industrial, commercial, and residential use. Beginning in 2005, Smoke-Out operated from a leased space within the western multi-tenant building on the property. The building is slab-on-grade construction with single story offices along the eastern part of the building, and with two-story work space in the western part of the building. A dry-cleaning machine (DCM) is located in the south-central part of the work area. Black Diamond Builders occupies the lease space adjacent north of Smoke-Out, and Badger Scale adjoins Smoke-Out to the south. Asphalt-paved parking areas exist to the east and west of the building.

A Preliminary Site Assessment (PEA) was completed at the site by Giles Engineering Associates (Giles) in August 2008. The PEA included two interior soil borings (HP-1 and HP-2) near the DCM



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Geotechnical



Environmental



Construction Materials



Facilities

and one exterior hand boring (GP-1) near the rear (west) service door. The PEA identified chlorinated volatile organic compounds (CVOCs) in both soil and groundwater. As a result, a Notification of Release was submitted to the Wisconsin Department of Natural Resources (WDNR) on August 21, 2008. The WDNR issued a Responsible Party (RP) letter on August 29, 2008, that named Mark Woppert of Smoke-Out as the RP and required a site investigation be performed to determine the magnitude and extent of contamination.

Giles performed the subsequent site investigation during multiple phases from 2008 through 2017. Giles advanced a total of 12 additional direct-push soil borings from July 2011 through March 2017, to investigate the nature and extent of soil and groundwater contamination. Nine shallow, small-diameter prepacked observation wells (MW-1 through MW-9) and one piezometer (PZ-1) were installed. Four observation wells (MW-1 through MW-4) were installed in the building's interior. A total of eight sub-slab vapor sampling points (VP-1 through VP-8) were installed during the course of the site investigation, including five within the Smoke-Out space, and three in the south adjacent Badger Scale space. Soil, sub-slab vapor, and groundwater samples were collected and analyzed for volatile organic compounds (VOC). Giles also collected groundwater samples from the four potable wells that serve the occupied buildings in the business park. The site investigation results indicated that soil and groundwater had been impacted above applicable standards by CVOCs, and that indoor air may be impacted based on sub-slab vapor results that exceeded small commercial vapor risk screening levels (VRSLs). The site investigation indicated that shallow soils were primarily fine to medium-grained sand with varying amounts of silty to depths of approximately 10-12 feet below grade. The sand is underlain by clay, silt, and silty clay to the terminus of the deepest boring at approximately 30 feet below grade. The site investigation results were documented in Giles' *Site Investigation Report* dated August 31, 2017.

Specifically, the soil to groundwater pathway residual contaminant level for soil was exceeded for one or more CVOCs including cis-1,2-dichloroethene (cis-DCE), methylene chloride, tetrachloroethene (aka perchloroethylene, perc, or PCE), and trichloroethene (TCE) at interior borings HP-1, HP-2, MW-2, MW-3, and MW-4, and exterior boring GP-1. The highest concentration detected in soil was 2,500 micrograms per kilogram ($\mu\text{g}/\text{kg}$) at 2 to 3 feet below grade at interior soil boring MW-3, located near the DCM.

Groundwater at the site is shallow, typically ranging from approximately 2.5 to 4.5 feet below grade, but seasonally may be as shallow as 1.5 feet below grade in some parts of the site. Shallow groundwater flow is generally to the east.

During the groundwater sampling event conducted in March 2017, the CVOCs cis-DCE, PCE, TCE, and vinyl chloride were detected at concentrations above their respective WAC, Chapter NR 140 Enforcement Standard (ES) at one or more interior observation wells, including MW-1, MW-3, and MW-4.

The sub-slab vapor sampling results indicated that PCE and/or TCE were detected at concentrations above their respective small commercial VRSLs at sub-slab vapor monitoring points VP-1, VP-4, VP-5, and VP-8 located within the Smoke-Out space, and at VP-2 and VP-7 located within the south adjoining Badger Scale space.

Based on review of the initial Site Investigation Report, the WDNR requested an additional round of sub-slab vapor sampling in conjunction with indoor ambient air sampling. The field work was performed on October 25, 2017. Two 8-hour indoor ambient air samples were collected. One was from the office area of Smoke-Out (IA-1) and the other from the office area of Badger Scale to the south. The results were documented in Giles' *Site Investigation Report Addendum*, dated December 6, 2017.

The results indicated that PCE concentrations in indoor ambient air sample IA-1 was above the WDNR small commercial vapor action limit (VAL). The sub-slab vapor sampling results confirmed that PCE and/or TCE concentrations remained above their respective small commercial VRSLs at sub-slab vapor monitoring points VP-1, VP-4, VP-5, and VP-8 located within the Smoke-Out space, and at VP-2 and VP-7 located within the south adjoining Badger Scale space.

Following initial review of submitted remedial action consultant bids based on the Giles SI data, and the responsible parties selecting Terracon's proposal, the WDNR project manager, Tauren Beggs, in an August 29, 2018, email, requested that several additional site investigation tasks be completed prior to implementation of remedial actions. The requested additional investigation included advancing two soil borings and constructing two monitoring wells to help define the extent of contaminated soil and groundwater. Because the last groundwater sampling event was conducted in October 2017, Terracon also proposed to perform groundwater monitoring from the entire monitoring well network as part of the additional investigation prior to preparing a detailed Remedial Action Plan (RAP). Details of the work plan for the additional site investigation is presented in the following sections.

2.0 WORK PLAN FOR SUPPLEMENTAL SITE INVESTIGATION

2.1 Pre-Investigation Tasks

Terracon will complete the following preparatory tasks prior to the supplemental site investigation fieldwork:

- n Prepare and submit this SSIWP
- n Prepare a site-specific Health and Safety Plan (HASP) to be followed during all field activities. Terracon is committed to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free®* safety goals, Terracon will develop a safety plan in general accordance with 29 CFR 1910.120 to be used by

our personnel during field services. Prior to commencement of onsite activities, Terracon will hold a brief health and safety meeting to review health and safety needs for this specific project. At this time, we anticipate performing fieldwork in a USEPA Level D work uniform consisting of hard hats, safety glasses, protective gloves, and steel toed boots. It may become necessary to upgrade this level of protection, at additional cost, during sampling activities in the event that we encounter petroleum or chemical constituents in soils or groundwater that present an increased risk for personal exposure.

- n Obtain written access permission from the property owner prior to work being performed at the site.
- n In an effort to locate utilities in the work area, Terracon will review site plans provided to us and will contact Diggers Hotline. To the extent practicable, the locations and depths of the various utilities will be identified to avoid damage to such utilities. In addition, available site personnel will be interviewed to help determine utility locations.

2.2 Soil Borings and Monitoring Well Construction

Following the WDNR approval of the work plan, Terracon will proceed with the additional site investigation activities as described in the work plan. In general, as requested by the WDNR, the supplemental investigation will include advancing two soil borings and constructing two monitoring wells to help define the extent of unsaturated contaminated soil and groundwater. The proposed soil boring and monitoring well locations are approximately shown on the attached Exhibit 1.

2.2.1 Soil Borings

The soil borings will include an interior soil boring to the north of observation well MW-2 and an exterior soil boring to the northeast of MW-2. The exterior soil boring will be advanced at the location of the proposed monitoring well nest described below. Because groundwater is very shallow (1 to 4 feet bg), the soil borings will be advanced to a maximum depth of 4 feet below grade. The borings will be advanced using a drill rig capable of collecting soil samples using direct-push methods. Soil samples will be collected continuously to the terminus of each boring. Soil characteristics (e.g. texture, color) and any unusual odors or discoloration will be noted on each soil boring log. A photoionization detector (PID) will be used to field screen soil samples for VOC vapors. One unsaturated soil sample will be collected from each boring and submitted to a Wisconsin-certified laboratory for analysis of VOCs by EPA Method 8260B. Samples will be collected in bottles provided by the laboratory, placed on ice in a cooler, and transported to the laboratory under Chain-of-Custody protocols.

2.2.2 Monitoring Well Construction

The requested additional monitoring wells included an observation well to the northeast of observation well MW-2, and a piezometer nested with either the new observation well or existing observation well MW-7. Terracon proposed to construct the two monitoring wells as a nest to the northeast of observation well MW-2 (see Exhibit 1).

The borings for the monitoring wells will be advanced using approximately 8½-inch outside diameter (OD) by 4¼-inch inside diameter (ID) hollow stem augers (HSA). Soil samples will be collected continuously and logged to the terminal depth of the piezometer boring using a direct-push 4- to 5-foot long, 2-inch diameter core barrel sampler or standard split spoon. The piezometer boring will be advanced to approximately 26.5 feet bg to correspond to the depth of the existing piezometer (PZ-1) constructed by the previous consultant. Discrete samples will be collected at 1-foot intervals over the upper 4 feet of the boring, at 2-foot intervals from 4 feet bg to the boring terminus, and at changes in stratigraphy in the boring. Each discrete sample will be screened using a PID and equivalent headspace methodology. The upper 4 feet of the piezometer boring will be considered as the requested soil boring northeast of observation well MW-2. As such, one discrete unsaturated soil sample will be collected from this boring for analysis of VOCs by EPA Method 8260B.

Upon completion of the soil boring, the piezometer (PZ-2) will be constructed in conformance with Chapter NR 141, WAC. The piezometer will be constructed with a 5-foot long, 0.010-slot, 2-inch diameter, Schedule 40 polyvinyl chloride (PVC) screen set at approximately 26 feet bg. The riser pipe will be constructed of 2-inch diameter, thread coupled, Schedule 40 PVC. The piezometer will be completed with a flush-mount protective cover set in concrete and a locking well cap.

The observation well, nested with the piezometer, will be blind-drilled to the terminal depth of the boring. Due to the very shallow groundwater table and to be comparable to the existing observation wells, Terracon proposes to set the observation well screen at approximately 6.5 feet bg. Because this will require alternative construction rather than typical construction described in Chapter NR 141, WAC, a well construction variance will be required (see below). The observation well will be constructed with 5-foot-long, 0.006-slot, 2-inch diameter, Schedule 40 PVC screen set at approximately 6.5 feet bg. Due to the native fine to silty sand adjacent to the screen, a fine sand filter pack will be required. The observation well (MW-10) will be completed with a flush-mount protective cover set in concrete and a locking well cap.

The top of casing elevations at each new monitoring well will be surveyed to the nearest 0.01 foot and the wells will be developed per NR 141, WAC, at least 12 hours following construction. Terracon will collect the initial groundwater elevation data and groundwater samples from the new monitoring wells during the baseline groundwater sampling event in December 2018.

2.3 Monitoring Well Construction Variance

As mentioned above, due to the shallow groundwater and to be comparable to the existing observation wells, alternative construction of the observation well will be required. As such, Terracon is requesting approval for the proposed variance. Terracon proposes to set a 5-foot-long screen at approximately 6.5 feet bg, reduce the filter pack above the screen top to 0.25 feet, and provide 0.75 feet of bentonite seal above the filter pack. The details of the construction variance are provided on the attached Exhibit 2.

2.4 Groundwater Monitoring

Because the monitoring well network has not been sampled since October 2017, Terracon proposed to collect groundwater samples from the entire monitoring well network following construction of the two new monitoring wells as the basis for the development of the final treatment injection remedial option. The groundwater sampling event will also be considered the baseline event to which the post-injection groundwater monitoring results will be compared.

Terracon will conduct the baseline groundwater sampling event to confirm shallow groundwater flow direction and verify groundwater quality. Terracon will measure static groundwater levels prior to purging and collect groundwater samples from each of the 12 proposed and existing groundwater monitoring wells in the monitoring well network, which will include 10 water table observation wells and 2 piezometers. Samples will be collected via low-flow methods to the extent possible considering the small diameter of existing groundwater monitoring wells. A peristaltic pump with dedicated polyethylene drop tubing for each well will be used in conjunction with a multiparameter water quality meter with a flow-through cell for low-flow sampling; however, groundwater levels will not be monitored during the purging process on the existing monitoring wells due to the small well diameter. In general, the wells will be sampled after field parameters (pH, temperature, specific conductance, dissolved oxygen [DO], and oxidation-reduction potential [ORP]) stabilize (when 3 consecutive readings taken a minimum of 2 minutes apart were within 10%) or after purging for a maximum of 60 minutes. The groundwater samples will be submitted under Chain-of-Custody protocols for analysis of VOCs by USEPA Method 8260B. Two duplicate samples will also be analyzed for VOCs. Samples from observation wells MW-1, MW-2, MW-3, MW-4, and MW-7 will also be analyzed for methane/ethane/ethene (MEE), total organic carbon (TOC), and dissolved iron.

During the mobilization for the baseline groundwater sampling, Terracon will also inspect the building and assess the overall condition of the building and sub-slab for the design of the SSSS system, including cracks, sumps, and drains, as well as access for interior injection borings.

2.5 Reporting

The soil analytical results from the requested soil borings and the baseline groundwater analytical results will be submitted to the WDNR project manager via email and discussed prior to developing the remedial action plan (RAP). If the results indicate unanticipated conditions, additional site investigation activities may be requested or required prior to developing the RAP. Once the WDNR indicates that the site investigation is complete, the results of the additional site investigation and baseline groundwater sampling, in conjunction with previous investigation results, will be used to develop and evaluate remedial action options (RAO) in conformance with WAC, Chapter NR 722. The selected alternative will be presented in the RAOR/RAP, which will also provide full documentation of the supplemental site investigation.

2.6 Investigation Derived Waste

Soil cuttings from the monitoring well construction will be placed in labeled, 55-gallon drums for temporary storage onsite until after laboratory results are received. Contaminated well development and purge water generated during the site investigation activities will be placed in labeled, 55-gallon drums for temporary storage onsite. Drums will periodically be removed from the site and properly disposed. It has not been determined whether the drums will require disposal as hazardous materials.

3.0 ANTICIPATED SCHEDULE

Terracon proposes to initiate these remedial actions as soon as possible upon client and WDNR authorization. Specifically, the proposed schedule is as follows:

TASK	ANTICIPATED SCHEDULE	ANTICIPATED COMPLETION DATE*
Access Permission; Preparation and Submittal of the Additional Site Investigation and Baseline Groundwater Monitoring Work Plan	Prior to field work	December 2018
WDNR Approval of Work Plan/Authorization to Proceed	Upon receipt	December 2018
Soil Borings and Monitoring Well Construction	December 11, 2018	December 11, 2018
Baseline Groundwater Monitoring	Immediately following monitoring well development	December 2018
Continued on next page		

TASK	ANTICIPATED SCHEDULE	ANTICIPATED COMPLETION DATE*
Preparation of the Remedial Action Options Report (RAOR)/Remedial Action Plan (RAP)	30 days after receipt of groundwater results	February 2019

*Anticipated completion dates are contingent upon WDNR and client review time, and the schedules of Terracon, laboratory, and subcontractors.

4.0 GENERAL COMMENTS

The analysis and opinions expressed in this SSIWP are based upon data obtained from the previous assessments and laboratory chemical analyses at the indicated locations or from other information discussed in this SSIWP. This proposal does not reflect variations in subsurface stratigraphy, hydrogeology, and contaminant distribution that may occur across the site. Actual subsurface conditions may vary and may not become evident without further assessment.

This SSIWP has been prepared in accordance with generally accepted environmental engineering practices. No warranties, express or implied are intended or made.

If you have questions or require additional information, please do not hesitate to contact our office.

Sincerely,



Scott A. Hodgson, P.G.
 Senior Project Manager

Timothy P. Welch, P.G.
 Manager, Environmental Services

Attachments – Exhibit 1: Proposed Soil Boring and Monitoring Well Locations
 Exhibit 2: Well Construction Variance-Observation Well

SAH/TPW:sah/N:\Projects\2018\58187103\PROJECT DOCUMENTS (Reports-Letters-Drafts to Clients)\58187103.Add SI Work Plan.docx

Copy to: Mark Woppert, Smoke-Out Cleaners
 Chris Dockry, Agent for Smoke-Out Cleaners
 Don Gallo, Axley Brynelson LLP
 File

5.0 CERTIFICATIONS

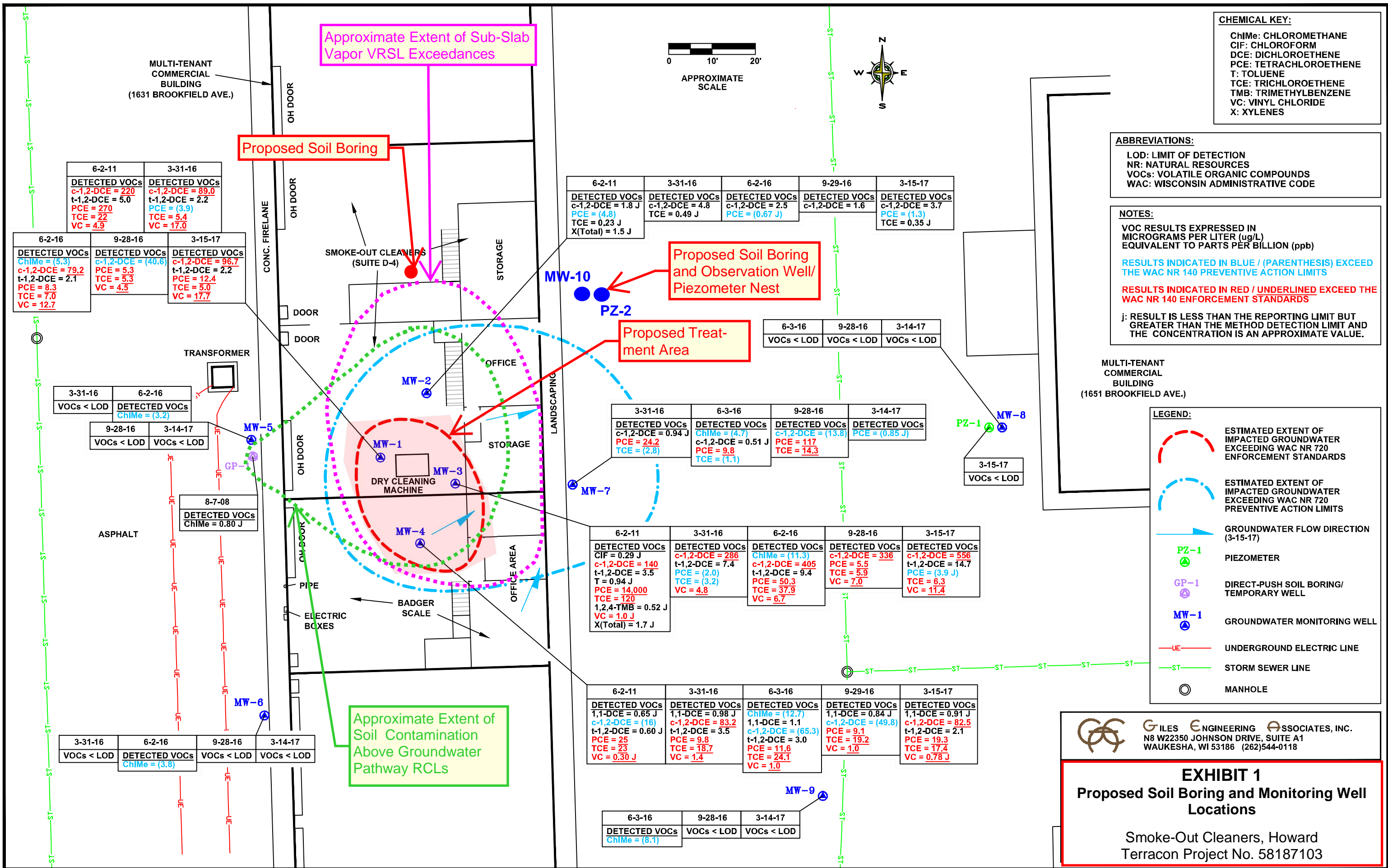
I, Scott A. Hodgson, P.G., hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. [GHSS 2](#), Wis. Adm. Code, or licensed in accordance with the requirements of ch. [GHSS 3](#), Wis. Adm. Code, and that, to the best of my knowledge, all of the 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.

PG-1229

Date 12/4/18

Signature and P.G. number

Project Geologist



CHEMICAL KEY:

- ChMe: CHLOROMETHANE
- CIF: CHLOROFORM
- DCE: DICHLOROETHENE
- PCE: TETRACHLOROETHENE
- T: TOLUENE
- TCE: TRICHLOROETHENE
- TMB: TRIMETHYLBENZENE
- VC: VINYL CHLORIDE
- X: XYLENES

ABBREVIATIONS:

- LOD: LIMIT OF DETECTION
- NR: NATURAL RESOURCES
- VOCs: VOLATILE ORGANIC COMPOUNDS
- WAC: WISCONSIN ADMINISTRATIVE CODE

NOTES:

VOC RESULTS EXPRESSED IN MICROGRAMS PER LITER (ug/L) EQUIVALENT TO PARTS PER BILLION (ppb)

RESULTS INDICATED IN BLUE / (PARENTHESIS) EXCEED THE WAC NR 140 PREVENTIVE ACTION LIMITS

RESULTS INDICATED IN RED / UNDERLINED EXCEED THE WAC NR 140 ENFORCEMENT STANDARDS

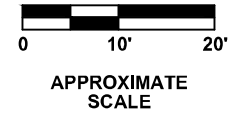
j: RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN THE METHOD DETECTION LIMIT AND THE CONCENTRATION IS AN APPROXIMATE VALUE.

LEGEND:

- ESTIMATED EXTENT OF IMPACTED GROUNDWATER EXCEEDING WAC NR 720 ENFORCEMENT STANDARDS
- ESTIMATED EXTENT OF IMPACTED GROUNDWATER EXCEEDING WAC NR 720 PREVENTIVE ACTION LIMITS
- GROUNDWATER FLOW DIRECTION (3-15-17)
- PIEZOMETER
- DIRECT-PUSH SOIL BORING/ TEMPORARY WELL
- GROUNDWATER MONITORING WELL
- UNDERGROUND ELECTRIC LINE
- STORM SEWER LINE
- MANHOLE

GILES ENGINEERING ASSOCIATES, INC.
 N8 W22350 JOHNSON DRIVE, SUITE A1
 WAUKESHA, WI 53186 (262)544-0118

EXHIBIT 1
Proposed Soil Boring and Monitoring Well Locations
 Smoke-Out Cleaners, Howard
 Terracon Project No. 58187103



Approximate Extent of Sub-Slab Vapor VRSL Exceedances

Proposed Soil Boring

Proposed Soil Boring and Observation Well/
Piezometer Nest

Proposed Treatment Area

Approximate Extent of Soil Contamination Above Groundwater Pathway RCLs

6-2-11	3-31-16
DETECTED VOCs c-1,2-DCE = 220 t-1,2-DCE = 5.0 PCE = 270 TCE = 22 VC = 4.9	DETECTED VOCs c-1,2-DCE = 89.0 t-1,2-DCE = 2.2 PCE = (3.9) TCE = 5.4 VC = 17.0

6-2-16	9-28-16	3-15-17
DETECTED VOCs ChMe = (5.3) c-1,2-DCE = 79.2 t-1,2-DCE = 2.1 PCE = 8.3 TCE = 7.0 VC = 12.7	DETECTED VOCs c-1,2-DCE = (40.6) PCE = 5.3 TCE = 5.3 VC = 4.5	DETECTED VOCs c-1,2-DCE = 96.7 t-1,2-DCE = 2.2 PCE = 12.4 TCE = 5.0 VC = 17.7

3-31-16	6-2-16
VOCs < LOD	DETECTED VOCs ChMe = (3.2)

9-28-16	3-14-17
VOCs < LOD	VOCs < LOD

8-7-08
DETECTED VOCs ChMe = 0.80 J

3-31-16	6-2-16	9-28-16	3-14-17
VOCs < LOD	DETECTED VOCs ChMe = (3.8)	VOCs < LOD	VOCs < LOD

6-2-11	3-31-16	6-2-16	9-29-16	3-15-17
DETECTED VOCs c-1,2-DCE = 1.8 J PCE = (4.8) TCE = 0.23 J X(Total) = 1.5 J	DETECTED VOCs c-1,2-DCE = 4.8 TCE = 0.49 J	DETECTED VOCs c-1,2-DCE = 2.5 PCE = (0.67 J)	DETECTED VOCs c-1,2-DCE = 1.6	DETECTED VOCs c-1,2-DCE = 3.7 PCE = (1.3) TCE = 0.35 J

6-3-16	9-28-16	3-14-17
VOCs < LOD	VOCs < LOD	VOCs < LOD

3-31-16	6-3-16	9-28-16	3-14-17
DETECTED VOCs c-1,2-DCE = 0.94 J PCE = 24.2 TCE = (2.8)	DETECTED VOCs ChMe = (4.7) c-1,2-DCE = 0.51 J PCE = 9.8 TCE = (1.1)	DETECTED VOCs c-1,2-DCE = (13.8) PCE = 117 TCE = 14.3	DETECTED VOCs PCE = (0.85 J)

6-2-11	3-31-16	6-2-16	9-28-16	3-15-17
DETECTED VOCs CIF = 0.29 J c-1,2-DCE = 140 t-1,2-DCE = 3.5 T = 0.94 J PCE = 14,000 TCE = 120 1,2,4-TMB = 0.52 J VC = 1.0 J X(Total) = 1.7 J	DETECTED VOCs c-1,2-DCE = 286 t-1,2-DCE = 7.4 PCE = (2.0) TCE = (3.2) VC = 4.8	DETECTED VOCs ChMe = (11.3) c-1,2-DCE = 405 t-1,2-DCE = 9.4 PCE = 50.3 TCE = 37.9 VC = 6.7	DETECTED VOCs c-1,2-DCE = 336 PCE = 5.5 TCE = 5.9 VC = 7.0	DETECTED VOCs c-1,2-DCE = 556 t-1,2-DCE = 14.7 PCE = (3.9 J) TCE = 6.3 VC = 11.4

6-2-11	3-31-16	6-3-16	9-29-16	3-15-17
DETECTED VOCs 1,1-DCE = 0.65 J c-1,2-DCE = (16) t-1,2-DCE = 0.60 J PCE = 25 TCE = 23 VC = 0.30 J	DETECTED VOCs 1,1-DCE = 0.98 J c-1,2-DCE = 83.2 t-1,2-DCE = 3.5 PCE = 9.8 TCE = 18.7 VC = 1.4	DETECTED VOCs ChMe = (12.7) 1,1-DCE = 1.1 c-1,2-DCE = (65.3) t-1,2-DCE = 3.0 PCE = 11.6 TCE = 24.1 VC = 1.0	DETECTED VOCs 1,1-DCE = 0.84 J c-1,2-DCE = (49.8) PCE = 9.1 TCE = 19.2 VC = 1.0	DETECTED VOCs 1,1-DCE = 0.91 J c-1,2-DCE = 82.5 t-1,2-DCE = 2.1 PCE = 19.3 TCE = 17.4 VC = 0.78 J

6-3-16	9-28-16	3-14-17
DETECTED VOCs ChMe = (8.1)	VOCs < LOD	VOCs < LOD

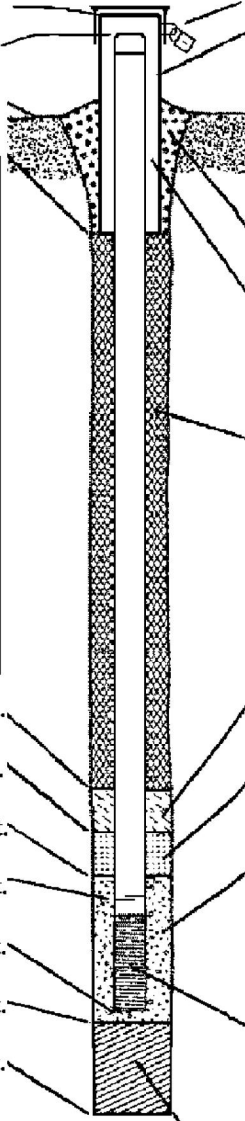
EXHIBIT 2: WELL CONSTRUCTION VARIANCE-OBSERVATION WELL

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name Smoke-Out Cleaners		Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.		Well Name Proposed Variance-OW	
Facility License, Permit or Monitoring No.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/>		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		Lat. _____ " Long. _____ " or		Date Well Installed _____ / _____ / _____	
Type of Well Well Code 11 / MW		Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____, T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm _____	
Distance from Waste/Source _____ ft.		Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known		Gov. Lot Number _____	

<p>A. Protective pipe, top elevation _____ ft. MSL</p> <p>B. Well casing, top elevation _____ -0.25 ft. MSL</p> <p>C. Land surface elevation _____ ft. MSL</p> <p>D. Surface seal, bottom _____ ft. MSL or -0.5 ft.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 5 0 Hollow Stem Auger <input checked="" type="checkbox"/> 4 1 Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1 Drilling Mud <input type="checkbox"/> 0 3 None <input checked="" type="checkbox"/> 9 9</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Describe _____</p> <p>17. Source of water (attach analysis, if required): _____</p> </div> <p>E. Bentonite seal, top _____ ft. MSL or -0.5 ft.</p> <p>F. Fine sand, top _____ ft. MSL or -1.25 ft.</p> <p>G. Filter pack, top _____ ft. MSL or -1.25 ft.</p> <p>H. Screen joint, top _____ ft. MSL or -1.5 ft.</p> <p>I. Well bottom _____ ft. MSL or -6.5 ft.</p> <p>J. Filter pack, bottom _____ ft. MSL or -7.0 ft.</p> <p>K. Borehole, bottom _____ ft. MSL or -7.0 ft.</p> <p>L. Borehole, diameter -4.0 in.</p> <p>M. O.D. well casing -2.34 in.</p> <p>N. I.D. well casing -2.00 in.</p>	 <p>1. Cap and lock? friction cap over PVC riser <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Protective cover pipe: a. Inside diameter: _____ in. b. Length: _____ ft. c. Material: Steel <input checked="" type="checkbox"/> 0 4 Other <input type="checkbox"/> d. Additional protection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: inside fenced area with locked gate</p> <p>3. Surface seal: Bentonite <input checked="" type="checkbox"/> 3 0 Concrete <input type="checkbox"/> 0 1 Other <input type="checkbox"/></p> <p>4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 3 0 Other <input type="checkbox"/></p> <p>5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 3 3 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 3 5 c. _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 3 1 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 5 0 e. _____ Ft³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 0 1 Tremie pumped <input type="checkbox"/> 0 2 Gravity <input checked="" type="checkbox"/> 0 8</p> <p>6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 3 3 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 3 2 c. _____ Other <input type="checkbox"/></p> <p>7. Fine sand material: Manufacturer, product name & mesh size a. _____ b. Volume added _____ ft³</p> <p>8. Filter pack material: Manufacturer, product name & mesh size a. <u>fine sand</u> b. Volume added _____ ft³</p> <p>9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 2 3 Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4 Other <input type="checkbox"/></p> <p>10. Screen material: <u>PVC</u> a. Screen type: Factory cut <input checked="" type="checkbox"/> 1 1 Continuous slot <input type="checkbox"/> 0 1 Other <input type="checkbox"/> b. Manufacturer _____ c. Slot size: 0.006 in. d. Slotted length: -5 ft.</p> <p>11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 1 4 Other <input type="checkbox"/></p>
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I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature _____ Firm _____

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.