

- vii. Explain the basis for the initial time and initial displacement. **The report has been updated to reflect this comment. See Section 8.1.2.**
- viii. Explain the inconsistent use of the “skin effect” in the model. **The report has been updated to reflect this comment. See Section 8.1.2.**
- ix. Provide the field notes for the testing. The report was updated to address the **WDNR’s comments.**
- i. Groundwater Quality - Additional groundwater quality assessment may be needed based on the re-evaluation of groundwater flow. Most notably, the TCE issue at MW-5 will likely require additional groundwater investigation. EPA expressed concern that the current groundwater monitoring network and sampling may not adequately address the potential for migration of PCBs to groundwater. Discuss additional groundwater PCB concerns with EPA. Perform additional sampling and update the conceptual model to include the transport mechanism for contaminants to migrate into native soil. **Additional PCB groundwater sampling was performed in December 2022. PCBs were not detected above limits of detection, similar to the December 2021 and April 2022 sampling events. PCBs tend to be relatively immobile based on the chemical and physical properties. The detection of TCE at monitoring well MW-5 was addressed in a previous comment.**
- j. Needed Clarification and Corrections to the Report - Portions of the Report contain information that needs correction and/or additional support. Items that were not mentioned above include, but are not limited to, the following:
 - i. There are irregularities with the sample times on the chain of custody documentation for the July 2021 samples included on pages 455 to 457 of the Report. Please confirm the sample times are correct and explain how a batch of many samples was collected at two-minute intervals followed by additional batches hours later. Provide field notes to support the accuracy of the July 2021 chain of custody documentation. **Terracon collects two aliquots of soil from each sample interval, and places each into separate labeled and sealed plastic bags. One sample aliquot is immediately placed in a cooler on ice. The second sample aliquot is field screened with PID. Due to the general fast pace of direct-push soil boring techniques, logging and PID screening of soil sample bags are prioritized, and the information is used later in the day to select samples for laboratory analysis. Bagged samples are then selected, jarred in laboratory containers, labeled, and placed back on ice. This process also reduces waste; if every soil sample were placed into laboratory containers, samples (and their associated containers) not selected for analysis would require subsequent disposal. During the collection of soil samples in July 2021, the field technician inadvertently recorded the times samples were transferred from the collection bags into the laboratory containers, instead of the time the sample was actually collected from the boring. This resulted in the short sampling intervals noted by the WDNR.**
 - ii. Page 8 states, “Total PCB concentrations exceeded the soil-to-groundwater pathway RCL at several locations across the site.” PCBs concentrations exceed the RCL at 43 locations. Most readers would not understand “several” to mean 43 and would likely misunderstand this description of the findings. This and any similar language should be corrected. **The report has been updated to reflect this comment.**

(Please Print Clearly)

Company Name: _____

Branch/Location: _____

Project Contact: _____

Phone: *See page 643*

Project Number: _____

Project Name: _____

Project State: _____

Sampled By (Print): _____

Sampled By (Sign): _____

PO #: _____

Regulatory Program: _____



UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

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CHAIN OF CUSTODY

Preservation Codes

A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH

H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)PRESERVATION
(CODE)*

Y/N	Pick Letter	Analyses Requested	Matrix
N	A	PAHs + PCBs	Water
N	A	metals	Water
N	F	VOCs - Soil	Soil
N	A	DRO	DRO

Quote #: _____

Mail To Contact: _____

Mail To Company: _____

Mail To Address: _____

Invoice To Contact: _____

Invoice To Company: _____

Invoice To Address: _____

Invoice To Phone: _____

CLIENT COMMENTS

LAB COMMENTS (Lab Use Only)

Profile #

Data Package Options

(billable)

☐ EPA Level III☐ EPA Level IV

MS/MSD

☐ On your sample (billable)☐ NOT needed on your sample

Matrix Codes

A = Air W = Water
B = Biota DW = Drinking Water
C = Charcoal GW = Ground Water
O = Oil SW = Surface Water
S = Soil WW = Waste Water
SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
014	P-5 (2)	7-15-21	1708	S
015	P-5 (5)	7-15-21	1710	
016	P-1 (2)	7-15-21	1712	
017	P-1 (5)	7-15-21	1714	
018	P-16 (2)	7-15-21	1716	
019	P-16 (8)	7-15-21	1718	
020	P-13 (2)	7-16-21	1450	
021	P-13 (5)	7-16-21	1452	
022	P-14 (2)	7-16-21	1515	
023	P-14 (5)	7-16-21	1500	
024	P-8 (4)	7-16-21	1600	
025	P-8 (7)	7-16-21	1602	
026	P-7 (3)	7-16-21	1604	

Rush Turnaround Time Requested - Prelims

(Rush TAT subject to approval/surcharge)

Date Needed: 5 DAY

Transmit Prelim Rush Results by (complete what you want):

Email #1: _____

Email #2: _____

Telephone: _____

Fax: _____

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: _____ Date/Time: 7-16-21 1730

Relinquished By: _____ Date/Time: 7-16-21 900

Relinquished By: _____ Date/Time: _____

Relinquished By: _____ Date/Time: _____

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: 7-16-21 1900

Received By: _____ Date/Time: _____

Received By: _____ Date/Time: _____

Received By: _____ Date/Time: _____

Received By: _____ Date/Time: _____

PACE Project No.

40230183

Receipt Temp = 3 °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / No Impact

Version 6.0 08/14/06

ORIGINAL

(Please Print Clearly)

Company Name:	
Branch/Location:	
Project Contact:	
Phone:	See
Project Number:	
Project Name:	lot 3
Project State:	
Sampled By (Print):	
Sampled By (Sign):	
PO #:	
Regulatory Program:	



UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

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40230183

CHAIN OF CUSTODY

Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)

PRESERVATION
(CODE)*

Y/N	Pick Letter	Analyses Requested
N	A	PAHs + PCBs
N	A	metals
N	F	nutrients
N	A	VOCs - soil
		DRO

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	See lot 3
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	
CLIENT COMMENTS	
LAB COMMENTS (Lab Use Only)	
Profile #	

Data Package Options (billable) ☐ EPA Level III ☐ EPA Level IV	MS/MSD ☐ On your sample (billable) ☐ NOT needed on your sample	Matrix Codes A = Air W = Water B = Biota DW = Drinking Water C = Charcoal GW = Ground Water O = Oil SW = Surface Water S = Soil WW = Waste Water SI = Sludge WP = Wipe
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PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
027	P-7 (9)	2-16-21	1606	S
028	P-4 (1)		1100	
029	P-3 (1)		1104	
030	P-3 (7)		1106	
031	P-17 (2)		1108	
032	P-17 (7)		1110	
033	P-4 (7)		1102	V
034	P-17 LRC			LRC
035	P-17 LRC			LRC
0034036	P-2 (2)		1454	
0035037	P-2 (6)		1456	

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed: 5 PM 4/4

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:
Relinquished By:	Date/Time:
Relinquished By:	Date/Time:
Relinquished By:	Date/Time:
Relinquished By:	Date/Time:

Received By:	Date/Time:
Received By:	Date/Time:
Received By:	Date/Time:
Received By:	Date/Time:
Received By:	Date/Time:

PACE Project No.

40230183

Receipt Temp = 3 °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Note: The use of piezometers may not be appropriate for all situations, including at the source area, or where a documented upward gradient exists downgradient of a source area.

(g) The presence and concentration of vapors sub-slab, when investigation of soil, soil gas or groundwater indicates that vapors may migrate to the foundation of an occupied building, taking into account the biodegradability of vapors, preferential pathways of vapor movement, or other physical or chemical factors affecting vapor movement into occupied buildings.

(h) The presence and concentration of vapors in indoor air, when it is necessary to determine the impact on an occupied structure considering applicable attenuation factors, land use, building size and other site-specific factors that affect exposure to vapor.

Note: Indoor air samples are expected to be collected and analyzed in most cases where vapor migration into an occupied residential setting is likely. A residential setting may include single or multiple family housing, and educational, childcare, and elder care facilities. Sampling and analysis is conducted to determine levels of the contaminants of concern. Indoor air sampling is not recommended in locations where the contaminant of concern is currently used in commercial or industrial operations.

(6) Responsible parties shall manage investigative wastes in a manner that will not pose a threat to public health, safety, or welfare or the environment, and which is consistent with state and federal regulations.

(7) Responsible parties shall label all drums containing investigative wastes, including drill cuttings and purge water, with the Bureau for Remediation and Redevelopment Tracking System activity number for the site, the site name, boring or well number, initial date of collection, and the contents.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; am. (3) (b), Register, April, 1995, No. 472, eff. 5-1-95; emerg. cr. (3) (c), am. (5) (a), eff. 5-18-00; cr. (3) (c), am. (5) (a), Register, January, 2001, No. 541, eff. 2-1-01; CR 12-023: cr. (2g), (2r), am. (3) (c), cr. (3) (d), (5) (e) to (h), (7) Register October No. 694, eff. 11-1-13.

NR 716.13 Sampling and analysis requirements.

(1) Responsible parties shall use laboratory analyses of environmental media samples which are collected, handled and analyzed in compliance with subs. (2) to (17) to confirm the nature and extent and evaluate the impacts of contamination, if a field investigation is required under s. NR 716.11 (1). Analytical methods used shall be suitable for the matrix, type of analyte, expected level of analyte, regulatory limit, and potential interferences in the samples to be tested.

(2) All chemical and physical analyses for which accreditation is available under ch. NR 149 shall be conducted by a laboratory accredited under ch. NR 149.

(3) Responsible parties may use non-laboratory methods of sample analysis, including field screening with a photoionization detector or flame ionization detector, analysis with a field gas chromatograph, geophysical or downhole probe surveying, non-certified mobile laboratory analysis, immunoassays and other appropriate methods, to supplement the information derived from laboratory analysis of samples. If non-laboratory methods are used at a location from which a laboratory sample is collected, responsible parties shall use separate samples for the non-laboratory and the laboratory analyses, unless the target compound is not subject to loss or alteration through sample handling.

(4) All soil samples obtained during the field investigation for the purpose of defining the degree and extent of the contamination shall be discrete, not composite, samples, unless the department explicitly approves in advance composite sampling for a specific site situation.

(5) Maximum holding times for soils shall be in accordance with the sampling method, sample storage container, and analytical methods used.

(6) Responsible parties shall provide for the following quality control and quality assurance procedures, at a minimum, when collecting samples for laboratory analysis for a field investigation conducted under this chapter:

(a) Chain of custody shall be documented from the time of sample collection to the receipt of the sample by the analytical laboratory. Chain of custody documentation shall be in compliance

with ch. NR 149, and shall be submitted to the department with the sample results.

(b) For soil samples, one temperature blank for every shipping container of samples that require cooling for preservation, unless samples are received by the laboratory on ice, unless another temperature is required by the analytical method used.

(c) For water samples:

1. One replicate sample for every 10 or less samples.

2. One equipment blank for every 10 or less samples, unless dedicated sampling equipment is used to prevent cross-contamination.

3. One trip blank for each shipping container that contained volatile samples.

4. One temperature blank for every shipping container of samples that require cooling for preservation, unless samples are shipped on ice.

(d) Decontamination of all sampling instruments between each sampling event, unless dedicated or disposable sampling devices are used in a manner that prevents cross contamination or other unintended contamination of samples.

(7) Responsible parties shall ensure that the following items are documented during the field investigation and are made available to the department upon request:

(a) Procedures for sampling and all other routine activities associated with the site investigation.

(b) A log of all routine and non-routine maintenance and calibrations performed on all instruments used during the field investigation.

(c) Field notes describing in detail the sequence of activities that took place during the field investigation.

(8) For soil and water samples, the reporting limit for volatile organic compound analysis and petroleum volatile organic compound analysis shall be the method detection limit for the analytical method used. If the results are less than the method detection limit, the results shall be reported as less than the method detection limit, rather than no detect. Qualifiers used for the data shall also be reported.

Note: Section NR 140.16 (2) (c) requires that the analytical method selected meet one of the following criteria: 1) has a limit of detection and limit of quantitation below the preventive action limit or 2) produces the lowest available limit of detection and limit of quantitation if the limit of detection and limit of quantitation are above the preventive action limit. In addition, s. NR 140.14 (3) specifies whether a standard has been attained or exceeded if a preventive action limit or enforcement standard is equal to or less than the limit of quantitation.

Note: Chapter NR 720 specifies whether a soil cleanup standard has been exceeded if the standard is at or below the limit of quantitation.

(9) Responsible parties shall ensure that drinking water samples are collected, handled and analyzed according to the procedures specified in ch. NR 809.

(10) Responsible parties shall ensure that groundwater samples are collected and handled according to the procedures specified in s. NR 140.16 (1), unless the department approves the use of an alternative procedure. The department may approve the use of an alternative procedure from one of the authoritative sources listed in ch. NR 149 Appendix III, or an alternate test procedure approved by the U.S. EPA, or, if the department determines that an appropriate procedure is not available, from another source. Alternative procedures may include the most recent published method, or an older published version deemed acceptable by the department on the basis of the objectives of the data collection. Responsible parties shall select an analytical method that is suitable for the matrix, type of analyte, expected level of analyte, regulatory limit, and potential interferences in the sample to be tested.

Note: Examples of suitable analytical methods for VOCs and PVOs in groundwater include EPA methods 5030B/8260B, EPA Method 8310 or 8270C-SIM or 8270D-SIM for PAHs, EPA method 3510C/8082A or 3520C/8082A for PCBs, EPA Method 3020A/6020A or 3010A/6020A for Pb, EPA Method 3020A/6020A for Cd, and EPA Method 1664 (Revision B) for oil and grease.

(11) Soil samples collected for analysis of volatile organic compounds for compliance with chs. NR 700 to 754 shall be pre-

served immediately after collection to minimize volatilization of contaminants from the sample to the greatest extent possible. Preservation techniques used shall be according to the analytical method to be used. Sampling techniques shall be used that minimize volatilization from the sample. Extraction techniques shall be according to the analytical method selected. Analytical methods used shall be suitable for the matrix, type of analyte, expected level of analyte, regulatory limit, and potential interferences in the samples to be tested.

Note: Suitable preservation, extraction and analytical methods include those found in method SW 5035A in "Test Methods for Evaluating Solid Waste (SW-846)," and in the "Modified GRO, Method for Determining Gasoline Range Organics" (GRO for screening purposes). Other techniques may be found in the List of Authoritative Sources, ch. NR 149 Appendix III.

(12) Responsible parties shall ensure that other samples taken for analysis are collected, handled and analyzed according to the procedures specified in "SW-846: Test Methods for Evaluating Solid Waste", "The Third Edition of SW 846, as amended by Final Updates I, II, IIA, IIB, III, IIIA, IIIB, and IV," published by the U.S. EPA, unless the department approves the use of an alternative procedure. The department may approve the use of an alternative procedure from one of the authoritative sources listed in ch. NR 149 Appendix III, an alternate test procedure approved by the U.S. EPA, or, if the department determines that an appropriate procedure is neither available from "SW-846: Test Methods for Evaluating Solid Waste" nor from one of the authoritative sources listed in ch. NR 149 Appendix III, from another source.

Note: Copies of "SW-846: Test Methods for Evaluating Solid Waste" are available for inspection at the offices of the department of natural resources, the secretary of state, and the revisor of statutes. Copies may be obtained from the Government Printing Office, Room 190, Federal Building, 517 East Wisconsin Avenue, Milwaukee, WI 53202 and may be accessed at the following web site: <http://www.epa.gov/epaoswer/hazwaste/test/main.htm>. Other suitable procedures may include revised SW-846 methods found at the EPA Office of Solid Waste Methods Web Site.

(13) Responsible parties shall collect samples and provide an analysis for the geochemical indicators and parameters, where natural attenuation is potentially a remedy or part of a remedy. These may include dissolved oxygen, nitrate, dissolved manganese, total and ferrous iron, sulfate and methane, alkalinity, oxidation reduction potential, pH, temperature, and conductivity.

(14) (a) Responsible parties shall inspect monitoring wells installed for field investigations conducted under this chapter at least annually to verify the integrity of the well labels, lock and seal, and to determine whether the wells are providing a conduit to the subsurface, and shall take action to repair or abandon the well if necessary in accordance with ch. NR 141.

(b) Flush mounted wells shall include a magnet placed in the void between the cover and the annular space seal. In cases where flush-mounted wells are not used, wells installed in areas potentially subject to damage from vehicle traffic shall include appropriate protective traffic posts next to the well.

Note: Traffic posts can vary in design. Normally, properly anchored concrete filled metal posts should be used to protect wells. The magnet may aid in locating wells for abandonment.

(15) Responsible parties shall measure and record to the nearest 0.01 foot the static water level elevation in each groundwater monitoring well prior to obtaining a groundwater sample from the well. The measurement point shall be the top of the well casing and shall be identified on the well itself if the top of the casing is not level.

Note: Section NR 141.065 (2) requires that the top of the well casing be referenced to the nearest benchmark for the national geodetic survey datum to an accuracy of 0.01 feet.

(16) Where site investigation data or other information indicate it is appropriate, or when directed to do so by the department, responsible parties shall make a good faith effort to sample public or private water supply wells as part of a regular monitoring program or to determine the extent of groundwater contamination, or both. Private and public water supply wells to be sampled shall include:

(a) Those wells that are known or suspected to be affected by the groundwater contamination.

(b) Other wells that the department determines have the potential to be affected by the groundwater contamination.

(17) If the responsible parties are unable to sample a public or private well because the property owner refuses access, the responsible parties shall notify the department within 30 days of the refusal, and shall document in writing the efforts undertaken to gain access when requested by the department.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; CR 12-023: r. and recr. Register October No. 694, eff. 11-1-13.

NR 716.14 Sample results notification requirements. (1) **SAMPLES FROM WATER SUPPLY WELLS.** Responsible parties shall report all water supply well sampling results to the department and to the well owner, and occupant as applicable, within 10 business days after receiving the sampling results. The report to the department shall include the Wisconsin unique well number for drinking water wells, a preliminary analysis of the cause and significance of any contaminant concentrations observed in the samples and an identification of any substances that attain or exceed ch. NR 140 preventive action limits, as well as any other substances observed in the samples for which there are no ch. NR 140 groundwater quality standards. The responsible party shall notify both the remediation and redevelopment project manager and the regional drinking and groundwater specialist or water supply engineer of all water supply well sample results.

Note: The appropriate remediation and redevelopment project manager can be determined for the site in question at <http://dnr.wi.gov/topic/Brownfields/documents/rtr/county.pdf>. The appropriate regional drinking and groundwater specialist or water supply engineer can be determined by viewing the staff listing at <http://dnr.wi.gov/topic/DrinkingWater/contact.html>.

Note: The department will provide information to well owners of the results of sampling in accordance with manual code 4822.1.

(2) **SAMPLES FROM OTHER MEDIA.** Responsible parties shall report all sampling results other than those for water supply wells, to the department and to the property owner, and occupants as appropriate, of the property from which the samples were collected, including the source property owner if the person conducting the investigation is not the property owner, within 10 business days of receiving the sample results.

(a) The report to the department shall include a preliminary analysis of the cause and significance of any contaminant concentrations observed in the sample, a list of names and addresses of those receiving a sampling notification, and the date of the sampling event and mailing.

(b) The written notification to an affected property owner, and occupant as appropriate, shall include information about how additional information may be obtained, in accordance with s. NR 714.05 (5). The department may waive the notification of occupants in limited situations, upon request.

(c) In addition, the notification to the property owners, and occupants as appropriate, shall include all the following information, in a letter or using a form provided by the department:

1. Responsible party name, address, and phone number.
2. Site name and source property address.
3. Department BRRTS number.
4. Department contact person name and phone number.
5. Reason for sampling, which may include routine sampling, and sampling to determine an immediate health concern, including the ingestion, inhalation, and dermal contact pathways.
6. Contaminant type.
7. Sample type, which may include groundwater, soil, sediment, soil vapor, outdoor or ambient air, and indoor air.
8. A map showing the sampling locations, which meets the requirements of s. NR 716.15 (4).
9. Collection date, specific contaminant levels per location, and whether the sample results attain or exceed state standards. A data table shall be used when multiple sample results are included.