LETTER OF TRANSMITTAL

AYRES ASSOCIATES

To: Wendy Weihemuller
Wisconsin Dept. of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Date: September 3, 2019

Project No.: 19-0590.10

Re: BRRTS 02-13-001621
Remedial Action Design Report

X Enclosed ___ Under Separate Cover Via _____

No. of Copies	Description
1	Remedial Action Design Report – Deerfield former Sta-Rite/Hilleque Site
1	Review fee check $1050

Sent to you for the following reason:

X For Approval ___ Review Completed ___ Revise and Resubmit

___ For Your Use ___ Not Reviewed ___ Returned

___ For Review and Comment ___ _____

Remarks:

Mike Schmoller is the DNR Project Manager for this project. Electronic submittal was made on Friday 8/30/2019.

Copy to: Village of Deerfield, Truckstar Collision

Signed:

Ben Peotter, PE
Manager – Environmental Services
PeotterB@AyresAssociates.com
608.443.1206

Project: 19-0590.10 File: v:\env\msn\deerfield\remediation design report\wdnr transmittal.docx

5201 E. Terrace Drive, Suite 200 • Madison, WI 53718
608.443.1200 • Fax: 608.299.2184 • www.AyresAssociates.com

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

Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

Notice: Use this form to request **a written response (on agency letterhead)** from the Department of Natural Resources (DNR) regarding technical assistance, a post-closure change to a site, a specialized agreement or liability clarification for Property with known or suspected environmental contamination. A fee will be required as is authorized by s. 292.55, Wis. Stats., and NR 749, Wis. Adm. Code., unless noted in the instructions below. 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.].

Definitions

"Property" refers to the subject Property that is perceived to have been or has been impacted by the discharge of hazardous substances.

"Liability Clarification" refers to a written determination by the Department provided in response to a request made on this form. The response clarifies whether a person is or may become liable for the environmental contamination of a Property, as provided in s. 292.55, Wis. Stats.

"Technical Assistance" refers to the Department's assistance or comments on the planning and implementation of an environmental investigation or environmental cleanup on a Property in response to a request made on this form as provided in s. 292.55, Wis. Stats.

"Post-closure modification" refers to changes to Property boundaries and/or continuing obligations for Properties or sites that received closure letters for which continuing obligations have been applied or where contamination remains. Many, but not all, of these sites are included on the GIS Registry layer of RR Sites Map to provide public notice of residual contamination and continuing obligations.

Select the Correct Form

This from should be used to request the following from the DNR:

- Technical Assistance
- Liability Clarification
- Post-Closure Modifications
- Specialized Agreements (tax cancellation, negotiated agreements, etc.)

Do not use this form if one of the following applies:

- Request for an **off-site liability exemption or clarification** for Property that has been or is perceived to be contaminated by one or more hazardous substances that originated on another Property containing the source of the contamination. Use DNR's Off-Site Liability Exemption and Liability Clarification Application Form 4400-201.
- Submittal of an Environmental Assessment for the **Lender Liability Exemption**, s 292.21, Wis. Stats., **if no response or review by DNR is requested**. Use the Lender Liability Exemption Environmental Assessment Tracking Form 4400-196.
- Request for an **exemption to develop on a historic fill site** or licensed landfill. Use DNR's Form 4400-226 or 4400-226A.
- **Request for closure** for Property where the investigation and cleanup actions are completed. Use DNR's Case Closure - GIS Registry Form 4400-202.

All forms, publications and additional information are available on the internet at: dnr.wi.gov/topic/Brownfields/Pubs.html.

Instructions

1. Complete sections 1, 2, 6 and 7 for all requests. Be sure to provide adequate and complete information.
2. Select the type of assistance requested: Section 3 for technical assistance or post-closure modifications, Section 4 for a written determination or clarification of environmental liabilities; or Section 5 for a specialized agreement.
3. Include the fee payment that is listed in Section 3, 4, or 5, unless you are a "Voluntary Party" enrolled in the Voluntary Party Liability Exemption Program **and** the questions in Section 2 direct otherwise. Information on to whom and where to send the fee is found in Section 8 of this form.
4. Send the completed request, supporting materials and the fee to the appropriate DNR regional office where the Property is located. See the map on the last page of this form. A paper copy of the signed form and all reports and supporting materials shall be sent with an electronic copy of the form and supporting materials on a compact disk. For electronic document submittal requirements see: http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf"

The time required for DNR's determination varies depending on the complexity of the site, and the clarity and completeness of the request and supporting documentation.

Section 1. Contact and Recipient Information

Requester Information

This is the person requesting technical assistance or a post-closure modification review, that his or her liability be clarified or a specialized agreement and is identified as the requester in Section 7. DNR will address its response letter to this person.

Last Name	First	MI	Organization/ Business Name		
Schwartz	Stephanie		Truckstar Collision Center, Inc. (also GreKa Holdings LLC)		
Mailing Address			City	State	ZIP Code
38 West Nelson Street			Deerfield	WI	53531
Phone # (include area code)	Fax # (include area code)		Email		
(608) 764-8374			stephanie@truckstarcollision.com		

The requester listed above: (select all that apply)

- ☐ Is currently the owner
- ☐ Is considering selling the Property
- ☐ Is renting or leasing the Property
- ☒ Is considering acquiring the Property
- ☐ Is a lender with a mortgagee interest in the Property
- ☐ Other. Explain the status of the Property with respect to the applicant:

Contact Information (to be contacted with questions about this request)

☒ Select if same as requester

Contact Last Name	First	MI	Organization/ Business Name		
Schwartz	Stephanie		Truckstar Collision Center, Inc. (also GreKa Holdings LLC)		
Mailing Address			City	State	ZIP Code
38 West Nelson Street			Deerfield	WI	53531
Phone # (include area code)	Fax # (include area code)		Email		
(608) 764-8374			stephanie@truckstarcollision.com		

Environmental Consultant (if applicable)

Contact Last Name	First	MI	Organization/ Business Name		
Peotter	Ben		Ayres Associates		
Mailing Address			City	State	ZIP Code
5201 E. Terrace Dr., Suite 200			Madison	WI	53718
Phone # (include area code)	Fax # (include area code)		Email		
(608) 443-1206			PeotterB@AyresAssociates.com		

Property Owner (if different from requester)

Contact Last Name	First	MI	Organization/ Business Name		
McCredie	Elizabeth		Village of Deerfield		
Mailing Address			City	State	ZIP Code
4 N. Main Street, PO Box 66			Deerfield	WI	53531
Phone # (include area code)	Fax # (include area code)		Email		
(608) 764-5404	(608) 764-5807		mccredie@deerfield.com		

Section 2. Property Information

Property Name	FID No. (if known)
Former Sta-Rite, Hilleque	

BRRTS No. (if known)	Parcel Identification Number
02-13-001621, 07-13-281473	117/0712-214-5672-1

Street Address	City	State	ZIP Code
40 West Nelson	Deerfield	WI	53531

County	Municipality where the Property is located	Property is composed of:	Property Size Acres
Dane	○ City ○ Town ◉ Village of Deerfield	◉ Single tax parcel ○ Multiple tax parcels	1

1. Is a response needed by a specific date? (e.g., Property closing date) Note: Most requests are completed within 60 days. Please plan accordingly.

○ No ◉ Yes

Date requested by: 10/23/2019

Reason: Construction schedule, in conjunction with WEDC Brownfield Grant Application Approval

2. Is the "Requester" enrolled as a Voluntary Party in the Voluntary Party Liability Exemption (VPLE) program?

◉ No. **Include the fee that is required for your request in Section 3, 4 or 5.**

○ Yes. **Do not include a separate fee.** This request will be billed separately through the VPLE Program.

Fill out the information in Section 3, 4 or 5 which corresponds with the type of request:
Section 3. Technical Assistance or Post-Closure Modifications;
Section 4. Liability Clarification; or Section 5. Specialized Agreement.

Section 3. Request for Technical Assistance or Post-Closure Modification

Select the type of technical assistance requested: **[Numbers in brackets are for WI DNR Use]**

- ☐ No Further Action Letter (NFA) (Immediate Actions) - NR 708.09, [183] - **Include a fee of $350.** Use for a written response to an immediate action after a discharge of a hazardous substance occurs. Generally, these are for a one-time spill event.
- ☐ Review of Site Investigation Work Plan - NR 716.09, [135] - **Include a fee of $700.**
- ☐ Review of Site Investigation Report - NR 716.15, [137] - **Include a fee of $1050.**
- ☐ Approval of a Site-Specific Soil Cleanup Standard - NR 720.10 or 12, [67] - **Include a fee of $1050.**
- ☐ Review of a Remedial Action Options Report - NR 722.13, [143] - **Include a fee of $1050.**
- ☒ Review of a Remedial Action Design Report - NR 724.09, [148] - **Include a fee of $1050.**
- ☐ Review of a Remedial Action Documentation Report - NR 724.15, [152] - **Include a fee of $350**
- ☐ Review of a Long-term Monitoring Plan - NR 724.17, [25] - **Include a fee of $425.**
- ☐ Review of an Operation and Maintenance Plan - NR 724.13, [192] - **Include a fee of $425.**

Other Technical Assistance - s. 292.55, Wis. Stats. [97] (For request to build on an abandoned landfill use Form 4400-226)

- ☐ Schedule a Technical Assistance Meeting - **Include a fee of $700.**
- ☐ Hazardous Waste Determination - **Include a fee of $700.**
- ☐ Other Technical Assistance - **Include a fee of $700.** Explain your request in an attachment.

Post-Closure Modifications - NR 727, [181]

- ☐ Post-Closure Modifications: Modification to Property boundaries and/or continuing obligations of a closed site or Property; sites may be on the GIS Registry. This also includes removal of a site or Property from the GIS Registry. **Include a fee of $1050, and:**
  - ☐ Include a fee of $300 for sites with residual soil contamination; and
  - ☐ Include a fee of $350 for sites with residual groundwater contamination, monitoring wells or for vapor intrusion continuing obligations.

Attach a description of the changes you are proposing, and documentation as to why the changes are needed (if the change to a Property, site or continuing obligation will result in revised maps, maintenance plans or photographs, those documents may be submitted later in the approval process, on a case-by-case basis).

Skip Sections 4 and 5 if the technical assistance you are requesting is listed above and complete Sections 6 and 7 of this form.

Section 4. Request for Liability Clarification

Select the type of liability clarification requested. Use the available space given or attach information, explanations, or specific questions that you need answered in DNR's reply. Complete Sections 6 and 7 of this form. **[Numbers in brackets are for DNR Use]**

☐ "Lender" liability exemption clarification - s. 292.21, Wis. Stats. [686]

❖ **Include a fee of $700.**

Provide the following documentation:

(1) ownership status of the real Property, and/or the personal Property and fixtures;

(2) an environmental assessment, in accordance with s. 292.21, Wis. Stats.;

(3) the date the environmental assessment was conducted by the lender;

(4) the date of the Property acquisition; for foreclosure actions, include a copy of the signed and dated court order confirming the sheriff's sale.

(5) documentation showing how the Property was acquired and the steps followed under the appropriate state statutes.

(6) a copy of the Property deed with the correct legal description; and,

(7) the Lender Liability Exemption Environmental Assessment Tracking Form (Form 4400-196).

(8) If no sampling was done, please provide reasoning as to why it was **not** conducted. Include this either in the accompanying environmental assessment or as an attachment to this form, and cite language in s. 292. 21(1)(c)2.,h.-i., Wis. Stats.:

h. The collection and analysis of representative samples of soil or other materials in the ground that are suspected of being contaminated based on observations made during a visual inspection of the real Property or based on aerial photographs, or other information available to the lender, including stained or discolored soil or other materials in the ground and including soil or materials in the ground in areas with dead or distressed vegetation. The collection and analysis shall identify contaminants in the soil or other materials in the ground and shall quantify concentrations.

i. The collection and analysis of representative samples of unknown wastes or potentially hazardous substances found on the real Property and the determination of concentrations of hazardous waste and hazardous substances found in tanks, drums or other containers or in piles or lagoons on the real Property.

☐ "Representative" liability exemption clarification (e.g. trustees, receivers, etc.) - s. 292.21, Wis. Stats. [686]

❖ **Include a fee of $700.**

Provide the following documentation:

(1) ownership status of the Property;

(2) the date of Property acquisition by the representative;

(3) the means by which the Property was acquired;

(4) documentation that the representative has no beneficial interest in any entity that owns, possesses, or controls the Property;

(5) documentation that the representative has not caused any discharge of a hazardous substance on the Property; and

(6) a copy of the Property deed with the correct legal description.

☐ Clarification of local governmental unit (LGU) liability exemption at sites with: (select all that apply)

☐ hazardous substances spills - s. 292.11(9)(e), Wis. Stats. [649];

☐ Perceived environmental contamination - [649];

☐ hazardous waste - s. 292.24 (2), Wis. Stats. [649]; and/or

☐ solid waste - s. 292.23 (2), Wis. Stats. [649].

❖ **Include a fee of $700, a summary of the environmental liability clarification being requested, and the following:**

(1) clear supporting documentation showing the acquisition method used, and the steps followed under the appropriate state statute(s).

(2) current and proposed ownership status of the Property;

(3) date and means by which the Property was acquired by the LGU, where applicable;

(4) a map and the ¼, ¼ section location of the Property;

(5) summary of current uses of the Property;

(6) intended or potential use(s) of the Property;

(7) descriptions of other investigations that have taken place on the Property; and

(8) (for solid waste clarifications) a summary of the license history of the facility.

Section 4. Request for Liability Clarification (cont.)

☐ Lease liability clarification - s. 292.55, Wis. Stats. [646]

❖ **Include a fee of $700 for a single Property, or $1400 for multiple Properties and the information listed below:**

(1) a copy of the proposed lease;

(2) the name of the current owner of the Property and the person who will lease the Property;

(3) a description of the lease holder's association with any persons who have possession, control, or caused a discharge of a hazardous substance on the Property;

(4) map(s) showing the Property location and any suspected or known sources of contamination detected on the Property;

(5) a description of the intended use of the Property by the lease holder, with reference to the maps to indicate which areas will be used. Explain how the use will not interfere with any future investigation or cleanup at the Property; and

(6) all reports or investigations (e.g. Phase I and Phase II Environmental Assessments and/or Site Investigation Reports conducted under s. NR 716, Wis. Adm. Code) that identify areas of the Property where a discharge has occurred.

General or other environmental liability clarification - s. 292.55, Wis. Stats. [682] - Explain your request below.

❖ **Include a fee of $700 and an adequate summary of relevant environmental work to date.**

☐ No Action Required (NAR) - NR 716.05, [682]

❖ **Include a fee of $700.**

Use where an environmental discharge has or has not occurred, and applicant wants a DNR determination that no further assessment or clean-up work is required. Usually this is requested after a Phase I and Phase II environmental assessment has been conducted; the assessment reports should be submitted with this form. This is not a closure letter.

☐ Clarify the liability associated with a "closed" Property - s. 292.55, Wis. Stats. [682]

❖ **Include a fee of $700.**

- Include a copy of any closure documents if a state agency other than DNR approved the closure.

Use this space or attach additional sheets to provide necessary information, explanations or specific questions to be answered by the DNR.

Attached Remedial Action Design Report, including Vapor Management Plan is included with this submittal. Please copy both Truckstar Collision and Village contacts on correspondence, along with Environmental Consultant.

Section 5. Request for a Specialized Agreement

Select the type of agreement needed. Include the appropriate draft agreements and supporting materials. Complete Sections 6 and 7 of this form. More information and model draft agreements are available at: dnr.wi.gov/topic/Brownfields/lgu.html#tabx4.

☐ Tax cancellation agreement - s. 75.105(2)(d), Wis. Stats. [654]

❖ **Include a fee of $700, and the information listed below:**

(1) Phase I and II Environmental Site Assessment Reports,

(2) a copy of the Property deed with the correct legal description.

☐ Agreement for assignment of tax foreclosure judgement - s.75.106, Wis. Stats. [666]

❖ **Include a fee of $700, and the information listed below:**

(1) Phase I and II Environmental Site Assessment Reports,

(2) a copy of the Property deed with the correct legal description.

☐ Negotiated agreement - Enforceable contract for non-emergency remediation - s. 292.11(7)(d) and (e), Wis. Stats. [630]

❖ **Include a fee of $1400, and the information listed below:**

(1) a draft schedule for remediation; and,

(2) the name, mailing address, phone and email for each party to the agreement.

Section 6. Other Information Submitted

Identify all materials that are included with this request.

Send both a paper copy of the signed form and all reports and supporting materials, and an electronic copy of the form and all reports, including Environmental Site Assessment Reports, and supporting materials on a compact disk.

Include one copy of any document from any state agency files that you want the Department to review as part of this request. The person submitting this request is responsible for contacting other state agencies to obtain appropriate reports or information.

- ☐ Phase I Environmental Site Assessment Report - Date: _____
- ☐ Phase II Environmental Site Assessment Report - Date: _____
- ☐ Legal Description of Property (required for all liability requests and specialized agreements)
- ☐ Map of the Property (required for all liability requests and specialized agreements)

Analytical results of the following sampled media: Select all that apply and include date of collection.

☐ Groundwater ☐ Soil ☐ Sediment ☐ Other medium - Describe: _____

Date of Collection: _____

- ☐ A copy of the closure letter and submittal materials
- ☐ Draft tax cancellation agreement
- ☐ Draft agreement for assignment of tax foreclosure judgment
- ☒ Other report(s) or information - Describe: Other reports are in DNR files

For Property with newly identified discharges of hazardous substances only: Has a notification of a discharge of a hazardous substance been sent to the DNR as required by s. NR 706.05(1)(b), Wis. Adm. Code?

- ○ Yes - Date (if known): _____
- ○ No

Note: The Notification for Hazardous Substance Discharge (non-emergency) form is available at: dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf.

Section 7. Certification by the Person who completed this form

- ☐ I am the person submitting this request (requester)
- ☒ I prepared this request for: Truckstar Collision & Vil. of Deerfield

Requester Name

I certify that I am familiar with the information submitted on this request, and that the information on and included with this request is true, accurate and complete to the best of my knowledge. I also certify I have the legal authority and the applicant's permission to make this request.

Signature

8/29/2019
Date Signed

Manager - Environmental Services
Title

(608) 443-1206
Telephone Number (include area code)

Section 8. DNR Contacts and Addresses for Request Submittals

Send or deliver one paper copy and one electronic copy on a compact disk of the completed request, supporting materials, and fee to the region where the property is located to the address below. Contact a DNR regional brownfields specialist with any questions about this form or a specific situation involving a contaminated property. For electronic document submittal requirements see: http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf.

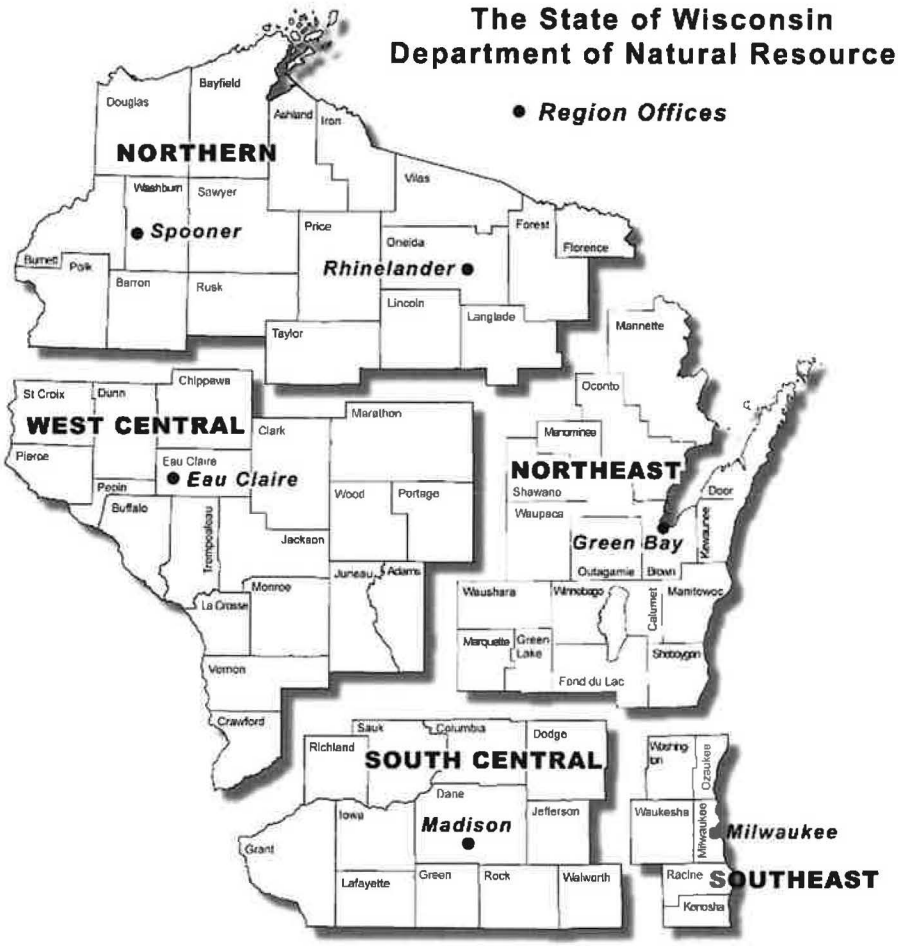
DNR NORTHERN REGION
Attn: RR Program Assistant
Department of Natural Resources
223 E Steinfest Rd Antigo, WI 54409

DNR NORTHEAST REGION
Attn: RR Program Assistant
Department of Natural Resources
2984 Shawano Avenue
Green Bay WI 54313

DNR SOUTH CENTRAL REGION
Attn: RR Program Assistant
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg WI 53711

DNR SOUTHEAST REGION
Attn: RR Program Assistant
Department of Natural Resources
2300 North Martin Luther King Drive
Milwaukee WI 53212

DNR WEST CENTRAL REGION
Attn: RR Program Assistant
Department of Natural Resources
1300 Clairemont Ave.
Eau Claire WI 54702



Note: These are the Remediation and Redevelopment Program's designated regions. Other DNR program regional boundaries may be different.

DNR Use Only			
Date Received	Date Assigned	BRRTS Activity Code	BRRTS No. (if used)
DNR Reviewer	Comments		
Fee Enclosed? ◯ Yes ◯ No	Fee Amount $	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		

Remedial Implementation Design Report
Soil, Vapor, and Groundwater Remediation

Former Hilleque Property
Parcel No. 0712-214-5672-1
40 West Nelson Street
Deerfield, Wisconsin 53531

BRRTs# 02-13-001621

Prepared for:

Elizabeth McCredie
Village of Deerfield
4 North Main Street
Deerfield, WI 53531
608.764.5404

August 29, 2019

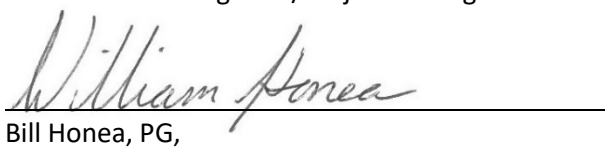
HireSmart®

Remedial Implementation Design Report

Hilleque Property
Parcel No. 0712-214-5672-1
40 West Nelson Street, Deerfield, Wisconsin 53531

Ben Peotter, PE
Environmental Engineer/Project Manager

August 29, 2019
Date



Bill Honea, PG,
Geologist

August 29, 2019
Date

AYRES ASSOCIATES
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Madison, WI 53718
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www.AyresAssociates.com

Ayres Associates Project No. 19-0590.10
File: V:\ENV\FINAL\19059010\Deerfield Remediation Design Report Final to DNR.docx

NR 712.09 SUBMITTAL CERTIFICATION

"I, Benjamin Peotter, 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."

WISCONSIN
BENJAMIN J.
PEOTTER
E-36784
MADISON
WI
PROFESSIONAL ENGINEER

Benjamin Peotter, PE

August 29, 2019
Date

36784-006
P.E. Number

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1.0 Introduction

The Village of Deerfield retained Ayres Associates (Ayres) to assess environmental conditions and support redevelopment goals at 40 West Nelson Street, Deerfield, Wisconsin. The property is listed on the Wisconsin Department of Natural Resources (WDNR) Bureau of Remediation and Redevelopment Tracking System (BRRTS), with two designation numbers: 02-13-001621 and 07-13-281473. To date, several investigations between 1995 and 2016 were performed on the subject property. The most recent was a supplemental NR 716 site investigation that was performed by Ayres Associates in June 2016. Previously unevaluated conditions such as an old burn pile site and surface staining were included in the supplemental investigation. Previous investigations have been conducted by the Department of Natural Resources (WDNR) and The Sigma Group. Ayres Associates submitted the results of the NR 716 investigation to the WDNR in September 2016. The Sigma Group's reports were previously submitted to the WDNR in 2014 and 2015. These reports were independent of the original site investigation of historic dumping at the site that was initiated in 1992 with state-led investigation activities.

This document presents the remedial design plans for soil removal and disposal, a barrier cap, and the installation of a vapor mitigation system. The project will encompass the splitting of the original property into two parcels. The Village of Deerfield will maintain ownership of the northern parcel, which is the most environmentally impacted, and GreKa Holdings LLC (which has ownership interest with the Truckstar Collision company adjacent to subject property, and will combine operations with the property redevelopment) owning the southern parcel. There is an existing pump and treat system on the northern portion of the property that will remain operational but will be relocated as part of this project.

This remedial design report is submitted as specified in NR 724 to present the design plans, specifications, quality assurance (QA) and quality control (QC) requirements, and procedures to for implementation of the remedy. This plan also is intended to describe soil management activities consistent with those outlined in NR 718 and describes the Soil Vapor Mitigation Plan (Appendix A). The plan establishes responsibilities and authorities, defines policies and requirements, and provides for the performance and assessment of the work.

Performance of this work is expected to be conducted with varying funding sources, including private funding by GreKa Holdings LLC, Wisconsin Economic Development Corporation (WEDC) Brownfield Grant, and Village of Deerfield Tax Incremental Financing (TIF) assistance.

Site Location and Description

The project site in the Southwest ¼ of the Southeast ¼ of Section 21, Township 7 North, Range 21 East, in the Village of Deerfield, Dane County, Wisconsin (Figure 1). The Latitude and Longitude for the site location are 43.055075 and -89.077964 respectively. The site (referred to as site, project site, or property) includes one parcel (Dane County Parcel Number 117/0712-214-5672-1) located at 40 West Nelson Street, which is on the north side of the Village of Deerfield (Figure 1). The project site is shown on a parcel map obtained from the Dane County Geographic, and Land Information Website and presented as Figure 2.

The original project site consists of approximately 0.89 acres of developed industrial zoned property. Before 1955, the subject property was farmland. It first developed for commercial use around 1962. From 1967 to 1984, Sta-Rite industries manufactured brine tanks on the subject property. The last non-local government owner, Hilleque Creative Laminates, purchased the property around 1984. The subject property has been vacant for the last 10 years, and Hilleque has been administratively dissolved as a business entity since 2009.

The project site is on the northeast corner of the intersection of West Nelson Street and North Grand Avenue. It is just south of the Glacial Drumlin Bike Trail. A 10,000-square-foot commercial building occupied most of the site but was demolished in 2016. The structure was demolished under a WEDC Site Assessment Grant (SAG), leaving the building slab, foundations, and a partial basement that was abated of asbestos under the SAG and filled with clean crushed concrete. The remaining foundations and slab will be removed upon approval of this remedial design approach and in conjunction with site development. Surrounding the building is a grass lot, concrete sidewalk, and deteriorating asphalt parking. The original building was heated by natural gas and connected to electrical service, municipal water, and sanitary sewer.

The area surrounding the site is a mix of agricultural, residential, industrial, and commercial properties. Upon redevelopment, the use would stay industrial with expanded operations of the adjoining Truckstar Collision business to the east.

Site History and Background

The history of the project area was obtained from the *Phase I Environmental Assessment Report, Hilleque Property, 40 West Nelson Street, Deerfield, WI 53531,* (April 2016), prepared by Ayres Associates. According to the Phase I ESA, before 1955, the original property was farmland, and it was first developed for commercial use around 1962 when the building was constructed. From 1967 to 1984, Sta-Rite Industries manufactured brine tanks on the subject property. The current owner, the Village of Deerfield, acquired the project site in July of 2016 from Dane County, and Dane County acquired the site in June of 2016 through the tax delinquency, tax deed process which provides the local governmental liability protection under Wis. Stat. 292.11(9)(e). Before the Village of Deerfield's ownership, Hilleque Creative Laminates purchased the property around 1984. The subject property has been vacant for the last 10 years.

Borgerud Manufacturing Company produced water softeners, glassware ceramic, porcelain, metal, and fabric on the property before 1967. Their manufacturing operations used solvent cleaners. Sta-Rite Industries acquired Borgerud Manufacturing in July 1967 and continued manufacturing operations.

In 1994, the Wisconsin Department of Natural Resources began investigating soil and groundwater within approximately ½-mile around Village municipal well #2. This investigation was launched after chlorinated solvents were detected in the municipal well in 1992. The area of investigation included a sample from the Hilleque parcel and samples to the north, south, east, and west of the parcel within that approximate radius. This zone included over six city blocks and an estimated 20 different commercial and industrial operations. The 1994 investigations found TCE, 1,1-dichloroethene, cis 1,2-dichloroethene and 1,1,1-trichloroethene in groundwater on the northern boundary of the site.

The historical activities on the site included cleaning with solvents. According to past employees, spent solvents were discarded on the ground outside the north door of the building. As part of the historical investigation and remediation activities, nearly 1,800 tons of contaminated soil was removed directly north and adjacent to the Hilleque building, where the solvent dumping allegedly took place. Also, a groundwater pump and treat system was installed on the adjacent Truckstar property to address the area identified in 1994 as having been contaminated. These actions were part of an agreement between former site owner (Sta-Rite) and the Village of Deerfield.

Along with the limited 1994 investigation, two more recent limited, site investigations were conducted between 2013 and 2015 under the Wisconsin Assessment Monies (WAM) grant program. In December 2013, an investigation was completed to determine if the past auto operations on the adjacent site to the east contributed to contamination at the Hilleque property. Four soil borings were advanced along the property border, and temporary wells were installed in two of the borings. In addition, two sub-slab vapor samples were collected from beneath the Hilleque building. Samples from the temporary groundwater wells on the east side of the subject property did not indicate concentrations exceeding NR 140 Preventive Action Limits (PALs). The northernmost sub-slab vapor sample (SS-2) had levels of TCE at 55,200 µg/m^3, above the industrial air vapor action levels, and the southern sub-slab vapor sample (SS-1) indicated results above residential screening levels but below commercial or industrial screening levels. In May 2015, four additional soil borings were advanced through the concrete building slab within the Hilleque building. Two of the samples on the northern side of the building contained cis-1,2-dichloroethene and TCE at concentrations above the WDNR GW RCLS, but no VOCs were detected in the two southern soil samples.

Several areas of concern were not addressed by these past investigative activities, including a noted burn pit on the northwest portion of the parcel, surface staining, former solvent drum storage, and identifying the potential for other dumping areas outside of doorways given the history of the site. Additionally, while TCE and cis-1,2-dichloroethene were confirmed beneath the building slab, the extent was not sufficiently evaluated for future remediation of sub-slab soil.

The 2016 NR 716 site investigation attempted to clarify remaining environmental data gaps and to quantify soil volumes that may need to be addressed before future redevelopment. Before scoping this investigation, Ayres Associates consulted WDNR project staff, and collecting further groundwater information as a result of the known chlorinated solvent release was not deemed a priority nor was further investigation on this item recommended.

In the 2016 NR 716 investigation, trichloroethene (TCE) and cis-1,2-dichloroethene exceeded RCLs established for the protection of groundwater in the soil sampled from beneath the building (H-GP-1, H-GP-2, H-GP-3, H-GP-4) and along the exterior at H-GP-7, and H-GP-9 between 0 and 8 feet below ground surface. The RCL exceedances were detected in areas on the north side of the site either near the building or where chemical dumping was reported. Six soil samples analyzed for polycyclic aromatic hydrocarbons (PAHs) exceeded non-industrial direct contact RCLs (Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, and Dibenzo(a,h)anthracene). These non-industrial exceedances were seen in probes H-GP-3, H-GP-4, H-GP-5, H-GP-7, H-GP-9, and H-GP-10 (located throughout the project site). Soil sampled from

probes H-GP-1 (10 to 12 ft bgs), H-MW-1 (2.5 to 5 ft bgs), and H-GP-3 (8 to 10 ft bgs) contained arsenic exceeding the Wisconsin background threshold value. Arsenic concentrations in the noted samples ranged from 8.3 mg/Kg to 16.7 mg/Kg. Probes H-GP-5 and H-GP-10 are the only sample locations anticipated to be located on the southern parcel, with H-MW-1, H-GP-3, and H-GP-4 located just north of the new parcel line.

The only VOC detected in groundwater during the NR 716 investigation sampling event was TCE. The PAL was exceeded in both wells sampled, and the concentrations ranged from 1.1 µg/L to 4.0 µg/L. Detections of PAH compounds were found in each of the two wells sampled, but at concentrations below their respective PALs. Low levels of dissolved barium were detected in two groundwater samples collected, although neither sample exceeded the PAL. None of the other seven RCRA metals were detected.

Project Description

Activities outlined in this document represent the remediation phase of the Brownfield development process for the site (BRRTs# 02-13-001621, 07-13-281473). The initial phases included performing Phase I Environmental Site Assessment (ESA), and supplemental site investigation to provide further information on other environmental concerns. The Phase I ESA subsequent NR 716 investigation were designed to provide the Village of Deerfield, Truckstar Collision (and GreKa Holdings LLC), WDNR, and Ayres Associates the data necessary to assess the threat from potential contaminants, estimate costs for site redevelopment, and evaluate remedial options. Details of investigation activities are addressed in the files at the WDNR, and the NR 716 Site Investigation Report (Ayres Associates, 2016). Remedial alternatives were evaluated in the context of how the site redevelopment plan would provide suitable protective measures at the northern and southern properties (upon re parceling of the properties, expected in fall 2019) compared to existing site conditions. At the time of this report, existing site features include the former building floor slab, some concrete residual sidewalks that remain on the site, grass, and deteriorating asphalt pavement; and the Village of Deerfield currently owns the entire parcel.

During the redevelopment process, the property will be segmented into a north and south parcel, with the northern parcel remaining in Village ownership, and the southern parcel owned by GreKa Holdings, LLC, and leased to Truckstar Collision. The dividing line and new tax parcels that a formal Certified Survey Map will implement in the fall of 2019 are shown in Figure 2. For this project description from this point forward in the report, we will refer to the scenario that the parcel is split. Accordingly, this remedial design will provide elements of protective measures on the northern portion of the property, which will remain in ownership of the Village (who maintains an LGU exemption on that portion of the site), with the goal of defining a remedial action plan and regulatory closure strategy for the southern site to be owned by GreKa Holdings LLC.

A map of the existing redevelopment site located at the existing 40 West Nelson Street is shown in Figure 4. Note that the redevelopment will be conducted on both parcels located at this address, with the north part being hard surface driveway and parking, and the south building and driveway. Following redevelopment, the new southern parcel will be referred to as 38 West Nelson Street, the same address as the existing Truckstar Collision operation. The

redevelopment activity proposes to remove the remaining floor slab and foundations of the existing building, construct a new approximately 16,000 square-foot body shop building on the southern parcel along with hard-surface drives and parking, construct supplemental asphalt parking on the northern parcel, and construct new clay-lined detention basins on the west side of both the north and south parcel. Also, the existing pump and treat system that is in place along the north parcel will be relocated and reconnected to the existing infrastructure with new piping. Existing monitoring wells installed and sampled by Others (Tetra Tech) will remain in place or will be abandoned and reinstalled if necessary.

The general project approach and sequencing for implementing the remedial alternatives at the site are outlined below and will be integrated into the demolition and building rehabilitation construction project as follows:

- Prepare design plans and specifications for vapor system (included in Appendix A, which will supplement more extensive construction plans and specifications package prepared by GreKa Holdings LLC's builder).
- Select contractor and prepare contracts (GreKa Holdings LLC).
- The Village will coordinate the removal of remaining concrete slab and foundation walls that are currently serving as a partial cap on the site. The concrete needs to be removed before site redevelopment. It is anticipated this work will be conducted using the remaining WEDC SAG funds in late 2019.
- Obtain necessary construction permits.
- Perform underground utility locate and clearance calls.
- Abandon or protect existing monitoring wells in the development area, as necessary to accommodate short term construction work. Designated wells in areas that cannot be protected will be abandoned.
- Mobilize equipment and personnel.
- Begin site preparation and grading activities. An environmental consultant will be present on-site to conduct field screening (PID, visual and olfactory observation) of soils and will work with the contractor to segregate and stockpile soil from known contamination areas (primarily on the north side of the building). The stockpiled soil will be characterized for off-site landfill disposal.
- Clean soil or soil impacted with PAHs or metals (arsenic is the only compound present above industrial direct-contact) will remain on-site beneath hard surfaces or in landscaped areas. Approximately 3,000 cubic yards of soil-fill is needed to obtain site grades.
- Manage groundwater from excavations or boreholes, as necessary.
- Install a vapor mitigation system in conjunction with other utilities under building slab to prevent vapor intrusion.
- Construct site and off-site features (access driveways, parking lots, walkways, landscape areas, building), including road construction (lowering) to provide site access (coordinated by Village for project benefit).

- Replace monitoring wells removed during development (if necessary, as part of restoring long-term monitoring plan on northern parcel. Southern parcel wells will not be replaced).
- Perform site-development monitoring and reporting on the north parcel (by others, same as existing obligations). Northern parcel with hard-surface parking lot and driveway will have continuing obligations.
- Perform the vapor mitigation system commissioning and system monitoring.

Contaminants of Concern and Exposure Routes

The primary contaminants of concern in soil on the south parcel include heavy metals (arsenic, lead), a subset of the semi-volatile organic compounds (SVOCs) known as polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (TCE and cis-1,2-dichloroethene). These compounds were consistent with site use of the south parcel and the known chlorinated solvent release on the north parcel. Investigation performed by Sigma Group and Ayres Associates noted chlorinated VOC impacts remain in the northern one-third to one-half of the former manufacturing facility. The southern two-thirds to one-half did not appear to have the same soil impacts (see Sigma supplementary Phase II ESA dated May 27, 2015 GP-7 and GP-8 soil data which showed non-detects).

The primary contaminant of concern in groundwater is TCE. The monitoring-well installed in 2016 along the west side of the existing building near the new property line that separates the north and south parcel contained TCE exceeding NR 140 PAL. Cleanup criteria for each of these constituents are outlined in NR 720 (soil standards) and NR 140 Wisconsin Administrative Codes (groundwater standards) and the clean-up level look-up tables. We anticipate that the remedial action outlined herein will meet the requirements for site closure on the southern parcel, which had no exceedances of VOCs above enforcement standards in the Sigma or Ayres Associates data noted in Appendix B.

Soil vapor analysis was also conducted at the site, with the primary constituents of concern above residential sub-slab screening levels being TCE. Sigma investigated vapor beneath the existing floor slab in their February 14, 2014 report. The northern vapor sample exceeded the screening level for sub-slab vapor to indoor air pathway for commercial or industrial, but the southern sample was below this threshold. Due to their high volatility and health risk, mitigation of vapor pathways will be necessary to protect building occupants. Remediation of the source area north of the existing building was previously conducted (source soil removal) or is still active (pump and treat system). Additional VOC-impacted soil beneath the north side of the building may be necessary during site development.

Based on the location and nature of the contaminants identified above, and considering the anticipated future use for the site and planned excavations, the construction worker or trespasser were identified as the most likely person to come in contact with the materials in the short-term. Future building occupants are the most likely to come in contact with the materials or contaminants in the long-term if cap maintenance is deficient. Sources of contamination present at the site include contaminated surface and subsurface soils, dissolved phase groundwater contamination, and soil gas vapors. The potential routes of exposure to these

substances include:

- Inhalation of VOC-impacted soil particulates or VOCs having volatilized from contaminated soil or groundwater
- Ingestion and dermal contact with VOCs, PAHs, and metals from impacted soils
- Ingestion, inhalation or dermal contact with groundwater that may contain VOCs during site development or dewatering activities

Potential transport mechanisms of site contaminants include:

- Wind and atmospheric dispersion
- Volatilization to enclosed spaces (e.g., vapors entering on-site buildings)
- Leaching of contaminants to groundwater

Potential exposure during the remedial work will be managed with a contractor-developed Health and Safety Plan (HASP), proper watering to minimize dust and off-site migration of soils, and field screening of VOCs within excavated soils designed to protect site workers and the public. Potential future exposure to residual contamination and vapor transport, if any, will be mitigated using institutional and engineering controls.

Environmental Risk Evaluation

The proposed remediation plan is intended to manage environmental risk and establish a practical and cost-effective approach to facilitate property redevelopment. The corrective action plan is based on the following conclusions regarding site conditions and environmental risk.

- The site has a history of industrial activity and indications of a minor number of surficial contaminants (PAHs, metals) in a variety of areas. The largest area of VOC-impacted soil was previously removed north of the Hilleque building.
- It is not economically feasible or practical to remove the entire quantity of potentially impacted surficial soil present at the site, nor is it necessary since the new building and parking areas act as a cap minimizing groundwater infiltration and direct contact concerns.
- While PAHs and metals were detected in the soil at levels exceeding NR 720 Wisconsin Administrative Code screening levels, the soil is not significantly impacting groundwater (as suggested by the low levels found in groundwater) or surface water quality due to existing site cap conditions (i.e., the existing building slab and existing deteriorating asphalt).
- Groundwater contamination, or lack thereof, is adequately defined for the redevelopment of the southern site. Only limited compounds were noted at groundwater samples collected on this parcel, none of which were above enforcement standards (see appendix B).
- Once any further VOC-impacted soils are removed no further sources of groundwater degradation were identified at the redevelopment site beyond the soil located beneath future hard surface caps.

- No environmental conditions representing an immediate risk to human health or the environment (e.g., open containers, storage tanks, exposed-waste) currently exist at the site.
- Concentrations of public health constituents, although above their respective ES, do not represent a significant risk to public health or the environment. The Village has installed new municipal groundwater wells to replace those that were impacted by the plume originating from the former site operations on the north parcel. The old municipal wells were abandoned.
- An engineered cap, consisting of the building, clean fill, parking lots, hard surface walkways or driveways, clay-lined detention basins, and landscaping along with institutional controls (i.e., no on-site drinking wells), is the presumptive remedy for this site. This remedial action is consistent with the site redevelopment and the type, and the limited extent of environmental impacts at the site.
- Potential vapor accumulation in the redeveloped site will be managed with engineering controls including a sub-slab vapor venting system and membrane vapor barrier placed beneath the new floor slabs in enclosed building spaces on the southern portion of the site to be occupied or used by future residents.

Technology Description

Excavation/Disposal

Contaminated material is removed using conventional earth moving equipment and transported by trucks to permitted, off-site, treatment, or disposal facilities. Contaminated soil that has been excavated as part of a response action must be managed following ch. NR 718, Wis. Adm. Code, which applies to excavated contaminated soil that is not a hazardous waste. Code requirements mandate if not conducting a direct excavate and haul activity that contaminated soil shall be placed on an impervious material such as concrete, asphalt, plastic sheeting, or an impervious construction fabric. Other requirements noted within NR 718 include location requirements, covering and anchoring stockpiles, surface water management, and stockpile storage duration.

Containment/Engineered Surface Barrier

Engineered barriers or caps can be an effective method to inhibit direct contact with contaminated materials and can also be used to protect groundwater from continued leaching of contaminants through the soil. Capping options may include asphalt, engineered clay cap, multi-layer caps, incorporating geotextiles, or buildings. Impermeable caps associated with site development, such as paved surfaces, require little maintenance. Vegetated soil requires regular maintenance to prevent erosion.

The end use of the property needs to be considered for its potential to implement a cap design. The cap should be incorporated as part of the site development as it will be a permanent feature of, and an improvement to the property. Materials used for cap construction are common and readily available.

The 40 West Nelson Street site is being redeveloped to a new approximate 16,000-square-foot industrial building which will be referred to in the future as 38 West Nelson Street, the same as the existing Truckstar Collision operation. Driveways, sidewalks, and landscaping will all be integrated into a cap which will cover the entire parcel, most of which will continue to be hard surfaces. New proposed detention ponds on the west side will be lined with 2 feet of clay to prevent surface water infiltration from impacting the existing north-parcel plume further. These ponds will be tied into the Village's storm sewer system.

Monitored Natural Attenuation

Natural attenuation is an on-going process in which contaminant concentrations are reduced through naturally occurring mechanisms under favorable conditions without human intervention. This remediation strategy relies on many physical, chemical, and biological processes to naturally reduce mass, toxicity, mobility, or concentration of contaminants in soil or groundwater. Attenuation processes include dilution, chemical and biological transformations, sorption, and volatilization.

Natural attenuation encompasses intrinsic biodegradation. Intrinsic biodegradation is a natural, non-enhanced process of remediation where complex organic compounds are broken down into simpler, less toxic constituents by aerobic or anaerobic microbial processes.

Natural attenuation monitoring alone may not meet groundwater standards in the short-term; however, active extraction and in-situ chemical treatment methods are not feasible as concentrations are too low and desorption from the fine-grained sediments to the groundwater may be diffusion-limited.

The southern portion of the property appears to have limited groundwater impacts. The northern portion of parcel has a pump-and-treat system near the historic source area that is used in conjunction with natural attenuation.

Vapor Intrusion Mitigation

Vapor intrusion is the migration of volatile constituents from contaminated subsurface soil or groundwater into indoor air spaces of overlying buildings or underground routes such as buried utility lines and trenches. Most vapor intrusion occurs when contaminants in the underlying soil, or contaminants at the water table, enter the unsaturated zone above the water table and migrate to the atmosphere, or into the air space of overlying structures or utility trenches. Less frequently, vapors can enter buildings with groundwater seepage into sumps or flooded basements where contaminants partition directly from the groundwater into indoor air.

Vapor-phase contaminant migration (VOCs) in the unsaturated soil has been measured at this site. Volatile compounds of sufficient concentration can migrate in the vadose zone from impacted soil and passively vent into the atmosphere. Elevated concentrations above residential screening levels have been measured in the northern portion of the property in the sub-slab vapor probes evaluated in the site investigation phase.

Mitigation or remediation of potential vapor intrusion risk is implemented to eliminate exposure pathways and will consist of engineering controls or physical modifications to the site. The

primary aspects of mitigation will be sub-slab perforated piping located beneath the future occupied buildings, routing this piping vertically in the building interior or exterior with plumbing vent piping (where possible) to a vent stack above the roof, and a new membrane vapor barrier installed below the floor of the new building.

Project Schedule

The project development is very time-sensitive. At the time of this report, a Developer's Agreement is being finalized between GreKa Holdings LLC and the Village of Deerfield. The agreement was approved at the August 26, 2019, Village Board meeting and is awaiting signatures to execute, which has not been done as of the completion of this report but is expected soon. This agreement details the financial and other obligations between the parties. Also, a WEDC Brownfield Grant is being developed for the project to be submitted in early September 2019. Other activities and their anticipated schedule include:

- Survey and re-plat the 40 West Nelson parcel into two parcels, 40 West Nelson and addition to 38 West Nelson to the east (fall 2019)
- Finalize the requirements for a Tax Incremental District (TID) to overlay the existing TID #3 (fall 2019)
- Upon approval of the remedial action strategy presented here and WEDC Brownfield Grant, demolish the existing slab and foundation that remains to allow for construction to begin (fall 2019, with work to be completed by SAG deadline of Dec. 31, 2019)
- Sample the two existing wells installed under the SAG for the 2016 Ayres Associates NR 716 investigation a second and possibly third time to gather information about concentration trends to support future site closure of the southern parcel in advance of construction activities. (August 2019, November 2019)
- Abandon wells that cannot be maintained due to site development (fall/winter 2019).
- Building permits (fall 2019)
- Begin construction (fall/winter 2019)
- End construction/Substantial Completion (early summer 2020, road construction of West Nelson to be coordinated by Village and coincide with completion timing)
- Reinstall any wells that were removed for construction, as part of long-term monitoring plan (performed by others [Tetra Tech])
- Vapor mitigation system commissioning and sampling (summer 2020)
- Documentation report submittal (summer 2020)
- Closure packet (southern parcel) submittal (fall 2020)

2.0 Project Organization and Responsibility

The purpose of this document is to describe the personnel, procedures, and methods for ensuring the quality of construction services, and the accuracy and precision of data collection associated with the remediation project. Following the procedures outlined in this Remedial Implementation Design Report will help to assure that the finished system adheres to the final design specifications for the proposed systems. The Design Report identifies the procedures to be followed during installation of the engineered barrier, provides guidelines for the excavation and disposal of soil following state and federal requirements, and provides quality control for performing natural attenuation monitoring.

Project Management

At the direction of the Wisconsin Department of Natural Resources, Ayres Associates has overall responsibility for environmental monitoring during soil removal, construction of the engineered barrier and vapor mitigation system. Ayres Associates will provide project management, and perform oversight of soil excavation and disposal during construction. Post-construction natural attenuation groundwater monitoring and maintenance and operation of the pump and treat system will continue to be performed by others (Tetra Tech) consistent with the current system and monitoring protocols. All lines of communication, management activities, and technical direction within this project team will follow this organization arrangement. Any directions or communications from the WDNR will be given to the Ayres Associates project manager.

Responsibilities of key project personnel are outlined below.

Wisconsin Department of Natural Resources (WDNR) Project Manager

The WDNR Project Manager (PM) for this project will be Michael Schmoller. The PM has the overall responsibility for project oversight. The PM will:

1. Direct review and approval of the Design Report
2. Provide regulatory consultation to the Ayres Associates' project manager
3. Review progress reports detailing work accomplished
4. Review and approve all final reports, including acting as coordinator for the future closure packet for the south parcel

Project Manager

The project manager will be Ben Peotter, PE. The project manager is responsible for implementing the project, has overall responsibility for ensuring that the project meets the WDNR's project objectives and Ayres Associates' quality standards, and has the authority to commit the resources necessary to meet project objectives and requirements. The project manager's primary function is to ensure that technical, financial, and scheduling objectives are achieved. The project manager will report directly to the WDNR Project Manager and will be the point of contact and control for matters concerning the project. The project manager will:

1. Define project objectives and develop a detailed work plan schedule
2. Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task
3. Develop project plans and strategies and review all project deliverables
4. Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule constraints
5. Orient all field leaders and support staff concerning the project's special considerations
6. Monitor and direct the field leaders
7. Develop and meet ongoing project or task staffing requirements, including mechanisms to review and evaluate each task product
8. Review the work performed on each task to ensure its quality, responsiveness, and timeliness
9. Review and analyze overall task performance for planned requirements and authorizations
10. Manage client and Agency communications regarding field activities and project progress
11. Approve all external reports (deliverables) before their submission to the State
12. Ultimately be responsible for the quality of interim and final reports
13. Represent the project team at meetings and public hearings

Project Technician

The project manager will be supported by an environmental engineer, geologist, or technician staffed out of Ayres Associates Waukesha or Madison, Wisconsin offices. The field technician is responsible for overseeing the day-to-day activities associated with soil removal and disposal, and installation of the vapor mitigation system. The project technician will report directly to the project manager. Specific field team leader responsibilities include:

1. Provision of day-to-day coordination with the project manager on technical issues in specific areas of expertise
2. Implement mandatory health and safety practices
3. Implementation of field-related work plans, assurance of schedule compliance, and adherence to management-developed study requirements
4. Implementation of QC for design and construction data provided by the field staff
5. Adherence to work schedules provided by the project manager
6. Coordination and oversight of technical efforts of subcontractors assisting the field team

7. Maintain a record of all design and construction activities collected during the design and construction of the remediation system
8. Identification of problems at the field team level, discussion of resolutions with the project manager, and provision of communication between the team and upper management
9. Participation in the preparation of the final report

Advanced Building Corporation (general contractor) on behalf of GreKa Holdings LLC, Site Owner

The construction Project Manager for Advanced Building Corporation (Verona, WI) will be Steve Kalscheuer. Advanced Building Corporation is responsible for all project-related issues involving the design and construction of the proposed building, including:

1. Provision of day-to-day coordination with the project manager on construction issues as they relate to environmental obligations
2. Establish policy and procedures to address the specific needs of the project concerning the projects special environmental considerations
3. Oversee construction crew and subcontractors concerning environmental objectives
4. Coordinate the removal and disposal of impacted soil and groundwater resulting from construction
5. Manage client and consultant communications regarding field activities and project progress
6. Provide consultant completed waste manifests for off-site disposal of soil

Laboratory Project Manager

The laboratory operations manager for this project will be Laurie Woelfel of Pace Laboratories or Dennis Linley of CT Laboratories.

1. Coordinates the completion and delivery of the final analytical report
2. Ensures that client DQOs are met. These are reproducible sampling results with LODs that are low enough to compare to regulatory standards
3. Oversees the overall completeness of the final analytical report
4. Directs the laboratory's analytical programs
5. Coordinates projects and associated workloads
6. Executes laboratory administrative functions
7. Ensures compliance with appropriate analytical methods

Laboratory Quality Assurance Officer

The laboratory quality assurance managers for this project will be Kate Grams of Pace Laboratories or Dan Elwood of CT Laboratories depending on the constituent.

1. Oversees laboratory quality assurance
2. Oversees QA/QC documentation
3. Oversees detailed data review
4. Decides laboratory corrective actions, if required
5. Provides a technical representation of laboratory QA procedures
6. Prepares laboratory Standard Operation Procedures

The primary responsibility for project quality rests with Ayres Associates' Project Director. Independent quality assurance will be provided by the Laboratory Project Manager, the Laboratory Analysts, the Analytical Group Coordinator, and the QA Officer as required before the release of all data to Ayres Associates.

Ayres Associates personnel have completed specialized training as mandated by the Occupational Safety and Health Administration (OSHA) Act regulations 29 CFR § 1910.120. All field staff are adequately trained to collect, label, preserve, package, and ship solid and liquid samples. Ayres Associates will be required to comply with site safety requirements addressed in the site-specific safety HASP. WDNR and construction subcontractors will be required to prepare and comply with their own Health & Safety Plans explicitly prepared for this project.

3.0 Identification of Applicable or Relevant and Appropriate Requirements (ARARs)

Section 121(d) of CERCLA requires that remedial actions undertaken pursuant to CERCLA comply with Federal and State applicable or relevant and appropriate standards or requirements (ARARs) where compliance is technically practicable. Non-CERCLA response actions do not necessarily require compliance with requirements beyond those contained in Wisconsin Administrative Codes and Statutes. While not legally binding, consideration will be given to statutes, regulations, ordinances, and guidance relating to all aspects of the remedial actions evaluated in this Remedy Implementation Work Plan, including:

- Air, groundwater, surface water quality, and residual soil concentration standards
- Waste handling, storage, transfer, and disposal requirements
- Operating parameters
- Health and safety requirements
- Monitoring requirements

The identification of ARARs depends on the type of media, contaminants of concern, site-specific characteristics, and the technologies employed during remediation. ARARs are those cleanup standards or controls that are promulgated under state or federal law that specifically address a hazardous substance, pollutant or contaminant, action, location, or another situation at a site. A requirement may be “relevant” but may not be “appropriate” to apply for various reasons and, therefore, not well suited for the site. ARARs can be chemical-, action- or location-specific requirements.

The principal ARARs that apply to the development site include:

- Clean Air Act
- Clean Water Act
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
- Resource Conservation and Recovery Act (RCRA)
- Department of Transportation Rules for Hazardous Materials Transport
- Occupational Safety and Health Administration (OSHA)
- State of Wisconsin Statutes Chapter 30
- State of Wisconsin Environmental Protection – Wisconsin Administrative Code Chapter NR 100 rule series
- State of Wisconsin Pollutant Discharge Regulations (WPDES) – Wisconsin Administrative Code Chapter NR 200 rule series
- State of Wisconsin Water Quality Regulations – Wisconsin Administrative Code Chapter NR 300 rule series

- State of Wisconsin Air Pollution Control Regulations – Wisconsin Administrative Code Chapter NR 400 rule series
- State of Wisconsin Solid Waste Management Regulations – Wisconsin Administrative Code Chapter NR 500 rule series and Wisconsin Statute 289.43
- State of Wisconsin Hazardous Waste Management Rules – Wisconsin Administrative Code Chapter NR 600 rule series
- State of Wisconsin Investigation and Remediation of Environmental Contamination –
- Wisconsin Administrative Code Chapter NR 700 rule series

Permitting

Local permits, such as construction and right-of-way permits, dewatering permits, demolition, or waste disposal permits may be required by the State, City, or County and will be the responsibility of the contractor or developer.

The contractor will complete a generator's waste profile form for the waste disposal facility before remediation. The information is used by the disposal facility to determine if the waste can be treated, stored, or disposed of in a legal, safe, and environmentally sound manner. The client will receive notification of waste acceptance based on the information submitted.

The contractor will work with the Village of Deerfield utility to obtain permission or a permit to discharge potentially contaminated or treated water to the sanitary system.

Cleanup Goals and Performance Objectives

Cleanup goals generally consist of either site-specific risk-based levels or regulated concentrations, such as federal maximum contaminant levels (MCLs) or state groundwater standards established for contaminants in groundwater. The risk-based remediation goals usually are calculated based on industrial or residential exposure scenarios and derived using standard contaminant partitioning and transport equations.

The future owner's objective would be to obtain closure. It will be necessary to follow state regulatory requirements outlined in the Wisconsin Administrative Codes. Contaminated soil should be restored in compliance with the requirements of ch. NR 720 and contaminated groundwater should be restored in compliance with the requirements of ch, NR 140. Soil and groundwater samples collected and analyzed for risk analysis, evaluation of remedial alternatives, and compliance with state regulatory requirements will be analyzed in a fixed analytical laboratory using USEPA SW-846 methods.

The following BRRTS cases have been identified as having confirmed Wis. Admin. § NR 140 (2019) enforcement standard exceedances:

30 W. Nelson Street

DNR BRRTS #: 02-13-001621

The Village is relying on natural attenuation and pump and treat that has been implemented by others to restore groundwater quality to meet NR 140 Wis. Adm. Code enforcement standards, but has a Local Governmental Unit (LGU) exemption that does not require them to develop or implement further remediation strategy on the north parcel. The southern parcel does not have evidence of groundwater exceedances of enforcement standards.

The performance objectives established for these remedies are as follows:

1. Protect human health by eliminating exposure pathways for metals, VOCs, and PAH remaining in soils. Encapsulation of those metals and PAHs will continue to be achieved by new structures and new hard surface areas on the site, as well as a new soil barrier layer on landscaped areas and clay liner in the new detention ponds.
2. Protect groundwater by encapsulation of VOCs, metals, and PAHs remaining in soils. Encapsulation of metals and PAH will limit the potential for mobilization of these constituents to groundwater.
3. Protect human health by limiting inhalation exposure pathways by operation of appropriate vapor mitigation systems beneath site structures (Appendix A).

4.0 Closure Strategy

Case Closure

As previously discussed, the redevelopment project consists of work on the entirety of the current 40 West Nelson property. In the fall, these will be subdivided into two contiguous parcels. The northern one would continue to be owned by the Village and the southern one owned by GreKa Holdings LLC. Future case closure will be performed on the south parcel only, due to the on-going groundwater contamination issues on the northern parcel.

Based on the results of the site assessment of the south property, the following environmental conditions must be addressed before the WDNR will issue regulatory site closure or a no further action determination:

- Contaminated soil in portions of the site (metals and PAHs noted GP-5 in the southwest and GP-10 south of new north property line of south parcel. Though not identified, possibly VOC-impacted soil beneath existing Hilleque building that remains).
- VOC vapors may be present, accumulate, or migrate through the unsaturated soil.

Resolution of the impacted soil on the site will require attention throughout site development. Under current conditions, the fill has limited exposure due to deteriorating asphalt, and the risk to human health and the environment is controlled. During building construction, the soil will be exposed and either capped with new features or hauled off-site to a landfill if deemed impacted. On the site grading plan, an estimated 3,000 cubic yards of new clean fill will need to be hauled to the site for development. Additionally, utility spoils will also need to be managed by replacing and compacting the spoils in the utility trenches as backfill material. The site cover features will consist of either hard surfaces (asphalt, concrete) or 12 inches of clean imported soil in landscaped areas that will include topsoil. The imported soil-fill will be obtained from a clean source as confirmed by sampling or other justifications (such as Phase I ESA from source property, load tickets from a virgin quarry or topsoil supplier, or other approved means).

Limited amounts of contaminated soil will be disturbed during redevelopment as the building foundations, utilities, and other features are constructed in areas that may be impacted. When buildings and other site improvements are completed, the disturbed site soils will once again be covered. At project completion, the environmental cap will consist of the following:

- Northern parcel (not part of closure) – Asphalt driveway and parking lot
- Site Exterior Areas: where hard surface features (noted below) are not located, a soil cap will be placed consisting of a minimum of 12 inches of clean soil in landscape areas (6 inches of clean general fill soil and 6 inches of topsoil). Source material for this soil is not yet determined but will be tested or determined to be approved source before hauling and placing at the site. The area of soil cap is shown on the site development figures and is minimal.
- Exterior Hard-Surface Areas: Paved parking areas, concrete walks, driveways, or building floors will be used to establish an engineered cap.

The imported soil-fill and topsoil will serve as a permeable engineered cap and the paved parking areas, exterior sidewalks, and building floors will serve as an impervious engineered cap.

The contractor will install new sanitary sewer, water, storm sewer, and other utility lines on the property and within the building concurrently with site development. The design team does not yet have an estimation on the amount of new piping below grade that would be installed. Installation of subsurface utilities will generate spoils that will be managed as backfill material over the utility. Excess fill material excavated from the utility trenches or other cut areas that are outside known metals/VOC/PAH-impacted areas, and cannot be relocated on the development site due to existing conditions, lack of fill areas, or proposed development plans, should be evaluated through PID screening, visual or olfactory methods to determine the possibility of contamination. If concerns exist, the soil should be segregated, stockpiled following NR 718 Wisconsin Administrative Code, and sampled for analytes of concern. If contaminated, it must be managed as solid waste, removed from the development site, and disposed at a licensed landfill.

The presence of VOC vapors appears to impact the southern site, though at concentrations below commercial and industrial screening levels. Therefore, vapor accumulation and potential intrusion into the proposed building will be managed using a sub-slab vapor barrier in conjunction with an active sub-slab venting system. Details of the vapor mitigation system are presented in Appendix A: Soil Vapor Management Plan.

Following the completion of remediation activities, a closure documentation request will be prepared following NR 726. This includes a case closure request, development of maintenance plans, and agreement to deed and parcel restrictions denoting continuing obligations.

5.0 System Design and Construction

Soil and Fill Management

Ex-situ remediation at this site will involve limited excavation of impacted soil from the subsurface in areas where buildings are removed or in the impacted soil boring locations from the site investigation activities. Site development may necessarily require some modifications to existing site grades (elevations). It is anticipated that an additional 3 to 5 feet of potentially impacted VOC soil from the northern portion of the building (where the previous soil was removed) will need to be excavated and hauled off-site at a licensed landfill facility. For the sake of budgeting, this may amount to up to 300 cubic yards of material. While this soil is assumed to be non-hazardous, TCLP analysis of samples collected from the temporary stockpiling of this material will likely be required to confirm hazardous versus non-hazardous based on the contained-out process. The historic disposal of the previously excavated soil just north of the existing building footprint did include at least some material that was categorized as hazardous waste due to the high levels of TCE.

A contractor will be hired to perform the soil excavation tasks as part of the overall construction contract.

Parking lots or other hard surfaces will be a new part of the redeveloped site features. Final designs are complete with a typical profile will consisting of 6 to 12 inches of aggregate bedding material overlaid by asphalt or concrete surface features.

Engineered Surface Barrier

Surface barriers that will be implemented at this site to prevent direct contact with subsurface soil contamination and minimize infiltration include the following:

- The building
- Concrete or asphalt floors, parking, driveway, sidewalk, and terraces
- Topsoil and vegetation in remaining landscape areas (minor amount in design drawings)
- Clay lined sedimentation ponds

Surface barriers will prevent direct contact with contaminated soil and groundwater in any area where impacted soil has not been removed by excavation and disposed of off-site. Surface barriers will also reduce infiltration minimizing the potential migration of potential contaminants from the unsaturated zone to the saturated zone.

The surface barriers will be present on both the north and south parcel. The northern parcel will remain in ownership by the Village of Deerfield, who will maintain their LGU exemption. This area, which had the primary historic issues with VOC releases, will be covered primarily with a hard-surface parking lot and driveway. The site will be leased to GreKa Holdings LLC and the developer agreement notes the responsibility for maintaining this cap feature in

accordance with the continuing obligations will be the responsibility of GreKa Holdings LLC. If GreKa Holdings LLC does not or can not maintain the integrity of this cap, the Village will provide those services at a cost to the Leaseee.

Imported Fill

Preliminary grading plans prepared to facilitate redevelopment of the 40 West Nelson Street Property estimate that approximately 3,000 cubic yards of fill will be imported to the site to achieve design grades within the exterior building areas following off-site disposal of contaminated soil. Soil grading will accommodate hard surface subgrade material (i.e., dense graded aggregate). The infill material for utility pipe bedding will be similar to the A/E specifications or clean aggregate around the vapor collection piping. Other imported fill material will be used for general grading and site features and shall be clean compactable fill to support site features.

In 2016, the WNDR released a guidance document proposing a process to document soil, or other material, imported to a VPLE site. While this site isn't expected to be a VPLE site, the developers plan to import fill in a manner that protects health and the environment and to confirm that it is indeed "clean." According to the draft guidance document (RR-041), the following factors will be considered when evaluating the imported fill:

- History of the property-where the soil and other filled materials are generated;
- The volume of soil and other fill materials to be used;
- Zoning restrictions on the planned end use of the receiving property;
- Location on the receiving property where the material will be placed, including the locational criteria in Section NR718.12(1), Wis. Adm. Code; and
- Results of sampling and comparison with RCLs established following Chapter NR720, Wis. Adm. Code.

While the volume of any imported soil-fill is expected to be minor if conducted, some effort will be made to confirm the soil meets the intent of clean infill. A borrow source has not yet been identified. However, appropriate due diligence before allowing material onto the site will be performed. Imported sand or gravel fill from a licensed quarry does not need further assessment. General fill from unknown sources may require a Phase I Environmental Site Assessment of the property and sampling or analysis of the imported soil either before, during, or after placement for constituents of concern. The soil may be evaluated during placement for VOCs based on PID screening results and olfactory observations. Imported topsoil from a commercial source, aggregate or stone material for hard surface subgrade or utility backfill will not be tested unless visual or olfactory observations during placement indicate a concern.

Temporary Stockpiles

Imported soil may be temporality stockpiled on the site's existing asphalt parking lot or another suitable surface for short durations depending on the ability to place the material

based on other site construction activities. The soil will then be relocated and placed in soil infill areas on the site.

Should it be necessary to place excavated fill material in stockpiles, such as from potentially VOC-impacted soil beneath the building, temporary stockpiles will be maintained in general accordance with s. NR 718.05 (3). Conditions for temporary stockpiles include:

- Placing the soil on an impervious base (e.g., concrete, asphalt, or plastic sheeting)
- Covering the soil when it is not being moved with a cover material sufficient to prevent infiltration of precipitation and inhibit volatilization of contaminants (e.g., plastic sheeting)
- Preventing surface water contact with the stockpiled soil using constructed berms, if necessary, to control surface water movement

If stockpiles are maintained for longer than 15 days, requirements under s. NR 718.05(2) would also apply including stockpile inspections at least once every 30 days, immediately repairing or replacing any base, cover, anchoring, or berm materials, and notification to the WDNR if the soil is stored for more than 90 days before final disposition.

The proposed soil handling and placement procedures will meet environmental closure requirements of s. NR 726.13(b) and not pose an unacceptable threat to public health, safety, welfare, or the environment. The site will be placed on the WDNR online Geographic Information System Registry (GIS Registry) for sites with residual soil or groundwater contamination and will have an approved cap maintenance plan which describes requirements for annual cap inspection and timely repair of any damaged/deteriorated areas.

Surface Water and Groundwater Management

Groundwater dewatering is not anticipated during construction at the site given the starting elevation of the land surface and the depth of groundwater (typically 8 – 10 feet below surface grades). Groundwater that is encountered during potentially footing or utility excavations that reaches the land surface, or surface water encountered during storm events, will be managed appropriately. The water will be collected and stored in on-site poly tanks, frac tank, or (upon receiving appropriate approvals) discharged directly to the sanitary sewer upon approval by the Village.

Monitored Natural Attenuation – Not Applicable to Southern Parcel

Natural attenuation is an on-going process in which contaminant concentrations are reduced through naturally occurring mechanisms under favorable conditions without human intervention. This remediation strategy relies on many physical, chemical, and biological processes to naturally reduce mass, toxicity, mobility, or concentration of contaminants in soil or groundwater. Attenuation processes include dilution, chemical and biological transformations, sorption, and volatilization.

Natural attenuation encompasses intrinsic biodegradation. Intrinsic biodegradation is a natural, non-enhanced process of remediation where complex organic compounds are broken down into simpler, less toxic constituents by aerobic or anaerobic microbial processes.

Due to the lack of exceedances for groundwater that was sampled on the southern parcel, no on-going natural attenuation is proposed or anticipated as a result of this project. Any on-going monitoring on the northern parcel or off-site wells currently and historically performed by others for purposes of data collection and evaluation of the northern parcel source area will continue as they are currently. This on-going obligation will not be the responsibility of the Village of Deerfield or GreKa Holdings LLC.

Vapor Intrusion and Mitigation

Vapor intrusion is the migration of volatile constituents from contaminated subsurface soil or groundwater into indoor air spaces of overlying buildings or underground routes such as buried utility lines and trenches. Most vapor intrusion occurs when contaminants in the underlying soil, or contaminants at the water table, enter the unsaturated zone above the water table and migrate to the atmosphere, or into the air space of overlying structures or utility trenches. Less frequently, vapors can enter buildings with groundwater seepage into sumps or flooded basements where contaminants partition directly from the groundwater into indoor air.

Vapor-phase contaminant migration (VOCs) in the unsaturated soil has been measured at this site. Volatile compounds of sufficient concentration can migrate in the vadose zone from impacted soil and passively vent into the atmosphere. Volatilization and migration of vapors in soil into the vadose zone and overlying structures, at concentrations of concern, is likely given the relatively high concentrations measured at the site.

Redevelopment often incorporates vapor mitigation solutions into the development as a precautionary measure in place of an extensive investigation. Mitigation or remediation of potential vapor intrusion risk is implemented to eliminate exposure pathways and can consist of one or more of the following:

- Removal of the source (contaminated soil or groundwater)
- In-situ remediation of the source
- Institutional controls such as deed restrictions
- Engineering controls or physical modifications to a site or facility

The mitigation approach and design for this project is included as a separate document in Appendix A.

6.0 Environmental Monitoring

Construction observation and groundwater monitoring (two wells installed as part of the Ayres 2016 investigation) will be performed by a qualified environmental engineer/consultant and will focus on specific remedial objectives. These objectives include documenting that excavated soil leaving the site is handled correctly and disposed of, groundwater from dewatering, if any, is properly managed, engineered surface barriers are appropriately placed, and the soil vapor management system is installed as designed.

Construction Observation

Construction observation will be performed at select intervals to document soil remediation activities, soil removal, any potential groundwater management, and vapor mitigation system installation and vapor barrier installation. The following tasks will be performed:

- Observe and document (including photographs) appropriate phases of remediation activities, including equipment and materials, soil excavation and infill, vapor mitigation system installation, and other pertinent activities. Provide recommendations to the Owner and Contractor for those not meeting specifications or special provisions. Make occasional site visits to ensure the contractor is complying with requirements of the approved Remedial Action Plan and obtaining the information necessary for the preparation of site closure documentation.
- Keep site visit diaries, logs, photographs, and other pertinent records to prepare a record of the contactor's work related to soil and groundwater management, cap installation, and construction of the soil vapor management system.

Groundwater Monitoring

Groundwater monitoring will be performed before well abandonment of the two wells installed by Ayres Associates in 2016 in support of data collection and trend analysis in support of site closure on the south parcel. This data will be limited to the analysis of VOC compounds since no other compounds are present in groundwater above regulatory standards.

Vapor Monitoring

Five sub-slab vapor probes will be installed to monitor the area beneath the slab to observe the characteristics of vapors that may form beneath the building and to determine the effectiveness of the SVMS, including pressure drop across the system. The locations of these probes are shown in Appendix A but may be modified during the construction phase. Sample protocol of these probes is also as indicated in Appendix A.

Well Abandonment

Wells currently installed at the site that will not be used for compliance or on-going monitoring will be abandoned before or during site redevelopment. These are limited to Ayres Associates' installed wells H-MW-1 and H-MW-2. These are shown in the figures and will be abandoned following Wisconsin Administrative Codes NR 812 and NR 141.25 following sampling anticipated

to occur in November. Depending on site development interference, additional wells may be abandoned. Well abandonment will be performed before or during construction and will proceed following the following procedure:

- All dedicated tubing, bailers, or other debris will be removed from the wells before abandonment.
- Protective casings will be removed before well abandonment (note: flush mount covers will be removed as well).
- Bentonite chips smaller than 3/8-inch diameter will be used to abandon the wells as specified in NR 812 and NR 141.25 WAC.
- The monitoring-well casing (if applicable) will be cut off at least 30-inches below ground surface.
- Monitoring-well abandonment documentation Form 3300-005 (R4/2015) will be completed and submitted to the DNR within 60 days of abandonment.

7.0 SVMS Operation, Maintenance, and Monitoring (OM&M) Considerations

See Appendix A.

8.0 Project Meetings

Meetings will be held to achieve a high degree of communication among members of the project team. These meetings will help to minimize errors and promote quality performance and site-safety during the system installation, mixing and injection, and monitoring phases of the project. Key project personnel attending these meetings, as appropriate, will include the Prime Contractor, appropriate Subcontractors, Subcontractor's Field Operations and Site Health and Safety Managers, Ayres Associates project and field operations personnel, and representatives from the developer.

Pre-construction Meeting

A pre-construction meeting will be held with the key project personnel to ensure that the entire team has a clear understanding of the project objectives, system design specifications, health and safety issues, QAQC requirements, and work procedures. Site-specific requirements and work procedures will be reviewed with all parties. This meeting also will allow the key team members to meet and develop solutions to any potential problems known to the team before the initiation of installation activities. Ayres Associates project engineer will document this meeting and provide notes to all meeting participants.

Monthly Progress Meetings

A monthly progress meeting will be held with the key project members and other appropriate parties to discuss progress and planned activities as they relate to environmental elements. At a minimum, the key project personnel attending these meetings will include the subcontractor's field supervisor, construction personnel, and Ayres Associates project manager and technicians. Ayres Associates project manager will document these meetings and prepare meeting notes for all parties, as necessary. Meeting frequency and dates may be adjusted to account for appropriate integration of environmental elements and construction.

Problem Resolution Meetings

Special meetings will be held when and if a problem or work deficiency occurs or may occur that could impact safety, quality, cost, or the project schedule. All parties involved will attend to discuss the problem or deficiency, to review possible solutions, and to implement a plan of action to resolve the problem or deficiency. The project manager or project engineer will document the meeting and provide notes to all meeting participants.

9.0 Quality Control Activities

Adherence to the design specifications and health and safety requirements and procedures will be required during the installation and operation of the remediation system. The measures required to verify the quality of work performed and compliance with the specified project requirements include the inspection of materials, equipment, and workmanship before and during the performance of each task comprising the system installation and operation; and the resolution of all reported deficiencies and nonconformance issues.

Preparatory activities will include the following:

- Verifying that all required submittals have been accepted by the WDNR project manager
- Verifying proper project and payment tracking elements are understood for potential WEDC Brownfield Grant
- Reviewing the site-specific health and safety plan
- Ensuring that the field team has reviewed and discussed the work procedures that will be followed
- Reviewing procurement specifications, selecting suppliers, and tracking procurements
- Ensuring that materials and equipment are appropriately received, inspected, tested, inventoried, and stored

Progress monitoring activities will include the following:

- Checking work quality to ensure that contract requirements and design specifications are being met
- Verifying site activities are performed in a safe manner
- Checking that QA provisions are in place and that QC activities are being completed in compliance with QA requirements and procedures
- Checking those daily QC inspections are sufficiently rigorous to ensure continuing compliance with the QA program
- Checking that nonconformance issues are being recorded, tracked, and resolved
- Checking that QC reporting is accurate, timely, complete, and in compliance with QA requirements and procedures

Follow-up and completion activities will include:

- Resolution of all nonconformance reports
- Resolution of all outstanding discrepancies

Environmental Health and Safety

Health and safety procedures and requirements are provided in the project-specific health and safety plan. The site health and safety plan describes the health and safety-related QA and QC activities that will be performed during construction observation and groundwater monitoring and provides the roles, responsibilities, and authorities of the various team members. Sub-contractors on the project will be required to submit and adhere to their site-specific health and safety plans.

10.0 Waste Management

Soil excavation and off-site disposal activities will require coordination with Subtitle D municipal landfill for confirmation of soil laboratory results before sending waste to that facility. Additionally, if the contained-out approval process is not accepted or TCLP testing indicates that VOC-impacted soils may be considered hazardous waste and would need to be managed and coordinated appropriately. While the soil removal remediation activity will generate the majority of the waste material at the site, drilling of replacement wells and sampling activities that may be performed during this project would be expected to generate a small amount of additional solid and liquid "waste." The anticipated waste types and management procedures for each activity are summarized below:

- Though not anticipated, soil cuttings generated during drilling and replacement well installation, if necessary for northern-parcel wells that interfere with construction, will be contained in 55-gallon DOT drums and left on-site for subsequent disposal. All solid wastes exclusive of the drill cuttings will be bagged and disposed of as solid wastes in a Subtitle D municipal landfill. If deemed to be not VOC-impacted through subsequent sampling, field screening, or other methods, the material may be thin spread beneath future drives or hard surfaces outside the building footprint.
- Monitoring-well Development/Groundwater Sampling – Solid wastes generated during well development and groundwater sampling activities may include tubing and filters, bailer rope, plastic and paper, and disposable protective clothing. All solid wastes generated during these field activities will be bagged and disposed of as solid wastes in a Subtitle D municipal landfill.
- Liquid waste generated during monitoring-well development and groundwater sampling may include purge water. Water obtained from wells that are known to be contaminated will be collected in 55-gallon DOT drums. Permission may be obtained from the City to discharge this water to the sanitary sewer at the point of generation if acceptable to the publicly-owned treatment works. The decision to discharge the water to the sanitary sewer will be based on the type and concentration of contaminants.

If permission cannot be obtained to discharge the water to the sanitary sewer, the water will be retained for subsequent off-site disposal. All 55-gallon drums containing solid or liquid wastes will be stored in a single secured location within the project corridor. Solids and liquids will be contained in separate drums. Each drum will be secured and properly labeled as to location, waste type, date, and other pertinent information.

11.0 Documentation

Field Logbook

Ayres Associates oversight personnel will maintain a field logbook. Entries into the logbook will be dated and initialed. In addition to other project requirements, the logbook will contain a diary of daily events and progress and a record of site meetings and visitors. The logbook also will contain any observations of unusual or previously unnoticed site conditions. QAQC activities that will be recorded in the logbook include inspections of materials, supplies, and equipment; inspections of work quality, notations of possible improvements to QAQC, health, and safety, or work quality procedures; and field data and information for which a recording form has not previously been prepared.

Data Forms

Field sample forms or bound project logbooks will be utilized to document the "who, what, when, where, why, and how" of site sampling activities. The field sample forms will be completed in the field at the time of sampling. Each form will be submitted to the field manager at the end of each day. After the field manager has reviewed each record for completeness and legibility, it will be transmitted to the project manager.

As-Built Drawings

The contractor operations manager will be responsible for ensuring that contractor as-built drawings for the soil remediation, soil excavation, soil barrier layer, vapor mitigation piping, vapor barrier, and vapor sampling points are prepared and submitted. The contractor's field operations manager will provide updated as-built drawing to Ayres Associates, as requested. Ayres Associates project manager will be responsible for ensuring the safekeeping, filing, retrieval, and retention of these drawings.

Non-Conformance Log

Ayres Associates field operations manager will be responsible for preparing and updating a nonconformance log for those activities assigned to their organization. The log will remain on-site and will identify all nonconformance situations, the nature of the nonconformance, corrective actions necessary to resolve the nonconformance, and the status of the nonconformance.

Progress Reports

Ayres Associates field technician will be responsible for preparing daily progress reports for the project manager and the client during days present at the site. These reports will contain a summary of work observed during the day, verification that the work performed meets contract and design requirements, reporting and updating significant nonconformance situations, projected work activities for the following week, and a comparison of the work completed to the project schedule. These reports also will highlight any potential problems that could compromise the safety or quality of work or project schedule.

NR 724 Remedial Action Documentation Report

An NR 724 construction documentation report will be submitted within 60 days of completing the remedial action. The report will document that the completed final remedial action meets or exceeds the design criteria and the plans and specifications developed following the requirements of NR 724.15. The report will include the following information:

- The regulatory status of the facility.
- As-built maps, plan sheets, drawings, and cross-sections.
- A synopsis of the remedial or interim action and a certification that the design and construction conform to the plans and specifications.
- An explanation of any minor changes to the plans and why these were necessary for the project.
- Results of site monitoring conducted during construction.
- A brief description of the public health and environmental laws applicable to the contamination at the site and the remedial action that was implemented. This description will include the physical locations where the environmental laws shall be complied with for all media of concern.
- A revised operations and maintenance plan following NR 724.13 (4), unless the cover letter indicates that there are no revisions to the operations and maintenance plan.
- The Cap Maintenance Plan will be prepared for this site following WDNR guidelines.

12.0 Procurement

Ayres Associate's project engineer and field technicians will be responsible for QC checks of materials, equipment, and the installation processes used during foundation construction. Ayres Associates project manager will be responsible for ensuring that checks and inspections are done.

Construction Equipment

Construction equipment necessary for system installation activities will be clean when arriving on-site. Construction equipment will be inspected immediately upon delivery to the site and before it is used. The inspection will note the type and model of equipment and determine that it is appropriate for its intended use as defined by the design specifications. A visual examination will be performed to ensure that there are no signs of damage or hazards and incipient failures such as fluid leaks or worn components. If any of these conditions are discovered, they will be corrected before the equipment is put into use. At all times, safe storage, proper positioning, set-up, and use of construction equipment will be enforced, and the performance of preventive maintenance will be verified daily.

13.0 Notification and Correction Process

Any problems associated with materials, supplies, equipment, and service suppliers will be documented, and corrective actions are taken immediately. In those instances where a potential for impact on safety or project success exists, the field technician or project engineer will immediately notify the project manager of nonconformance situations.

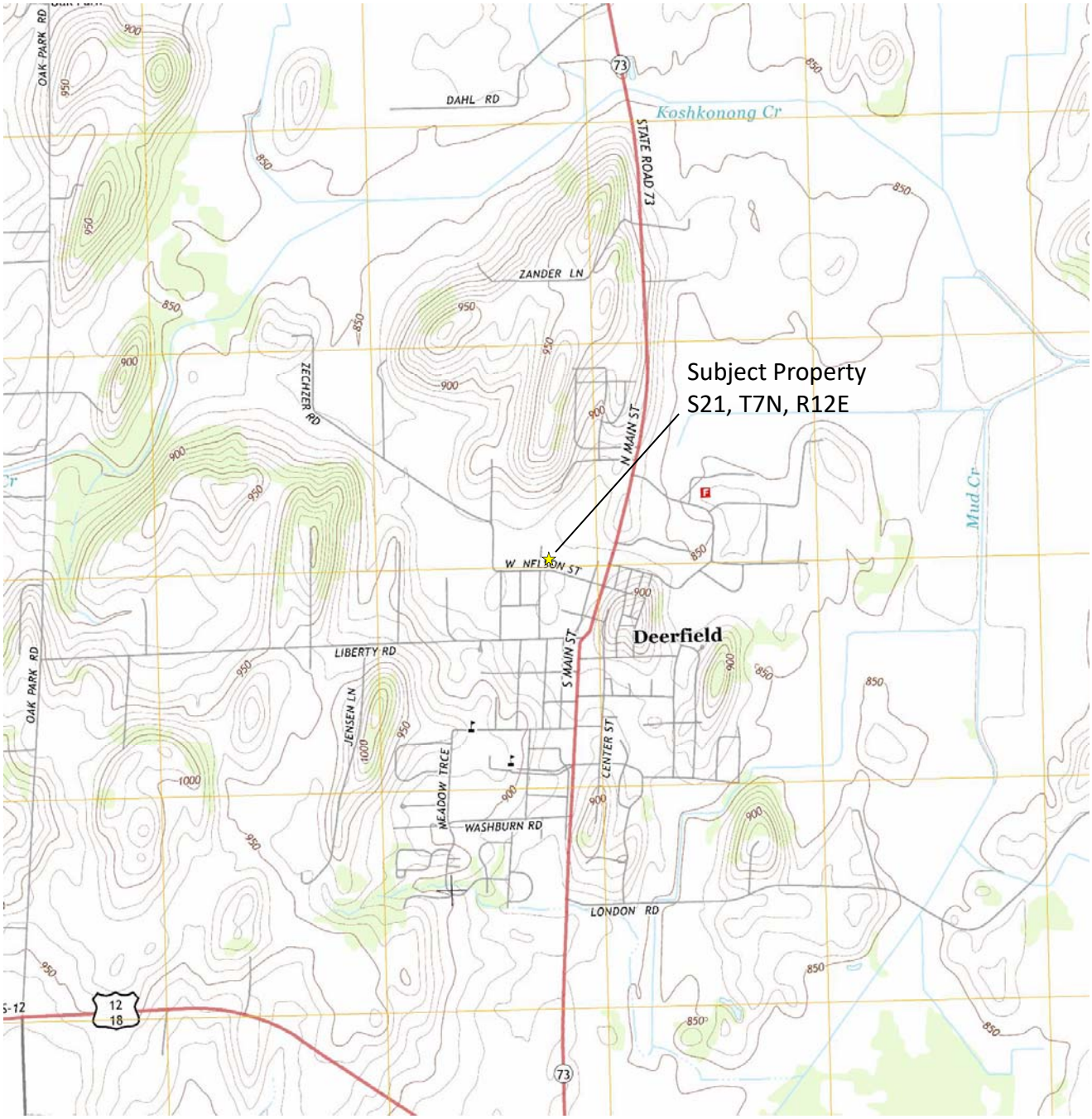
All nonconforming shipments, materials, supplies, equipment, or subcontractor services will be documented and reported to Ayres Associates project manager. Documentation will include the date of the inspection, the items inspected, the nature of the nonconformance, any immediate corrective actions are taken, and the name of the person performing the inspection. Ayres Associates field technician or project engineer will immediately contact Ayres Associates' project manager of any nonconformance situations that could impact safety, quality, or the success of the project.

Ayres Associates field technicians or project engineer will maintain a log of all nonconformance reports and will document corrective actions through final resolution. Resolved nonconformance reports will be so indicated on the log with a description of the corrective actions and final resolution. Nonconformance resolution will be documented and communicated to all parties.

Ayres Associates field technicians will provide the project manager with a weekly update of this nonconformance log. Nonconforming materials, supplies, and equipment will be immediately tagged as being "out of conformance" and repaired, calibrated, or removed from the site as soon as reasonably possible. The client will be notified immediately if the nature of the nonconformance involves a health and safety violation, or threatens safety or project success.

Figures

Figure List



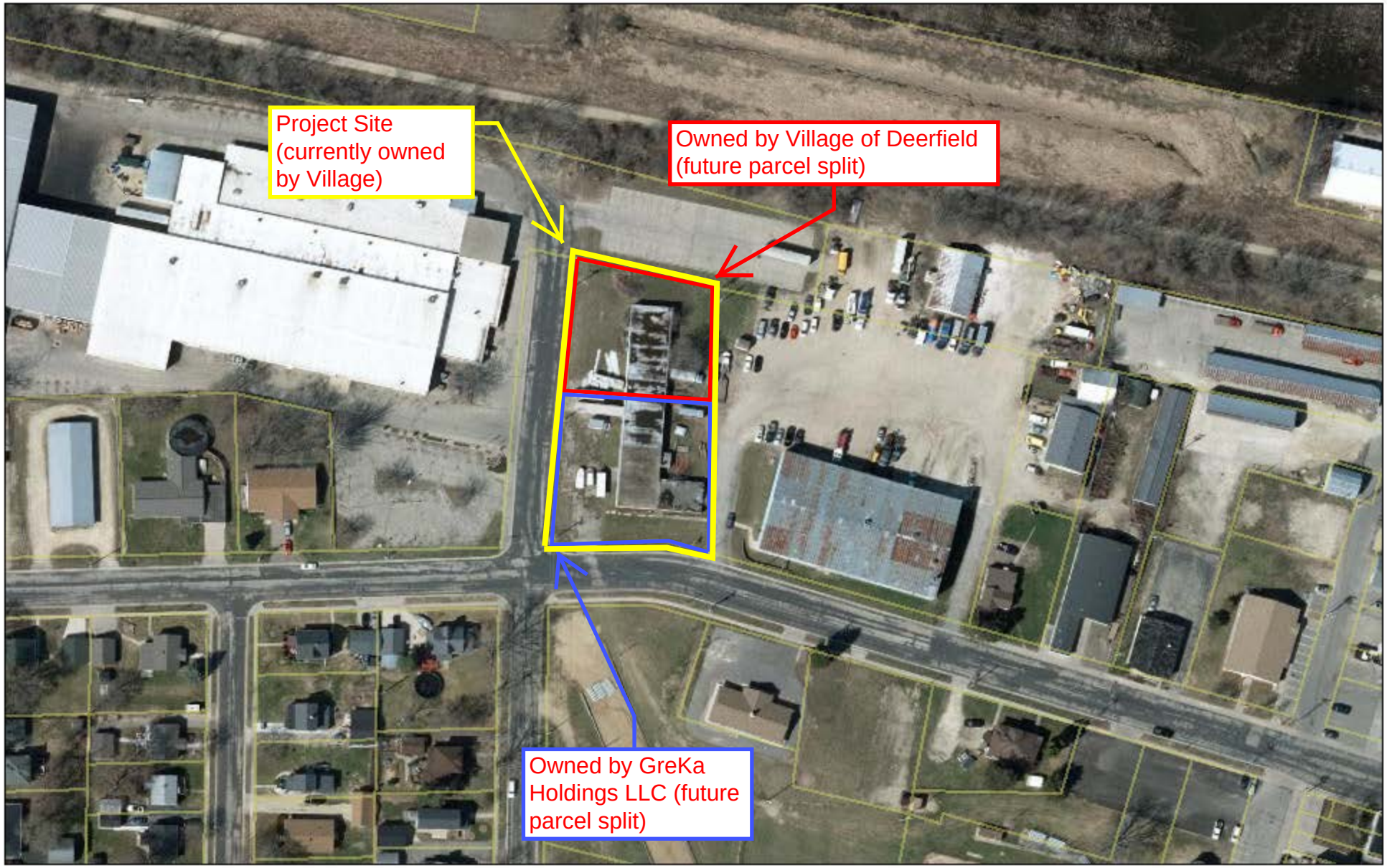
Source: USGS 7.5-Minute Series Topographic Quadrangle, Deerfield, Wisconsin, 2013

Figure 1 – Location Map
Remedial Design Report
40 West Nelson Street
Deerfield, Wisconsin
August 2019

19-0590.10

AYRES ASSOCIATES

Figure 2 - 40 W Nelson St Tax Parcels



June 2, 2017

Tax Parcels

1:2,257

0 0.0175 0.035 0.07 mi

0 0.03 0.06 0.12 km

Planning
Geophysical

NORTH

0 30 60
FEET

LEGEND

- PROPERTY BOUNDARY
- H-GP-5 — GROUND PROBE
- H-MW-1 — MONITORING WELL
- GP-5 — GROUND PROBE FROM FORMER INVESTIGATION DONE BY THE SIGMA GROUP (2013/2015)
- MW-14SR — MONITORING WELL FROM FORMER INVESTIGATION DONE BY TETRA TECH (1994). APPROXIMATE LOCATION.

NOTE: THIS DRAWING WAS PREPARED IN COLOR. REPRODUCTION BY MEANS OTHER THAN EQUIVALENT COLOR COPYING MAY CAUSE SOME DATA TO BE LOST OR MISREPRESENTED.

DR.BY	T. SHUPERT
CHK.BY	E. GROSS
DATE	JUNE 2016
BOOK NO.	
JOB NO.	19-0590.10
SCALE	AS SHOWN

NO.	DATE	REVISION

NO.	DATE	REVISION

HILLEQUE PROPERTY
40 W. NELSON STREET
DEERFIELD, WISCONSIN

AYRES ASSOCIATES
Eau Claire, Wisconsin

SOIL BORING, PROBE, AND MONITORING WELL LOCATIONS

DRAWING NO. 2

QUAM ENGINEERING, LLC 4604 Siggelkow Road, Suite A – McFarland, WI 53558 (608) 838-7750 \AB-12-17\AB12BASE.DWG

EX. VALVE
EX. INLET
EOP=861.59
E IE=859.03
EX. SAN MH
RIM=861.79
EX. 12" PVC
STORM SEWER
EX. INLET
BOC=861.68
W IE=858.84
EX. 8" WATER
MAIN
EX. 8" SANITARY
SEWER
EX. POWER
POLE
N. GRAND AVE
EX. ASPHALT
EX. POWER
POLE
EX. INLET
RIM=861.56
E IE=858.40
EX. 18" RCP STORM SEWER
EX. 4" DI
STORM SEWER
EX. ELECTRIC LINE
(TO BE ABANDONED)
EX. GRAVEL
EDGE
EX. INLET
EX. VALVE
EX. SAN MH
RIM=862.58
EX. PROPERTY LINE
(TO BE REMOVED VIA CSM...)
EX. BUILDING
(TO BE REMOVED)
REDEVELOPMENT
BOUNDARY LINE
EX. 8" SANITARY
SEWER
EX. ASPHALT
(TO BE REMOVED)
EX. CONCRETE
(TO BE REMOVED)
EX. GRAVEL
EX. TELEPHONE LINE
(TO BE ABANDONED)
EX. POWER
POLE
EX. 6" WATER MAIN
EX. VALVE
EX. HYDRANT
EX. GAS
LINE
EX. 8" WATER
MAIN
EX. TELEPHONE LINE
EX. EASEMENT
(TO BE VACATED)
EX. SIDEWALK
EX. CONCRETE
WALL
(TO BE REMOVED)
EX. GAS
LINE
EX. ASPHALT
(TO BE REMOVED)
EX. ELECTRICAL LINE
(TO BE RELOCATED)
EX. TELEPHONE LINE
EX. SANITARY STUB
EX. WATER STUB
EX. 4' SIDEWALK
(TO BE REMOVED)
EXISTING BUILDING
EX. FLOOR=868.57
EX. POWER
POLE
EX. PAVEMENT
(TO BE REMOVED)
EX. SIDEWALK
(TO BE REMOVED)
EX. SAN MH
RIM=864.18
EX. VALVE
EX. WATER
LATERAL
EX. LIGHT POLE
(TO BE RELOCATED)
EX. VALVE
EX. MODULAR
WALL
EX. 8" PVC
SANITARY SEWER
EX. 8" WATER MAIN
EX. TELEPHONE
PEDESTAL (TO BE
RELOCATED)
EX. POWER
POLE (TO BE
RELOCATED)
EX. LIGHT POLE
EX. VALVE
EX. 4" PVC
SANITARY LATERAL
W. NELSON ST
(TO BE LOWERED
BY OTHERS)
EX. SAN MH
RIM=864.40
NE IE=859.26
NW IE=859.30
EX. GAS LINE

N

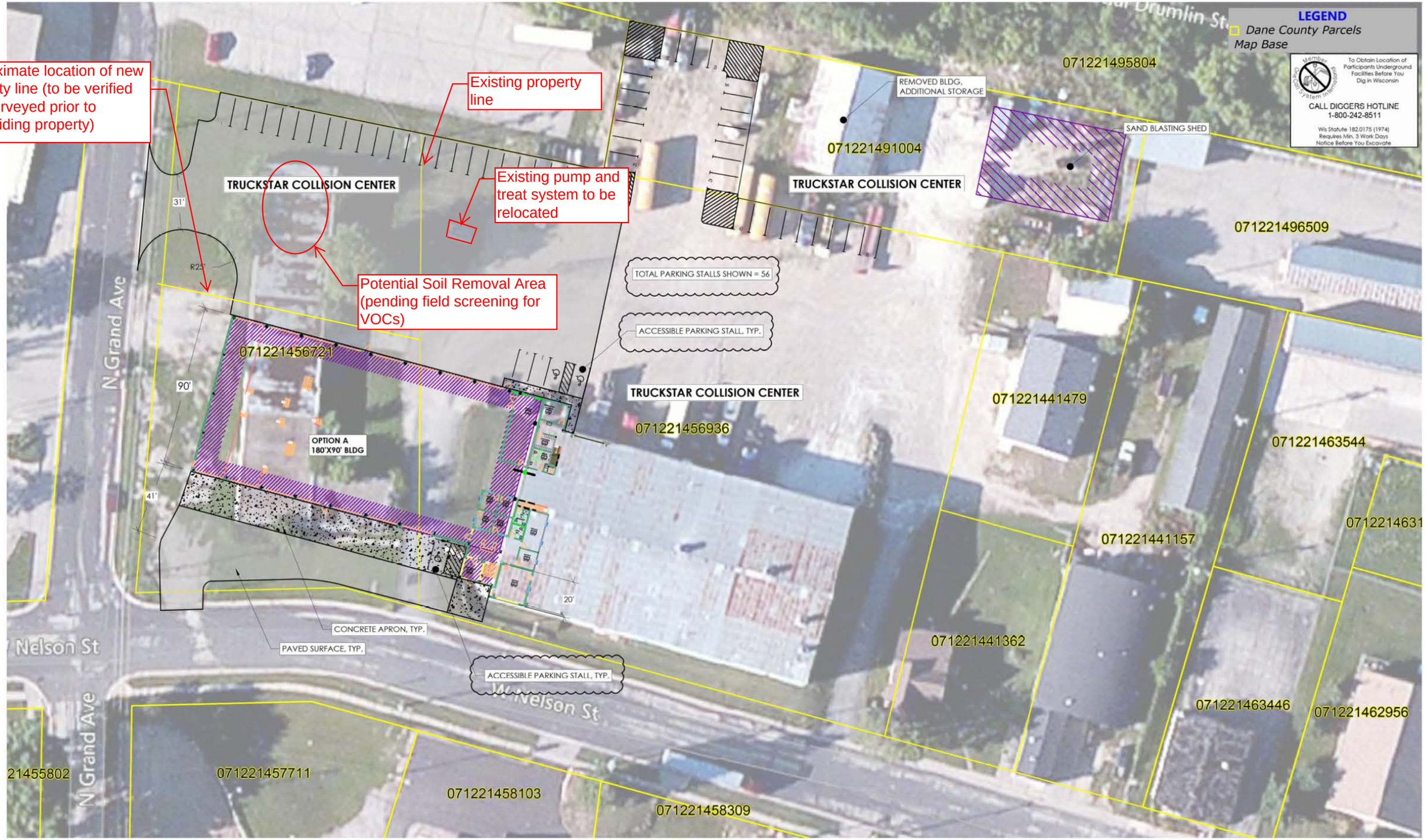
0 20 40

EXISTING IMPERVIOUS AREAS (REDEVELOPMENT AREA):

EXISTING BUILDING	=102 SF
SIDEWALK	=606 SF
ASPHALT	=5,746 SF
CONCRETE	=10,618 SF
GRAVEL	=8,288 SF
TOTAL IMPERVIOUS	=25,358 SF

TRUCKSTAR–VILLAGE OF DEERFIELD
EXISTING SITE PLAN
SHEET C1.0
DATED: AUGUST 3, 2017

QUAM ENGINEERING, LLC
Residential and Commercial Site Design Consultants
www.quamengineering.com
4604 Siggelkow Road, Suite A – McFarland, Wisconsin 53558
Phone (608) 838-7750; Fax (608) 838-7752



Roussev Engineering Solutions LLC

406 Windy Peak Rd • Verona, WI 53593
608-620-3036 (Office) • 608-620-3755 (Fax)
www.roussevengineering.com

REVISIONS	NO.	BY	DATE
DSPS COMMENTS	1	SSR	2/21/19

PROPOSED SITE PLAN

TRUCKSTAR COLLISION CENTER
GREKA HOLDINGS LLC
Village of Deerfield
Dane County, WI

0 50'
25' SCALE

DRAWN BY	SSR
REVIEWED BY	
DATE	2/21/19
RES FILE NO.	1016-30
SHEET NO.	C1.0

QUAM ENGINEERING, LLC 4604 Siggelkow Road, Suite A – McFarland, WI 53558 (608) 838-7750 \AB-12-17\AB12BASE.DWG

N. GRAND AVE

W. NELSON ST

OHEL

EX. POWER POLE

BIO-RETENTION /DET. BASIN

R20'

DETENTION BASIN

R25'

EX. PROPERTY LINE (TO BE REMOVED VIA CSM...)

PROPOSED ASPHALT

RETAINING WALL

PROPOSED BUILDING

OVERHEAD DOORS 16'X16'

CONCRETE APRON

25'

EX. EASEMENT (TO BE VACATED)

HANDICAP SIGN (SEE DETAIL)

EX. SIDEWALK

EX. GRAVEL EDGE

EX. GRAVEL

REDEVELOPMENT BOUNDARY LINE

EXISTING BUILDING

EX. MODULAR WALL

18'(TYP.)

8'(TYP.)

32'

100'

180'

136.5'

37'

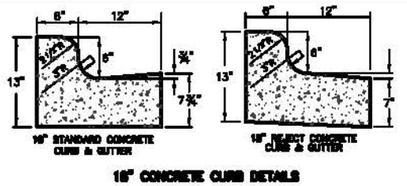
R5'

N

0 20 40

IMPERVIOUS AREAS (REDEVELOPMENT AREA:

PROPOSED BUILDING	=18,208 SF
NORTH PARKING LOT	=18,174 SF
SOUTH PARKING LOT	=7,080 SF
GRAVEL	=1,041 SF
TOTAL IMPERVIOUS	=44,503 SF



16" CONCRETE CURB DETAILS

HANDICAP ACCESSIBLE SIGN DETAIL

TRUCKSTAR–VILLAGE OF DEERFIELD
PROPOSED SITE PLAN
SHEET C2.0
DATED: AUGUST 3, 2017

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www.quamengineering.com
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Phone (608) 838-7750; Fax (608) 838-7752

6" SANITARY FORCE MAIN
EX. VALVE
EX. INLET EOP=861.59 E IE=859.03
EX. SAN MH RIM=861.79
EX. INLET BOC=861.68 W IE=858.84
EX. 12" PVC STORM SEWER
EX. POWER POLE
EX. 8" SANITARY SEWER
N. GRAND AVE
EX. ASPHALT
EX. STORM INLET E IE=858.40
EX. STORM SEWER
EX. 4" DI STORM SEWER
EX. 18" RCP STORM SEWER
EX. INLET
EX. GRAVEL EDGE
EX. PROPERTY LINE (TO BE REMOVED VIA CSM:11)
REDEVELOPMENT BOUNDARY LINE
EX. GRAVEL
18'(TYP.)
8'(TYP.)
EX. SIDEWALK
EX. VALVE
EX. SAN MH RIM=862.58
EX. POWER POLE
EX. 6" WATER MAIN
EX. VALVE
EX. 8" SANITARY SEWER
EX. HYDRANT
EX. GAS LINE
EX. 8" WATER MAIN
PROPOSED BUILDING
EX. GAS LINE
EX. TELEPHONE LINE
EXISTING BUILDING
CONNECT TO EX. SANITARY LATERAL
CONNECT TO EX. WATER LATERAL
EX. POWER POLE
EX. VALVE
EX. SAN MH RIM=864.18
EX. LIGHT POLE (TO BE RELOCATED)
EX. 8" WATER MAIN
EX. TELEPHONE PEDESTAL (TO BE RELOCATED)
EX. POWER POLE (TO BE RELOCATED)
EX. LIGHT POLE
EX. VALVE
EX. 6" PVC SANITARY SEWER
EX. VALVE
EX. 4" PVC SANITARY LATERAL
W. NELSON ST (TO BE LOWERED BY OTHERS)
EX. SAN MH RIM=864.40 NE IE=859.26 NW IE=859.30
EX. GAS LINE

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN
CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE
TDD(FOR THE HEARING IMPAIRED)(800)542-2289
WIS. STATUTE 182.0175 (1974) REQUIRES MIN. OF 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

GENERAL NOTES:

UTILITY NOTES:

TRUCKSTAR–VILLAGE OF DEERFIELD
PRELIMINARY UTILITY PLAN
SHEET C4.0
DATED: AUGUST 3, 2017

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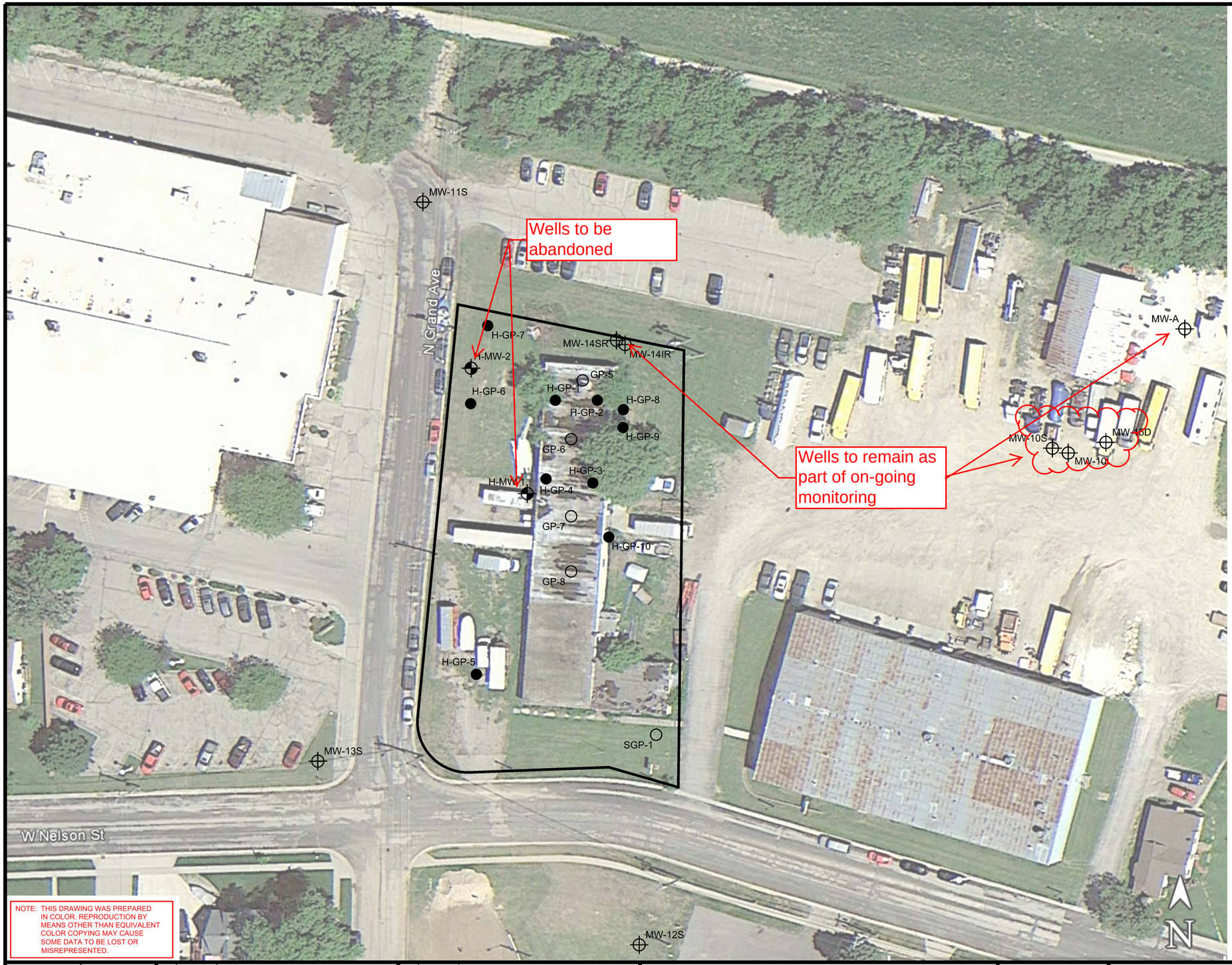

LEGEND

- PROPERTY BOUNDARY
- H-GP-5 — GROUND PROBE
- H-MW-1 — MONITORING WELL
- GP-5 — GROUND PROBE FROM FORMER INVESTIGATION DONE BY THE SIGMA GROUP (2013/2015)
- MW-14SR — MONITORING WELL FROM FORMER INVESTIGATION DONE BY TETRA TECH (1994). APPROXIMATE LOCATION.

NOTE: THIS DRAWING WAS PREPARED IN COLOR. REPRODUCTION BY MEANS OTHER THAN EQUIVALENT COLOR COPYING MAY CAUSE SOME DATA TO BE LOST OR MISREPRESENTED.

DR.BY	T. SHUPERT
CHK.BY	E. GROSS
DATE	JUNE 2016
BOOK NO.	
JOB NO.	19-0590.10
SCALE	AS SHOWN

NO.	DATE	REVISION

HILLEQUE PROPERTY
40 W. NELSON STREET
DEERFIELD, WISCONSIN

AYRES ASSOCIATES
Eau Claire, Wisconsin

Well Abandonment Plan

DRAWING NO. W1

Appendix A

Soil Vapor Management Plan

Soil Vapor Management Plan

GreKa Holdings LLC/Truckstar Collision Redevelopment
40 W. Nelson Street
Deerfield, Wisconsin

Prepared for:

Elizabeth McCredie
Village of Deerfield
4 North Main Street
Deerfield, WI 53531

August 2019

HireSmart®

Soil Vapor Management Plan

GreKa Holdings LLC/Truckstar Collision Redevelopment
40 W. Nelson Street
Deerfield, Wisconsin

This report prepared by:

Benjamin Peotter, PE
Project Engineer

This report reviewed by:

Bill Honea, PG,
Project Manager/Geologist

AYRES ASSOCIATES
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Madison, WI 53718
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www.AyresAssociates.com

Ayres Associates Project No. 19-0590.10
File: v:\env\final\19059010\soil vapor management plan 40 w. nelson.docx

NR 712.09 SUBMITTAL CERTIFICATION

"I, Benjamin Peotter, 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."

WISCONSIN
BENJAMIN J.
PEOTTER
E-36784
MADISON
WI
PROFESSIONAL ENGINEER

Benjamin Peotter, PE

August 29, 2019
Date

36784-006
P.E. Number

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1.0 Introduction

This Soil Vapor Management Plan (SVMP) was prepared to support the design and construction of a new building redevelopment project located at 40 W. Nelson Street, Wisconsin. The site is the former location of the Borgerud Manufacturing Company (acquired by Sta-Rite) and later Hilleque Creative Laminates.

Plans for redeveloping the parcel include the construction of an approximate 16,500 square foot addition to the existing Truckstar Collision vehicle repair building. The new building will connect to the west side of the existing building and extend westerly on to the southern portion of the 40 W. Nelson Street property, which will be a separate parcel in the future. The redevelopment will allow this underutilized and contaminated site back into productive reuse for the community, creating a better environment for the existing surrounding properties and providing an improved tax base for the Village.

Sampling has indicated that VOC-impacted soil does not appear located on the southern half of the property or existing building (see Sigma report dated May 27, 2015, GP-6 and GP-7 on southern two-thirds of existing Hilleque building showing non-detects for VOCs, as do other soil probes on the southern half of the property). Additionally, vapor analysis by Sigma (in a letter dated February 14, 2014, to DNR, Sample SS-1) did not indicate exceedances above commercial/industrial levels, consistent with the soil analysis. However, due to the history on the northern portion of the site and vapor detects above the residential screening levels, a soil vapor management plan (SVMP) was prepared and presented here to manage potential soil vapors in the new building to be constructed on the south side of the site.

The SVMP will support suitable indoor air quality of the proposed building and follow the proposed guidance from the Wisconsin Department of Natural Resources (WDNR) and the United States Environmental Protection Agency (USEPA) on vapor intrusion and continuing obligations. Vapor management systems are beneficial for multiple reasons, including both the proper performance of the building heating, ventilating, and cooling (HVAC) systems and protection from drafts, pollens, particulates, odors, and potential environmental contaminants. The SVMP developed for the 40 West Nelson Street redevelopment includes an active soil vapor management system (SVMS) with a vacuum blower and subsurface collection piping beneath the building floors to vent any collected vapors and has been designed to be incorporated into the existing building plans.

Please note that as of the date of this report, the site parcel has not yet been subdivided. The approach will be to subdivide the parcel in the fall of 2019 with Greka Holdings LLC (with common owners with Truckstar Collision) owning the southern portion of the property and the Village of Deerfield owning the northern portion. It is not yet known if the address of the property will change in the future for the new development.

2.0 Project Background

Past documents within the DNR file present the project history and background in further depth, including the remedial design report, of which this appendix is an attachment to. The background information in this section will focus on the volatile organic compounds for which this vapor management plan is intended to address.

Borgerud Manufacturing Company produced water softeners, glassware ceramic, porcelain, metal, and fabric on the property before 1967. Their manufacturing operations used solvent cleaners. Sta-Rite Industries acquired Borgerud Manufacturing in July 1967 and continued manufacturing operations. According to past employees, spent solvents were discarded on the ground outside the north door of the building. As part of the historical investigation and remediation activities, nearly 1,800 tons of contaminated soil was removed directly north and adjacent to the Hilleque building, where the solvent dumping allegedly took place. Also, a groundwater pump and treat system was installed on the adjacent Truckstar property to address the area identified in 1994 as having been contaminated. These actions were part of an agreement between former site owner (Sta-Rite) and the Village of Deerfield.

Along with the limited 1994 investigation, two more recent limited, site investigations were conducted between 2013 and 2015 under the Wisconsin Assessment Monies (WAM) grant program. In December 2013, an investigation was completed to determine if the past auto operations on the adjacent site to the east contributed to contamination at the Hilleque property. Four soil borings were advanced along the property border, and temporary wells were installed in two of the borings. In addition, two sub-slab vapor samples were collected from beneath the Hilleque building. Samples from the temporary groundwater wells on the east side of the subject property did not indicate concentrations exceeding NR 140 Preventive Action Limits (PALs). The northernmost sub-slab vapor sample (SS-2) had levels of TCE at 55,200 µg/m^3, above the industrial air vapor action levels, and the southern sub-slab vapor sample (SS-1) indicated results above residential screening levels but below commercial or industrial screening levels. In May 2015, four additional soil borings were advanced through the concrete building slab within the Hilleque building. Two of the samples on the northern side of the building contained cis-1,2-dichloroethene and TCE at concentrations above the WDNR GW RCLS, but no VOCs were detected in the two southern soil samples.

Due to the historic nature of VOCs on the northern portion of the site and findings of VOC present, though below industrial vapor screening levels on the southern portion of the site, a venting system is required to safely mitigate vapors beneath the future building and vent it to the atmosphere.

3.0 Soil Vapor Management System Plan

The SVMS Plan consists of efforts and activities designed to benefit the indoor air quality of the proposed development by controlling potential airborne contaminants, including those that may be present beneath the subject building. This section of the SVMS Plan presents the vapor management objectives and design strategy that were used to address the potential risks to the proposed building development.

3.1 Soil Vapor Management Objectives

The proposed vapor management plan has the protection of human health, related to addressing potential air quality concerns, as its primary objective. The protection will be accomplished using multi-faceted engineering controls that include sub-slab SVMS components, and a means of determining the effectiveness of the engineering controls following implementation. The proper effect of the SVMS will be supported through the proper installation of the building and its HVAC system, SVMS components, and performance of the proper long-term operation, maintenance, and monitoring (OM&M) activities.

Long-term OM&M of the SVMS will include pressure monitoring to ensure proper operation within the SVMS risers and probes, and from indoor air quality monitoring, to confirm that suitable ambient air conditions exist within representative areas of the buildings. A specific management strategy has been developed to meet these objectives.

3.2 Soil Vapor Design Strategy

The SVMS will be designed to utilize the proposed building's aggregate subgrade in conjunction and interconnected with a gravel-bedded piping network. The aggregate stone and piping network will collect and allow potential soil vapors to flow away from the area beneath the building to a discharge point located safely above the buildings. According to WDNR guidance documents, an active venting system should be effective at managing subsurface vapors. Both active and passive systems have been used in many other locations where vapors have been encountered, and depending on the situation, both are an effective remedy in suitably protecting health and environmental concerns. The SVMS for this site is proposed to be installed as an active system to mitigate this previously evaluated sub-slab vapors that exceeded the VRSL for residential (but were below commercial/industrial standards).

Through the vacuum induced on the system, soil vapors will be forced to travel laterally through the sub-slab aggregate and into the piping network. Soil vapors and contaminants will generally migrate along paths of least resistance and typically flow upward through subsurface soil and fill seeking equilibrium of temperatures and concentrations. The piping network will allow the vapors to reach the risers where the vapors can travel upward to discharge points. The sub-slab SVMS will be operated in an active mode to create a depressurization zone beneath the building slab to actively draw soil vapors from the sub-slab area using a powered vacuum inducing blower. Collected vapors will be discharged to the air above the building's roofline during active SVMS

operation. Sizing of the vacuum blower was based on guidance from Naval Facilities Engineering Command and USEPA and provided 204 cubic feet per minute (CFM) of flow at -1.0 inches of water column to provide a vacuum field of -0.02 inches-of-water column over the extents of the building.

The Naval Facilities and USEPA guidance also advise that at least one probe should be installed per 5,000 square feet of slab area, and one probe for each blower system. The building size is approximately 17,000 square feet; thus, four probes (minimum) are recommended. The proposed system provides five sub-slab vapor monitoring probes in that may be used to measure sub-slab vapor pressure conditions and sub-slab contaminant concentrations. Additionally, the design provides for a visual representation of system operation and pressure conditions using a manometer placed near the exhaust stack. The long-term OM&M program will include periodic ambient air sampling within target building areas to confirm suitable air quality, with an initial pre-development sample collection. The next sections of this SVMP include discussions of the SVMS design, installation, and OM&M considerations.

4.0 Soil Vapor Management System Design

The objectives of the SVMS design are to develop an efficient and effective means of managing potential sub-slab vapors and other airborne contaminants to protect indoor air quality and mitigate potential explosive gases within the building occupied areas. An active sub-slab SVMS is deemed appropriate for building development.

The SVMS design approach utilizes the WDNR-recommended design reference prepared by the United States Navy Alternative Restoration Technology Team titled, *Vapor Intrusion Mitigation in Construction of New Buildings Fact Sheet* (2011), as well as the United States Environmental Protection Agency (USEPA) Engineering Issue *Indoor Air Vapor Intrusion Mitigation Approaches* (2008). The design of the SVMS includes the selection of suitable materials, component sizes, and design configurations for the SVMS components. The components include the sub-slab piping for vapor collection, connected to ventilation and discharge piping, vapor barrier (above the slab), sub-slab vapor probes, and associated appurtenances.

The components are described below together with the selected material specifications.

4.1 Soil Aggregate

Clean aggregate stone will be used to bed and backfill the sub-slab collection piping. The layer of aggregate stone in areas where the perforated or slotted piping laterals are placed will be a minimum of 12 inches thick to provide for a minimum of 4 inches of stone above and 2 inches of stone below the piping.

Approximately 2 inches of the selected aggregate stone will be placed before the placement of the soil vapor collection piping. After the piping is placed, the remainder of the aggregate stone will be placed around and over the piping such that at least 4 inches of the aggregate stone also exists over the top of the installed vapor collection piping. The three SVMS Specifications are included in Appendix A.

4.2 Soil Vapor Collection Piping

The SVMS collection piping will consist of a network of rigid polyvinylchloride (PVC) piping placed across the sub-slab area that will be bedded within the aggregate stone layer discussed above. Due to the recommendations of the guidance document, practical experience of similar systems, and size of the building, the piping network will include 6-in. diameter, perforated (or slotted), PVC Schedule 40 piping, strategically placed within the sub-slab area of the building. PVC pipe elbows will be installed as shown on the design drawings, to interconnect the pipes to a shared vent. The SVMS piping and spacing was sized using industry-standard determinations and project experience to produce a suitable radius of influence with a reasonable pressure drop while reducing friction. This pipe size is recommended for the building footprint per guidance documents. When the collection pipes are installed, each pipe will be oriented such that a row of perforations (or slots) will be located at the bottom of the pipe to allow moisture to drain out of the piping. Refer to Figure V1.0, titled Vapor Mitigation Plan, for the layout of the collection system piping. Refer to Figure V1.1, titled Vapor Mitigation Details drawing for SVMS components information.

The vacuum blower will be installed either inside or outside the building depending on field conditions and locating a discreet location to locate this mechanical item with electrical access. At the vertical venting locations, the 6-inch perforated pipe will transition to solid piping and turn upward using a non-perforated 90° elbow fitting. The vent stack is proposed to be installed in parallel with other plumbing vent stacks in shared chases or other strategic locations, or transition to an exterior vent stack and routed outside the building and around the roofline. All PVC piping and fittings will be joined using solvent welding methods. Three SVMS specifications are included in Appendix A for reference.

Refer to Figure V1.0 for the SVMS component locations, which will be confirmed before construction. The discharge point must be at least 10 feet away from windows that open and air intake locations.

4.3 Soil Vapor Barrier

After the soil vapor piping network is placed and the aggregate stone layer is installed for the concrete floor subgrade, a plastic sheeting soil vapor barrier will be installed on top of the aggregate to impede the upward migration of potential soil vapor. The vapor barrier will consist of 15-mil polyethylene or polyolefin plastic sheeting. The sheeting will be overlapped a minimum of 1 foot at each joint, and the overlapped edges of the plastic will be sealed with suitable tape. Utilities that penetrate the vapor barrier will be sealed so that soil vapors cannot travel through gaps in the vapor barrier and the concrete. Care will be taken when installing plastic sheeting to prevent tears and punctures from occurring. Deficiencies identified during installation, and before pouring of the concrete slab over the plastic, will be corrected and patched. The concrete slab will be poured over the vapor barrier.

4.4 Sub-Slab Vapor Probes

Five sub-slab Vapor Pins™ (depending on accessibility) will be installed to evaluate the pressure field beneath the foundation slab, observe the characteristics of vapors that may form beneath the building, and to determine the effectiveness of the SVMS. The Vapor Pins™ will include an extension that penetrates the vapor barrier into the sub-slab aggregate stone layer beneath the vapor barrier. The top of each probe will terminate within suitable out-of-the-way locations. The probes will include a valve-top to which monitoring equipment can be attached to measure the sub-slab soil vapor pressure and to sample potential vapors for analyses of potential contaminants. Each probe top will be installed within flush-mounted, stainless steel, valve-boxes for protection, and unauthorized access. Refer to Figure 4 for the SVMS Vapor Pin™ details.

4.5 Additional SVMS Design Requirements

The SVMS design includes additional building construction requirements that shall be addressed to support proper protection against potentially contaminated soil and groundwater vapor intrusion. Additional requirements include sealing of planned and unplanned penetrations and potential vapor entryways that may exist through the vapor barrier and the concrete slab.

4.5.1 Penetrations and Soil Vapor Pathways

Planned penetrations are those utility-type items that travel vertically upward through the vapor barrier and at-grade concrete slab to service the building. Penetrations through the barrier and slab, including construction joints, can result in small gaps through which vapors can readily migrate. Unplanned penetrations may be tears of the plastic vapor barrier that occur during installation or cracks that develop in the concrete slab following typical curing and settlement. Potential soil and groundwater vapor pathways include cracks, foundation, and concrete expansion joints, sewer and water pipe penetrations, sumps and lids, floor drain piping, electrical conduits, HVAC equipment, and hollow wall features.

These penetrations can impede the effectiveness of the sub-slab SVMS because of the following: 1) vapors will take the path of least resistance, which may be a gap through the vapor barrier and concrete slab and, 2) during active ventilation of the sub-slab, air may be drawn through penetration gaps and into the sub-slab area and this may result in less effective vapor collection in other portions of the SVMS.

Therefore, potential vapor pathways will be sealed to the extent possible during the utility and slab installation. Sealing technologies include the use of appropriate gaskets or gasket materials and sealants. Gasket and sealant choices will:

- Be suitable for the working conditions and temperatures of application.
- Be durable and resistant to water.
- Be compatible with potential soil vapors and contaminants.
- Have proper adhesive properties (sealants).
- Be highly flexible and non-shrinking after curing (sealants).
- Have low VOC emission properties (sealants).

5.0 SVMS Installation

Installation of the SVMS and required protective measures shall be completed using acceptable and necessary industry standards-of-care and practices, and following the building HVAC system and SVMS specifications.

5.1 Roles/Qualifications for Environmental Management Activities

The owner, developer, and their representatives are responsible for implementing the environmental activities outlined in this SVMP. Personnel responsible for implementing this SVMP shall possess the training, experience, and equipment commensurate with implementing the requirements of this SVMP. Documentation of the applicable training and experience shall be provided to the developer before the commencement of construction and shall be verifiable and sufficiently detailed to demonstrate to the WDNR if requested, that the designated implementation personnel possess the qualifications to safely and thoroughly implement this SVMS design.

5.2 Reporting and Communication

The owner shall provide the WDNR with appropriate updates on the status of the site development, and similarly with the installation record of the SVMS. Documentation of the SVMS installation activities should detail field observations and changes affecting the SVMS installation, including site sketches, photos, documentation of conformance with SVMS specifications, and a summary of the activities performed.

Monitor building to confirm the absence of VOCs within the building is a planned approach and will be conducted initially before occupancy using the sub-slab probes. Indoor ambient air monitoring will not be conducted until 6 months following build-out of the ground floor spaces due to new construction off-gassing from solvents, glues, flooring, and other features that tend to indicate false-positives as it relates to sub-slab vapors. Additionally, the timing of this ambient air sampling will be coordinated with owner-activities such as vehicle paint to ensure they do not interfere with the sample results. This may require data collection during non-operating times.

6.0 SVMS Commissioning and OM&M Considerations

Proper OM&M of the SVMS is critical to its continued success in protecting against the intrusion of potentially contaminated vapors into building areas. Proper OM&M is a long-term proposition that must be performed by individuals that possess the training, experience, and equipment commensurate with the requirements of the needs of the SVMS.

6.1 Operation, Maintenance, and Monitoring Considerations

The OM&M considerations include:

- Conducting performance monitoring of the SVMS utilizing the manometers, sub-slab vapor probes, and sampling of the indoor ambient air quality.
- Re-visiting the SVMS design and OM&M plans if significant and subsequent changes are made to the building or its use.
- Monitoring and sampling on a more frequent schedule following the construction of the building and SVMS, with the frequency and activities of required tasks, reduced over time, as experience and measured results permit.
- Maintaining sufficient SVMS records related to OM&M, repairs, and implementation of the contingency plan.
- Maintaining the blower system to ensure proper operation and effectiveness

Approximately two post-installation indoor air sampling events are believed to be sufficient to determine the operational effectiveness of the SVMS, depending on results of sub-slab sampling. However, a discussion of "false positives" from off-gassing needs to be considered and discussed in the results depending on the timing of the sample and construction buildout. An *Indoor Air Journal* article from April 2010 titled "Decreasing concentrations of volatile organic compounds (VOC) emitted following home renovations" noted that buildings return to "normal" VOC levels after 2-3 months. The research was based on "real-life" studies of 234 homes in Germany and not chamber tests. This 2 to a 3-month timeframe of off-gassing to lower levels is a general guide as industry experience has noted elevated VOC levels for much longer than this.

The appropriate sampling parameters will be determined at the start of the SVMS operation. Typically, the analytical method used would be the Compendium Method TO-15, selected ion monitoring (SIM) mode, as specified in EPA document EPA/625/R-96/010b.

6.2 Operation Contingency Plan

This section of the SVMP provides the Operation Contingency Plan (OCP) that should be implemented if significant SVMS malfunctions occur, the SVMS becomes significantly damaged, or if monitoring data suggests that contaminated soil and groundwater vapors exist within the SVMS that suggest that active SVMS operation would improve

building protection. Trigger items should exist in a more significant nature before the OCP is implemented. Minor malfunctions (e.g., temporary and short duration power failure) and minor damage (e.g., broken probe sample port) are not occurrences that require the implementation of the OCP. The OCP should be implemented when the malfunction, damage, or other occurrences are such that the protectiveness of the SVMS may be jeopardized.

The steps to be taken when implementing the OCP include:

1. Thoroughly identifying and evaluating the problem(s) and cause(s).

2. Identifying and evaluating potential solutions to address the problem(s).

3. Implementing a temporary solution if necessary, to maintain suitable SVMS protectiveness.

4. Implementing a final solution(s) to the problem(s).

5. Confirming the effectiveness of the solution(s).

6. Documenting the implementation of the solution(s).

7. Maintaining records of implementation of the OCP and the efforts taken, and providing notification to WDNR if appropriate.

6.3 System Commissioning

System commissioning consists of evaluating the system operation once the construction is complete. Once the SVMS piping is complete, blowers wired, monitoring probes installed, and restoration complete, system commissioning can be completed.

The commissioning will consist of the following:

1. Pre-Commissioning - Existing conditions documentation before start-up: temperature, precipitation, barometric pressure, sub-slab pressure (using micromanometer or another very-low pressure gauge), and manometer readings from visual manometers on exhaust stacks.

2. Documentation of team members staff: Chief Quality Control Representative, contractors mechanical piping representative, contractor's electrical representative, contractor's control representative, designer's representative.

3. Demonstration of operation – turn on each blower system and confirm proper operation. Record the following: pressure differential at visible manometer on exhaust stack, the pressure at sub-slab vapor probes.

4. Use subsurface vacuum measurements to confirm the pressure differential across the slab in the target area (entire or partial slab). Vacuum measurements from permanent sub-slab points may be in the range of 0.01 to 0.001 inches of water

(2.5-0.25 Pascal). Therefore, a digital micromanometer with an accuracy and resolution of 0.0001 “wc is necessary. Smoke testing can be used to determine if there is a vacuum in the sub-slab, but it is only a qualitative test. At low vacuums, the use of a chemical smoke test at the sub-slab points may be difficult to determine the presence of vacuum in the sub-slab. For active subsurface depressurization systems, obtain sub-slab vacuum measurements from the permanent sub-slab. In general, an active sub-slab depressurization system should achieve a pressure differential of at least 0.004 inches of water (1 Pascal) across the slab for the mitigation of vapor intrusion. For active subsurface ventilation systems, where subsurface materials are highly permeable, large volumes of air are drawn through the subsurface soils with little pressure drop. In these situations, sub-slab depressurization measurements across the slab may be difficult where soil conditions limit reasonably achievable depressurization levels. If measurable vacuum measurements are not obtainable, use the chemical smoke test to indicate depressurization or ventilation of the subsurface. A minimum static pressure of 0.125 “wc should be achieved at system suction point for submembrane depressurization systems.

5. Upon confirmation that the system is putting negative airflow on the sub-slab piping, the system shall be operated 24 hours per day. Confirmation sampling of indoor ambient air and sub-slab vapor shall occur at least one month and three months following the start-up of system after HVAC system is operational. Existing conditions shall (as described in 6.3, item 1) need to be recorded for each sampling event.

6. The system shall have steps 1 through 4 reperformed during standard HVAC operation.

7. A report shall be prepared that includes:
    - History of site
    - Map of building
    - List of potential indoor air contaminant sources and location (i.e., gasoline storage cans, gas-powered equipment, mothballs, air fresheners, wood stove or fireplace, new furniture/upholstery, new carpeting/flooring, hobby use glues, and paints, other potential sources that may impact air quality testing)
    - Design and as-built drawings showing all system components and electrical connections, sampling locations
    - Description of dates each action occurred, including sampling events, mitigation installation, commissioning
    - Summary and justification for field modifications to the system
    - Pre- and Post-SVMS testing results and interpretation of results
    - Certification of the report by an environmental professional
    - Monitoring, maintenance, and evaluation plan.

Future documentation to remain at the site will include:

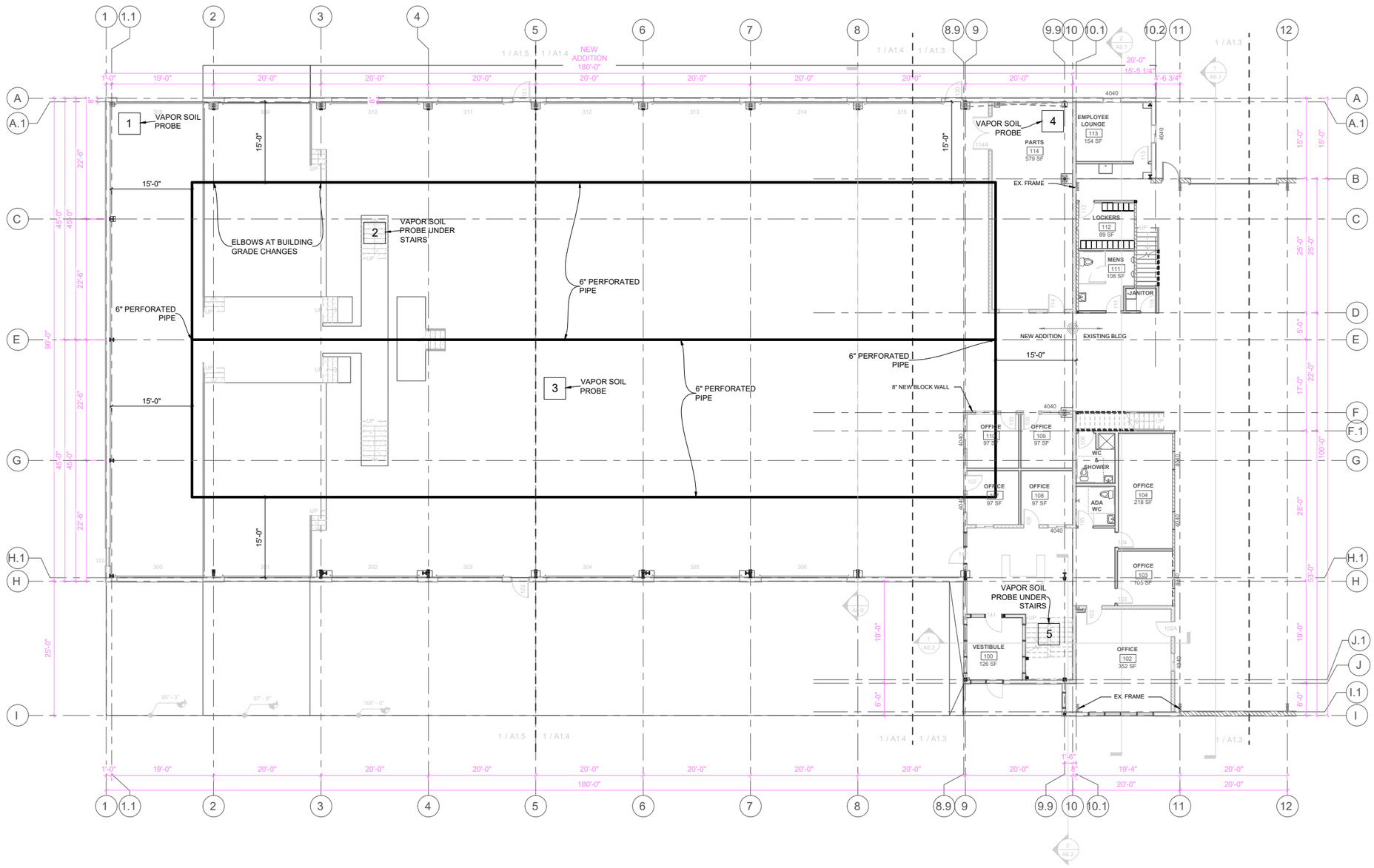
a. Semi-annual inspection of the system (first year)
b. Verification of commissioning values

c. An annual inspection of the system (second year and beyond)
d. An annual collection of appropriate system diagnostic measurements and verification with baseline values
e. If exceedance, check system for malfunctions; augment or modify the system with appropriate re-commissioning, the restart of Maintenance and Monitoring plan

Figures (2)

NOTE: LOCATION OF EXHAUST STACKS TO BE DETERMINED IN FIELD.
PROBE LOCATIONS SHOWN AS APPROXIMATE, MAY BE FIELD
ADJUSTED TO BE UNOBTRUSIVE FOR BUILDING OPERATIONS.

NORTH
5' 10' 15' 20'



VIllage of Deerfield
4 N. Main Street,
Deerfield, WI 53531
Telephone: 608-764-5404

AYRES ASSOCIATES
5201 E. Terrace Drive, Suite 200
Madison, Wisconsin 53718
608-443-1200

CONSTRUCTION DRAWINGS

08-20-2019

08-20-19	SUB-SLAB VAPOR PLAN

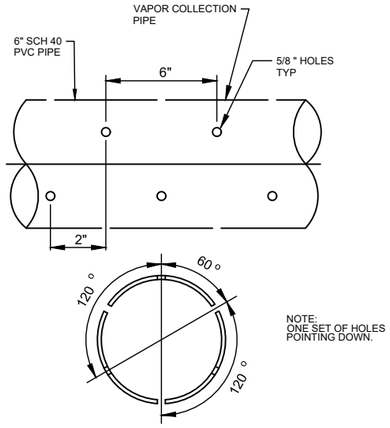
DRAWN: APPR.:

NEW ADDITION
TRUCKSTAR COLLISION CENTER
38 W NELSON STREET
DEERFIELD, WI 53531

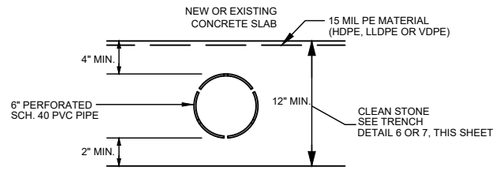
PROJECT
19-0590.10

VAPOR MITIGATION PLAN

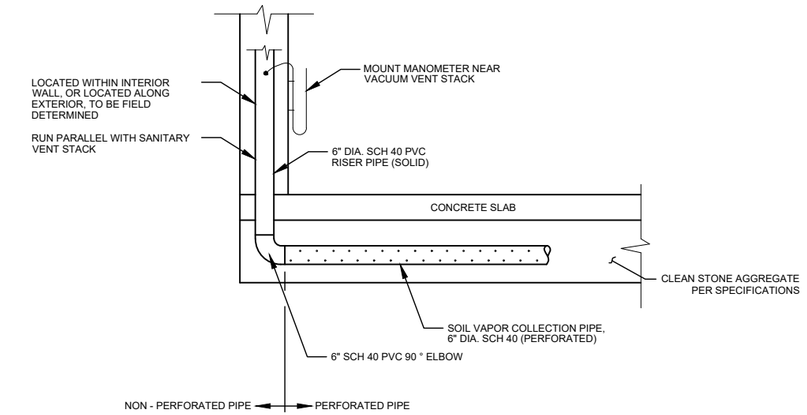
V1.0



1 VENT PIPE PERFORATION DETAIL
NTS



2 SOIL VAPOR COLLECTION PIPE PLACEMENT DETAILS
NTS



3 TYPICAL SOIL VAPOR COLLECTION PIPE TRANSITION TO RISER PIPE DETAIL
NTS

NOTE: VENT STACK LOCATIONS TO BE CONFIRMED PRIOR TO CONSTRUCTION. AT LEAST ONE STACK PER BUILDING.

4 TYPICAL SOIL VAPOR PROBE DETAIL
NTS

NOTE: TEN LOCATIONS

FOLLOW VAPOR PIN INSTALLATION STANDARD OPERATION PROCEDURES. PROCURE SPANNER FOR SECURED COVER AND PROVIDE TO OWNER.

5A ROOF PENETRATION AND VENTILATION FAN DETAIL
NTS

NOTE: WHERE POSSIBLE, ROUTE VENT LOCATIONS WITH OTHER PLUMBING VENT SYSTEMS: ADJUST VENT LOCATIONS AS NECESSARY

5B EXTERIOR PENETRATION AND VENTILATION FAN DETAIL
NTS

NOTES: WHERE POSSIBLE, ROUTE VENT LOCATIONS WITH OTHER PLUMBING VENT SYSTEMS: ADJUST VENT LOCATIONS AS NECESSARY

EXHAUST POINT SHALL BE AT LEAST 10 FEET FROM HVAC INTAKES OR WINDOWS THAT MAY BE OPEN

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CONSTRUCTION DRAWINGS

08-20-2019

08-20-19	SUB-SLAB VAPOR PLAN

DRAWN: APPR.:

NEW ADDITION
TRUCKSTAR COLLISION CENTER
38 W NELSON STREET
DEERFIELD, WI 53531

PROJECT # 19-0590.10

VAPOR MITIGATION DETAILS

V1.1

Appendix A

SVMS Specifications (3)

SECTION 31 21 31

SOIL VAPOR BARRIER

PART 1 GENERAL

1.01 SUMMARY

A. Provide Soil Vapor Barrier as shown and as specified. Comply with applicable provisions of building specifications by others.

1.02 RELATED SECTIONS

A. 31 21 33 Soil Vapor Collection Piping.
B. 31 21 35 Soil Vapor Monitoring Probes.

1.03 ABBREVIATIONS

A. ASTM - American Society for Testing and Materials.

1.04 SUBMITTALS

A. Submit product data for Vapor Barrier.

B. Submit product data for Sealing Tape

1.05 REGULATORY REQUIREMENTS

A. Contractor shall be responsible for providing safety equipment and following safety procedures as required by applicable federal, state, and local codes applicable to the project work.

1.06 QUALIFICATIONS

A. Soil Vapor Barrier shall be installed under direct supervision of qualified individuals.

PART 2 PRODUCTS

2.01 VAPOR BARRIER

A. Vapor Barrier: Minimum thickness is 15 mil. Polyethyelene (HDPE, LLDPE or VDPE) or polyolefin material, permeance WVTR of <0.1 perms.

B. Include Vapor Barrier manufacturer's recommended adhesive or pressure-sensitive sealing tape.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Comply with manufacturer's instructions. Notify of contract provisions in conflict with manufacturer's recommendations.

3.02 VAPOR BARRIER INSTALLATION

A. Install vapor barrier in accordance with manufacturer's recommendations and ASTM E1643.

1. Unroll vapor barrier with longest dimension parallel with direction of pour.

2. Lap vapor barrier over footings and seal to foundation walls, grade beams, or slab at an elevation consistent with the top of the slab or terminate at impediments such as water stops or dowels.
3. Overlap joints 12 in. and seal with sealing tape. Clean seams of dirt, dust, and moisture prior to taping.
4. Seal all penetrations (including pipes) in accordance with manufacturer's or utility contractor’s recommendations.
5. No unsealed penetration of the vapor barrier is allowed.
6. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 in. and securing all edges with tape.

B. Construct pipe boots from vapor barrier material, pressure sensitive tape, and/or mastic in accordance with manufacturer's or utility contractor’s recommendations.

END OF SECTION

SECTION 31 21 33

SOIL VAPOR COLLECTION PIPING AND BLOWER

PART 1 GENERAL

1.01 SUMMARY

A. Provide Soil Vapor Collection Piping as shown and as specified. Comply with applicable provisions of building specifications by others.

1.02 RELATED SECTIONS

A. 31 21 35 Soil Vapor Monitoring Probes

1.03 ABBREVIATIONS

A. ASTM - American Society for Testing and Materials.

B. PPI - Plastic Pipe Institute.

1.04 SUBMITTALS

A. Submit product data for PVC pipe and vent.

B. Submit product data for Vacuum Blower.

C. Submit Aggregate Stone grain size

D. Submit product data for pipe penetration annular space seal.

E. Submit product data for manometer or approved pressure reading device.

1.05 REGULATORY REQUIREMENTS

A. Contractor shall be responsible for providing safety equipment and following safety procedures as required by applicable federal, state, and local codes applicable to the project work.

1.06 QUALIFICATIONS

A. PVC pipe and blower system shall be installed under direct supervision of qualified individuals.

PART 2 PRODUCTS

2.01 PIPE

A. Perforated and non-perforated rigid PVC plastic pipe and fittings conforming to ASTM D1785, sch. 40. Pipe shall be of rigid PVC with diameter shown on drawings with compatible solvent welded socket fittings. Do not install lag screws through couplings to secure piping sections.

B. Perforations for Soil Vapor Collection Piping shall be 5/8-in. diameter and spaced as shown on Drawings. Only the horizontally placed piping shall include perforations. PVC pipe fittings and riser piping are not perforated.

2.02 PVC CLEANER AND SOLVENT

A. Pipe cleaner shall be a compatible solution of PVC pipe cleaner, ASTM F656, free-flowing and free of lumps, undissolved particles, or foreign matter that will adversely affect joint strength or chemical resistance.

B. Solvent cement shall be a compatible solution of unplasticized PVC compound, ASTM D2564, free-flowing and free of lumps, undissolved particles, or foreign matter that will adversely affect joint strength or chemical resistance.

2.03 VACUUM BLOWER

A. In-line vacuum blowers rated for exterior use shall be sized as noted below, and attached to the vertical vent stack that pulls vacuum on the sub-slab piping system. Systems should be mounted and wired according to manufacturer information and located in building interior or exterior as determined during installation.

a. Blower shall be capable of moving 200 cubic feet per minute (CFM) at -1.0 inches of water column (w.c.). *RadonAway* model RP265 (86-140 watts per manufacturer information), or approved equal.

B. Provide suitable PVC reducers, couplers, or fittings as needed to connect vent and supply pipes to blower.

2.05 VACUUM MANOMETER

A. A manometer or other approved visual device for use in recording depressurization shall be installed near vent stack or piping system. Must be capable of reading pressures from 0 to 4 inches w.c. Vacu-Ray Vacumeter (U-tube type manometer) or approved equal.

2.05 AGGREGATE STONE

A. Aggregate Stone conforming to ASTM C33 around the soil vapor monitoring probes, which is same as concrete aggregate (slab support layer), shall be Aggregate Stone, which is clear or washed stone meeting gradation AASHTO No. 4, or approved equal.

Sieve Size	**Amounts finer than laboratory sieve (square openings), percentage by weight**
2”	100%
1 ½”	90-100
1”	20-55
¾”	0-15
3/8”	0-5

2.06 ANNULAR SPACE PIPE SEAL MATERIAL

A. Pipe seals around vertical pipe penetrations shall fill in annular space between pipe and concrete using the following accepted materials:

1. Non-shrink grout, with surface seal by epoxy to match existing floor finish.

2. Self-leveling polyurethane. Acceptable manufacturers include Sonneborn, or approved equal.

PART 3 EXECUTION

3.01 LINE AND GRADE

A. Provide location line and grade marking as necessary to complete the work. The piping shall be installed level and square to the extent possible.

B. Prior to installing the Aggregate Stone, Contactor shall confirm with building designer that the subbase soils are free-draining. Notify Vapor Design Engineer if subbase conditions do not meet the intent of this specification.

3.02 SOLVENT WELDING

A. Solvent-welded (cemented) joints shall be made in accordance with manufacturer's recommendations, ASTM D2855, and PPI-TR10.

B. The handling of solvent cements shall be in accordance with ASTM F402.

3.03 PIPE FABRICATION AND INSTALLATION

A. Soil Vapor Collection Piping shall be installed within new aggregate stone layer beneath existing building slab surface in trench utility trench cuts. The piping shall be fabricated and installed as shown on the drawings. Piping can be located above sanitary piping or off-set in shared trench situations.

B. The remaining Aggregate Stone shall be installed so that it completely covers the piping to at least a 4-in. thickness over all piping to support concrete slab poured over pipe trench.

C. The vertical risers shall be installed through the concrete slab and proceed vertically either inside or outside the building. The risers shall extend a minimum of 2 foot above the roof line before connecting to roof vent wind turbine. Vertical risers above or below points of penetrations through floors, ceilings, and roofs shall be secured to the building every 8-feet with hangers, straps, or other supports, or as consistent with other plumbing vent securing methods. Risers shall be configured to allow condensate within the pipes to drain downward into the ground beneath the slab.

D. Riser pipe penetrations through slab and foundation walls shall be sealed in a permanent, air-tight manner using non-VOC emitting compatible caulks or other sealant materials. Openings around other utility penetrations of slab shall also be sealed.

E. The location of the top of the riser pipe shall not be within 10 feet to any window that is able to be opened or to any air intakes. Adjustments to the riser piping location or exhaust configuration may be necessary. The number of pipe fittings shall be minimized.

F. A roof vent wind turbine shall be installed at the top of the vertical riser pipe above the roof line.

3.04 AGGREGATE INSTALLATION

A. Provide location line and grade marking as necessary to complete the work. The piping and accessories shall be installed level and square to the extent possible.

B. Confirm depths or thicknesses of aggregate material prior to placing pipe. Compact using hand tampers or other means around haunches of pipe and over pipe to avoid damaging pipe.

3.05 INSTALLATION BLOWER

A. Fasten blower system to vent piping in level position with properly sealed and installed supply and vent piping in accordance with manufacturer information. Supply appropriate electrical wiring or plug-type wiring to connect to building electrical. Follow other manufacturer installation instructions.

3.06 INSTALLATION ANNULAR SPACE VERTICAL PIPE SEAL

A. Annular space for vertical pipe penetrations through existing concrete floor shall be filled with acceptable materials noted in Section 2. Allow material to cure prior to placing final surface sealants.

END OF SECTION

SECTION 31 21 35

SOIL VAPOR MONITORING PROBES

PART 1 GENERAL

1.01 SUMMARY

A. Provide Soil Vapor Monitoring Probes as shown and as specified. Comply with applicable provisions of building specifications by others.

1.02 RELATED SECTIONS

A. 31 21 33 Soil Vapor Collection Piping.

1.03 ABBREVIATIONS

A. AASHTO – American Association of State Highways and Transportation Officials

1.04 SUBMITTALS

A. Submit product data for vapor pin probe and probe appurtenances.

1.05 REGULATORY REQUIREMENTS

A. Contractor shall be responsible for providing safety equipment and following safety procedures as required by applicable federal, state, and local codes applicable to the project work.

1.06 QUALIFICATIONS

A. PVC pipe shall be installed under direct supervision of qualified individuals.

PART 2 PRODUCTS

2.01 VAPOR PIN PROBE

A. Stainless steel threaded vapor pin sampling point – Vapor Pin ® model VPIN 522SS or approved equal.

B. Stainless steel 2-inch diameter secured cover. Vapor Pin ® model VPSCSS001 or approved equal.

C. Vapor Pin ® Cap or approved equal.

D. Vapor Pin ® Sleeve or approved equal.

PART 3 EXECUTION

3.01 SOIL VAPOR MONITORING PROBE INSTALLATION

A. Follow Standard Operating Procedures of Vapor Pin ® Installation.

B. Core 1.5 inch diameter hole to approximately 1 3/4-inch depth from concrete surface. Pre-marking the desired depth on the drill bit will assist in this process. Remove concrete cuttings from hole.

C. Place manufacturer's Drilling Guide into the hole with conical end down. Alternative methods to centering smaller diameter hole would be considered provided it meets the intent of a vertical core centered in the hole. Core 5/8 inch diameter hole through remaining depth of

concrete, penetrating into sub-slab aggregate material. If necessary, deepen 1 ½ inch diameter hole but avoid drilling more than 2 inches into he slab as the threads on the Secure Cover may not engage properly with the threads on the Vapor Pin ®

D. Install Vapor Pin ® and Vapor Pin sleeve within hole so that Vapor Pin extends and penetrates into the sub-slab aggregate material. Secured final position and tight seal with sleeve, and orientate with threaded fitting for the cap to screw to located above the bottom of 2-inch concrete hole.

E. Install cap on Vapor Pin ® sampling barb to form tight seal while not in use.

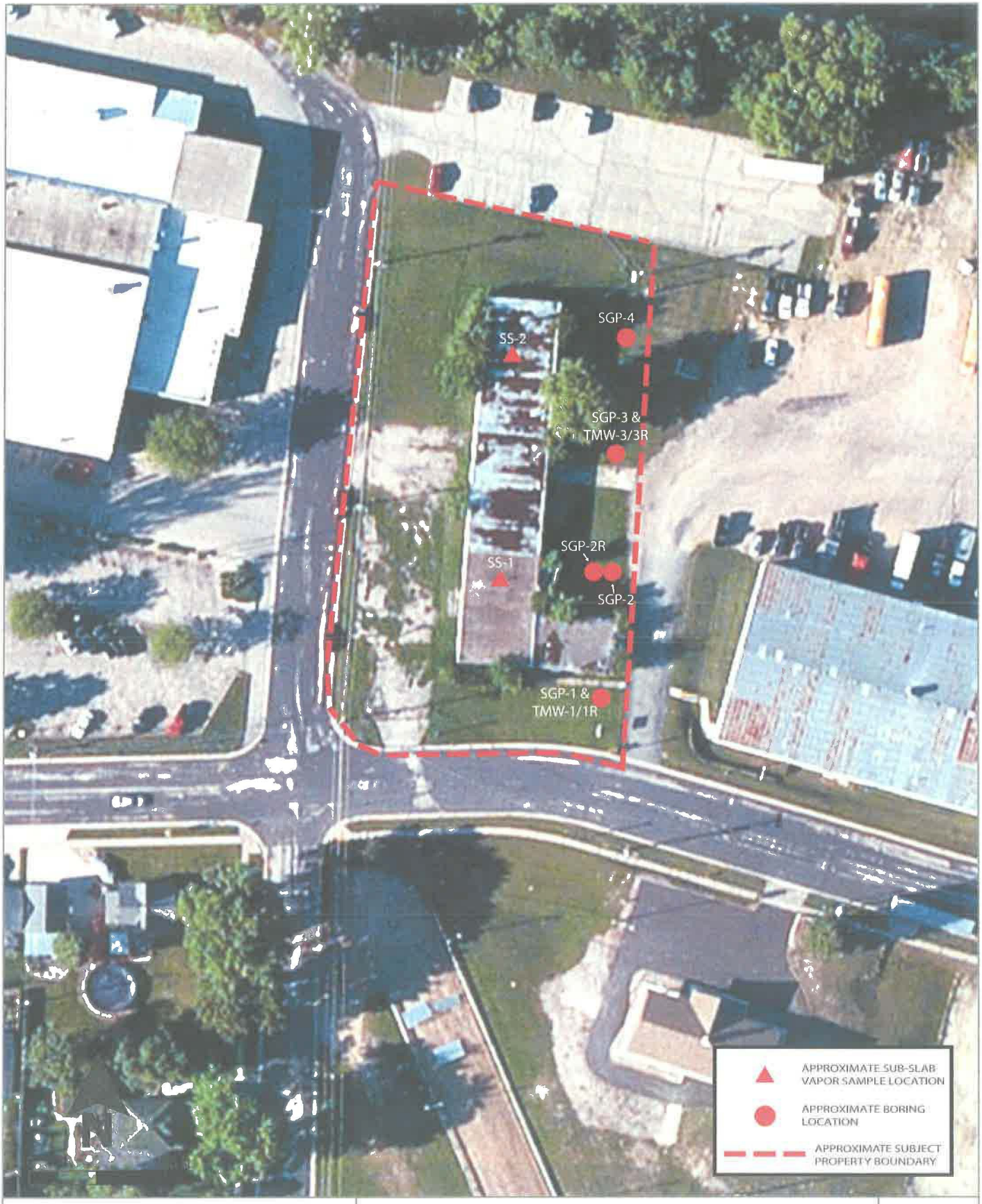
F. Install threaded stainless steel secured cover to a tight seal over the concrete hole. Use Spanner for Secured Cover or other alternative equipment.

END OF SECTION

Appendix B

Excerpts from Sigma and Ayres Associates Investigative Reports

Sigma Phase 2 Figures and Tables



DETAILED SITE MAP

40 WEST NELSON STREET
DEERFIELD, WISCONSIN

FIGURE

2

THE SIGMA GROUP
Single Source. Sound Solutions.

Project 14214 | Directory Figures | Filename 14214_Soil Boring Location Map.pdf | Created By JVW | Date 12/27/13

Table 1
Pre-Remedial Soil Analytical Data
WDNR-Hilleque Creative Laminates, 40 W. Nelson St
Sigma Project No. 14214

Soil Sample Location:		SGP-1	SGP-1	SGP-2	SGP-2R	SGP-3	SGP-3	SGP-4	SGP-4	Trip	Groundwater Pathway RCL [4]	Non-Industrial Direct Contact RCL [5]	Industrial Direct Contact RCL [6]
Sample Depth (feet bgs):		2-4	6-8	0-2	8-10	2-4	6-8	0-2	4-6				
Sample Collection Date:		12/12/13	12/12/13	12/12/13	12/12/13	12/12/13	12/12/13	12/12/13	12/12/13	12/12/13			
Depth to Groundwater (feet bgs):		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Unsaturated/Smear Zone (U) or Saturated (S):		U	U	U	U	U	U	U	U	U			
Organic Vapor Monitor	ppm	0	1	0	0	0	0	0	0	-	NS	NS	NS
PVOCs & Detected VOCs													
Benzene	µg/kg	<25	<25	<25	<25	<25	<25	<25	<25	<25	5.1	1,490	7,410
Ethylbenzene	µg/kg	<25	<25	<25	<25	<25	<25	<25	<25	<25	1,570	7,470	37,000
Methyl-tert-butyl-ether	µg/kg	<25	<25	<25	<25	<25	<25	<25	<25	<25	27	59,400	293,000
Toluene	µg/kg	<25	<25	<25	<25	<25	<25	<25	<25	<25	1,107.2	818,000	818,000
1,2,4-Trimethylbenzene	µg/kg	<25	<25	<25	<25	<25	<25	<25	<25	54	1,379.3	89,800	219,000
1,3,5-Trimethylbenzene	µg/kg	<25	<25	<25	<25	<25	<25	<25	<25	51		182,000	182,000
Xylenes (total)	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	3,940	258,000	258,000
RCRA Metals													
Lead	mg/kg	4.1	<0.3	13.3	<0.3	5.0	<0.3	22.1	6.1	-	27	400	800
Cumulative DC RCL Exceeded (Y/N)?											---	---	---

Notes:
1. Unsaturated/smear zone versus saturated soil conditions based on: (1) measured water levels in adjacent/nearby monitoring wells, (2) soil moisture conditions recorded on soil boring logs, and/or (3) soil moisture contents reported on laboratory analytical reports.
2. Analytical units: µg/kg = micrograms per kilogram (equivalent to parts per billion, ppb)
   mg/kg = milligrams per kilogram (equivalent to parts per million, ppm)
3. NA = not analyzed
4. Groundwater Pathway RCL = Residual Contaminant Level for protection of groundwater as described in NR 720.10. Current RCLs based on WDNR's RCL Spreadsheet (dated June 2013) as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 20, 2013.
5. Non-Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at a non-industrial property as described in NR 720.12. Current RCLs based on WDNR's RCL Spreadsheet (dated June 2013) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 20, 2013.
6. Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at an industrial property as described in NR 720.12. Current RCLs based on WDNR's RCL Spreadsheet (dated June 2013) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 20, 2013.
7. NS = no standard established
8. Laboratory flags: "J" = Analyte detected between Limit of Detection and Limit of Quantitation
   Enter other flags as necessary
9. Exceedances: **BOLD** = Concentration exceeds Groundwater Pathway RCL (unsaturated soil samples only)
   Italics = Concentration exceeds Non-Industrial OR Industrial Direct Contact RCL (shallow, unsaturated soil samples only)

Table 2
Groundwater Analytical Table
Hilleque Creative Laminates - 40 West Nelson Street, Deerfield, Wisconsin
Sigma Project No. 14214

Well Location:		TMW-1R	TMW-3R	NR 140 ES	NR 140 PAL
Date:		1/17/13	1/17/13		
Water Elevation* (feet MSL):		-	-		
PVOCs & Detected VOCs					
Benzene	µg/L	<2.4	0.24 J	5	0.5
Ethylbenzene	µg/L	<5.5	<0.55	700	140
Methyl-tert-butyl-ether	µg/L	<2.3	<0.23	60	12
Toluene	µg/L	<6.9	0.78 J	800	160
1,2,4-Trimethylbenzene	µg/L	<22	<2.2	NS	NS
1,3,5-Trimethylbenzene	µg/L	<14	<1.4	NS	NS
Total Trimethylbenzene	µg/L	<36	<3.6	480	96
Xylenes, Total	µg/L	<13.2	<1.32	2,000	400
Bromobenzene	µg/L	<3.2	<0.32	NS	NS
Bromodichloromethane	µg/L	<3.7	<0.37	0.6	0.06
Bromoform	µg/L	<3.5	<0.35	4.4	0.44
tert-Butylbenzene	µg/L	<3.6	<0.36	NS	NS
sec-Butylbenzene	µg/L	<3.3	<0.33	NS	NS
n-Butylbenzene	µg/L	<3.5	<0.35	NS	NS
Carbon Tetrachloride	µg/L	<3.3	<0.33	5	0.5
Chlorobenzene	µg/L	<2.4	<0.24	NS	NS
Chloroethane	µg/L	<6.3	<0.63	400	80
Chloroform	µg/L	<2.8	<0.28	6	0.6
Chloromethane	µg/L	<8.1	<0.81	30	3
2-Chlorotoluene	µg/L	<2.1	<0.21	NS	NS
4-Chlorotoluene	µg/L	<2.1	<0.21	NS	NS
1,2-Dibromo-3-Chloropropane	µg/L	<8.8	<0.88	0.2	0.02
Dibromochloromethane	µg/L	<2.2	<0.22	60	6
1,4-Dichlorobenzene	µg/L	<3	<0.3	75	15
1,3-Dichlorobenzene	µg/L	<2.8	<0.28	600	120
1,2-Dichlorobenzene	µg/L	<3.6	<0.36	600	60
Dichlorodifluoromethane	µg/L	<4.4	<0.44	1,000	200
1,2-Dichloroethane	µg/L	<4.1	<0.41	5	0.5
1,1-Dichloroethane	µg/L	<3	<0.3	850	85
1,1-Dichloroethene	µg/L	<4	<0.4	7	0.7
cis-1,2-Dichloroethene	µg/L	<3.8	<0.38	70	7
trans-1,2-Dichloroethene	µg/L	<3.5	<0.35	100	20
1,2-Dichloropropane	µg/L	<3.2	<0.32	5	0.5
2,2-Dichloropropane	µg/L	<3.6	<0.36	NS	NS
1,3-Dichloropropane	µg/L	<3.3	<0.33	NS	NS
Di-isopropyl ether	µg/L	<2.3	<0.23	NS	NS
EDB (1,2-Dibromoethane)	µg/L	<4.4	<0.44	0.05	0.005
Hexachlorobutadiene	µg/L	<15	<1.5	NS	NS
Isopropylbenzene	µg/L	<3	<0.3	NS	NS
p-Isopropyltoluene	µg/L	<3.1	<0.31	NS	NS
Methylene Chloride	µg/L	<5	<0.5	5	0.5
Naphthalene	µg/L	<17	<1.7	100	10
n-Propylbenzene	µg/L	<2.5	<0.25	NS	NS
1,1,2,2-Tetrachloroethane	µg/L	<4.5	<0.45	0.2	0.02
1,1,1,2-Tetrachloroethane	µg/L	<3.3	<0.33	70	7
Tetrachloroethene (PCE)	µg/L	<3.3	<0.33	5	0.5
1,2,4-Trichlorobenzene	µg/L	<9.8	<0.98	70	14
1,2,3-Trichlorobenzene	µg/L	<18	<1.8	NS	NS
1,1,1-Trichloroethane	µg/L	<3.3	<0.33	200	40
1,1,2-Trichloroethane	µg/L	<3.4	<0.34	5	0.5
Trichloroethene (TCE)	µg/L	<3.3	<0.33	5	0.5
Trichlorofluoromethane	µg/L	<7.1	<0.71	3,490	698
Vinyl Chloride	µg/L	<1.8	<0.18	0.2	0.02

Notes:
1. NR 140 ES = Wisconsin Administrative Code, Chapter NR 140 Enforcement Standard
2. NR 140 PAL = Wisconsin Administrative Code, Chapter NR 140 Preventive Action Limit
3. NS = no standard
4. µg/L = micrograms per liter (equivalent to parts per billion, ppb)
5. NA = Not Analyzed
6. Laboratory flags: "J" = Analyte detected between Limit of Detection and Limit of Quantitation. Enter other flags as necessary
7. Trip blank results: 1/1/13: All VOCs reported below laboratory detection limits.
8. Equipment blank results: 1/1/13: All VOCs reported below laboratory detection limits.
9. Exceedances: **BOLD** = Concentration exceeds NR 140 ES; *ITALICS* = Concentration exceeds NR 140 PAL
10. Special notes: * = monitoring well screen submerged below water table; ** = not a statistically valid PAL exceedance per NR 140.14(3)(c)

TMW-1 diluted due due to high amount of sediment in the groundwater sample.

Table 3
Vapor Analytical Table
Hilleque Creative Laminates - 40 West Nelson Street, Deerfield, Wisconsin
Sigma Project No. 14214

Sample Type:		Subslab Vapor Samples		Screening Level for Subslab Vapor to Indoor Air Pathway [4]	Screening Level for Subslab Vapor to Indoor Air Pathway [5]
Sample Identification:		SS-1	SS-2		
Date:		1/17/14	1/17/14		
Duration:		1.0 hr	0.92 hrs		
BETX & Detected VOCs (Summa canisters by EPA Method TO-15)					
Acetone	$\mu g/m^3$	17.3	17.9	320,000	1,400,000
Benzene	$\mu g/m^3$	2.1	8.1	31	160
2-Butanone (MEK)	$\mu g/m^3$	5.7	ND	52,000	220,000
Chloroform	$\mu g/m^3$	ND	20.3	11	53
Cyclohexane	$\mu g/m^3$	3.7	ND	63,000	260,000
Dichlorodifluoromethane	$\mu g/m^3$	2.5	2.3	1,000	4,400
Ethanol	$\mu g/m^3$	9.9	8.2	NS	NS
Ethylbenzene	$\mu g/m^3$	3.4	1.9	97	490
4-Ethyltoluene	$\mu g/m^3$	1.9	1.7	NS	NS
n-Heptane	$\mu g/m^3$	6.1	ND	NS	NS
n-Hexane	$\mu g/m^3$	8.0	5.3	7,300	31,000
Methylene Chloride	$\mu g/m^3$	3.3	3.9	6,300	26,000
4-Methyl-2-pentanone (MIBK)	$\mu g/m^3$	1.6	ND	31,000	130,000
Toluene	$\mu g/m^3$	9.2	5.4	52,000	220,000
Xylenes	$\mu g/m^3$	6.3	2.6	1,000	4,400
cis-1,2-Dichloroethene	$\mu g/m^3$	ND	9770	NS	NS
trans-1,2-Dichloroethene	$\mu g/m^3$	ND	371	630	2,600
Naphthalene	$\mu g/m^3$	2.5	2.6	7.2	36
Tetrachloroethene (PCE)	$\mu g/m^3$	ND	69.4	420	1,800
1,1,1-Trichloroethane	$\mu g/m^3$	14.2	21.2	52,000	220,000
Trichloroethene (TCE)	$\mu g/m^3$	**30**	**55200**	21	88
1,2,4-Trimethylbenzene	$\mu g/m^3$	3.2	2.6	73	310
1,3,5-Trimethylbenzene	$\mu g/m^3$	1.9	ND	NA	NA

Notes:

1. Analytical units: $\mu g/m^3$ = micrograms per cubic meter
2. VAL for Residential Indoor Air = Vapor Action Level described in WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated December 2010) which in turn references EPA Region 3 Risk-Based Concentrations for **residential** air (Regional Screening Level Master Table - November 2012 [http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm]) and May 2012 "Indoor Air Vapor Action Levels for
3. VAL for Commercial/Industrial Indoor Air = Vapor Action Level described in WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated December 2010) which in turn references EPA Region 3 Risk-Based Concentrations for **industrial** air (Regional Screening Level Master Table - November 2012 [http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm]) and May 2012 "Indoor Air Vapor Action Levels for
4. Screening Level for Subslab Vapor to Indoor Air Pathway = Risk-based concentrations based on VALs for **residential** air (see note #2 above) which has been adjusted with an Attenuation Factor of 0.1 for the subslab vapor to ambient air pathway in a residential/small commercial building as provided in WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated December 2010).
5. Screening Level for Subslab Vapor to Indoor Air Pathway = Risk-based concentrations based on VALs for **commercial/industrial** air (see note #3 above) which has been adjusted with an Attenuation Factor of 0.01 for the subslab vapor to ambient air pathway in a large commerical/industrial building as provided in WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated December 2010).
6. NA = not analyzed
7. ND = non detect
7. Laboratory flags: Enter flags as necessary
8. Exceedances: **BOLD** = concentration exceeds Vapor Risk Screening Level

Project: 14214 | Directory: Figures | Filename: 14214_Boring Location Map.pdf | Created By: DJS | Date: 5/26/15

THE SIGMA GROUP
Single Source. Sound Solutions.

BORING LOCATION MAP

40 WEST NELSON STREET
DEERFIELD, WISCONSIN

FIGURE
2

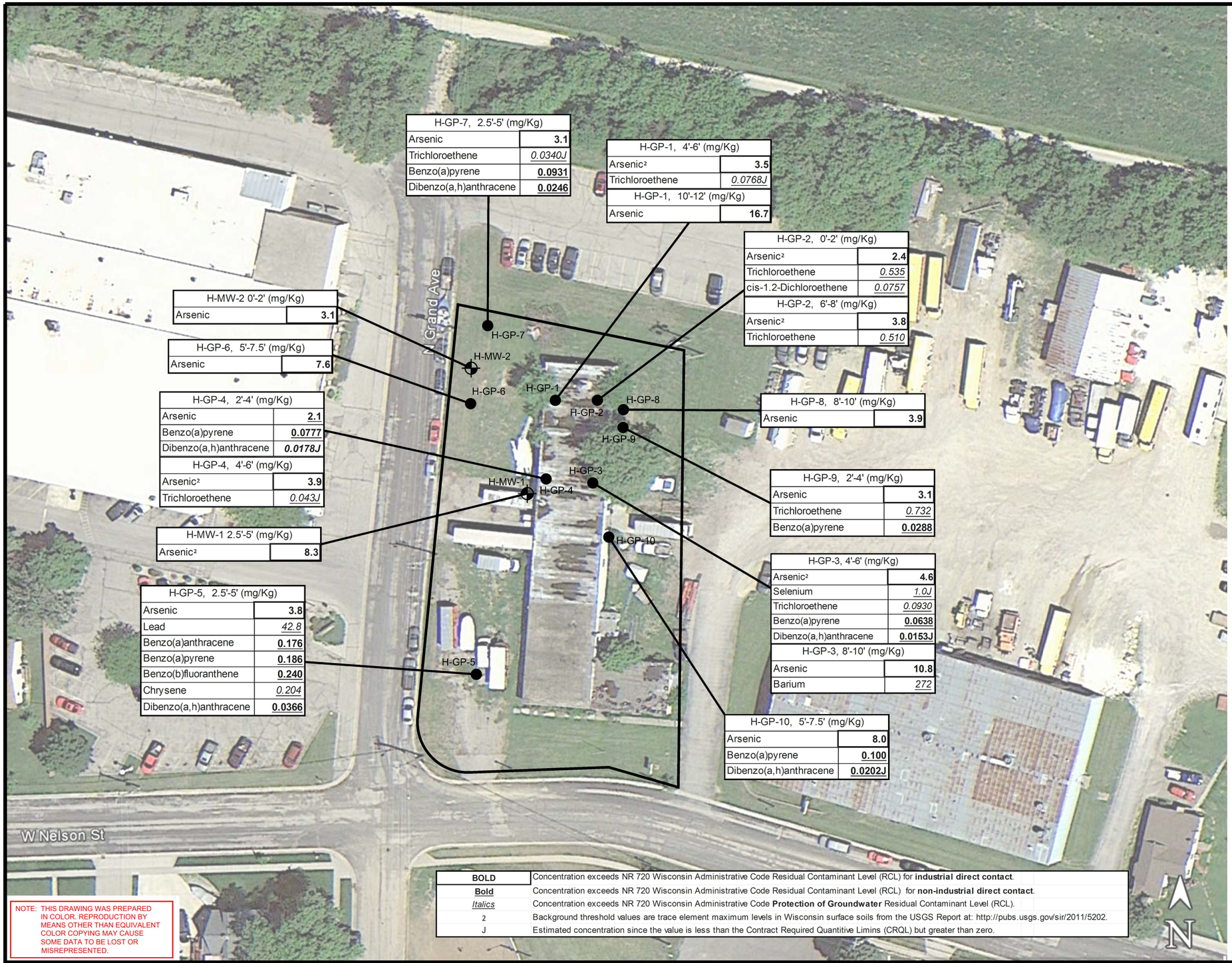
Table 1
Pre-Remedial Soil Analytical Data
WDNR-Hilleque Creative Laminates, 40 W. Nelson St
Sigma Project No. 14214

Soil Sample Location:		GP-5		GP-6		GP-7		GP-8		Trip Blank	Groundwater Pathway RCL [4]	Industrial Direct Contact RCL [6]
Sample Depth (feet bgs):		6-8'	12-14'	8-10'	14-16'	8-10'	12-14'	4-6'	11-12'	NA		
Sample Collection Date:		5/5/2015	5/5/2015	5/5/2015	5/5/2015	5/5/2015	5/5/2015	5/5/2015	5/5/2015	5/5/2015		
Depth to Groundwater (feet bgs):		15	15	16	16	15	15	14	14	NA		
Unsaturated/Smear Zone (U) or Saturated (S):		U	U	U	U	U	U	U	U	NA		
Organic Vapor Monitor	ppm	5.9	6.9	0.6	0.1	0.6	0.2	0.2	0.0	NA	NS	NS
VOCs												
Benzene	mg/kg	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0051	7.41
Bromobenzene	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	NS	679
Bromodichloromethane	mg/kg	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0003	1.96
Bromoform	mg/kg	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	0.0023	218
tert-Butylbenzene	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	NS	183
sec-Butylbenzene	mg/kg	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	NS	145
n-Butylbenzene	mg/kg	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	NS	108
Carbon tetrachloride	mg/kg	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	0.0039	4.25
Chlorobenzene	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	NS	761
Chloroethane	mg/kg	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	0.2266	NS
Chloroform	mg/kg	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	0.0033	2.13
Chloromethane	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.0155	720
2-Chlorotoluene	mg/kg	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	NS	907
4-Chlorotoluene	mg/kg	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	NS	253
1,2-Dibromo-3-chloropropane	mg/kg	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	0.0002	0.099
Dibromochloromethane	mg/kg	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	0.032	4.4
1,4-Dichlorobenzene	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.144	17.5
1,3-Dichlorobenzene	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.1528	297
1,2-Dichlorobenzene	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	1.168	376
Dichlorodifluoromethane	mg/kg	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	3.0863	571
1,2-Dichloroethane	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.0028	3.03
1,1-Dichloroethane	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.4828	23.7
1,1-Dichloroethene	mg/kg	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	0.005	1,190
cis-1,2-Dichloroethene	mg/kg	**0.22**	**0.081**	<0.021	**0.056 J**	<0.021	<0.021	<0.021	<0.021	<0.021	0.0412	2,040
trans-1,2-Dichloroethene	mg/kg	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	0.0588	1,670
1,2-Dichloropropane	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.0033	6.62
2,2-Dichloropropane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NS	527
1,3-Dichloropropane	mg/kg	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	0.0003	1,490
Di-isopropyl Ether	mg/kg	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	NS	2,260
EDB (1,2-Dibromoethane)	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	0.0000282	0.23
Ethylbenzene	mg/kg	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	1.57	37
Hexachlorobutadiene	mg/kg	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	NS	22.1
Isopropylbenzene	mg/kg	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	NS	NS
p-Isopropyltoluene	mg/kg	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	<0.056	NS	162
Methylene chloride	mg/kg	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	0.0026	1,070
Methyl-tert-butyl-ether	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.027	293
Naphthalene	mg/kg	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	<0.087	0.6582	26
n-Propylbenzene	mg/kg	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	NS	264
1,1,2,2-Tetrachloroethane	mg/kg	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.0002	3.69
1,1,1,2-Tetrachloroethane	mg/kg	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	0.0534	12.9
Tetrachloroethene (PCE)	mg/kg	<0.054	<0.054	<0.054	<0.054	<0.054	<0.054	<0.054	<0.054	<0.054	0.0045	153
Toluene	mg/kg	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	1.1072	818
1,2,4-Trichlorobenzene	mg/kg	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	0.408	98.7
1,2,3-Trichlorobenzene	mg/kg	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.012	NS	493
1,1,1-Trichloroethane	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.1402	640
1,1,2-Trichloroethane	mg/kg	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	0.0032	7.34
Trichloroethene (TCE)	mg/kg	**2.19**	**0.67**	**0.052 J**	**0.47**	<0.042	<0.042	<0.042	<0.042	<0.042	0.0036	8.81
Trichlorofluoromethane	mg/kg	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	NS	1,230
1,2,4-Trimethylbenzene	mg/kg	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	<0.078	1.3821	219
1,3,5-Trimethylbenzene	mg/kg	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089		182
Vinyl Chloride	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0001	2.03
Xylenes (total)	mg/kg	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	3.94	258

Notes:

1. Unsaturated/smear zone versus salured soil conditions based on: (1) measured water levels in adjacent/nearby monitoring wells, (2) soil moisture conditions recorded on soil boring logs, and/or (3) soil moisture c
2. Analytical units: µg/kg = micrograms per kilogram (equivalent to parts per billion, ppb)
   mg/kg = milligrams per kilogram (equivalent to parts per million, ppm)
3. NA = not analyzed
4. Groundwater Pathway RCL = Residual Contaminant Level for protection of groundwater as presented on the WDNR's RCL Spreadsheet (dated December 2014) referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated January 2014
5. Non-Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at a non-industrial property as presented on the WDNR's RCL Spreadsheet (dated December 2014) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated January 2014
6. Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at an industrial property as presented on the WDNR's RCL Spreadsheet (dated December 2014) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated January 2014
7. NS = no standard established
8. Laboratory flags: "J" = Analyte detected between Limit of Detection and Limit of Quantitation
   Enter other flags as necessary
9. Exceedances: **BOLD** = Concentration exceeds Groundwater Pathway RCL (unsaturated soil samples only)
   [ ] = Concentration exceeds Non-Industrial OR Industrial Direct Contact RCL (unsaturated soil samples only)

Ayres Associates NR 716 Figures and Tables



NORTH

0 30 60
FEET

H-GP-7, 2.5'-5' (mg/Kg)	
Arsenic	**3.1**
Trichloroethene	*0.0340J*
Benzo(a)pyrene	**0.0931**
Dibenzo(a,h)anthracene	**0.0246**

H-GP-1, 4'-6' (mg/Kg)	
Arsenic[2]	**3.5**
Trichloroethene	*0.0768J*

H-GP-1, 10'-12' (mg/Kg)	
Arsenic	**16.7**

H-GP-2, 0'-2' (mg/Kg)	
Arsenic[2]	**2.4**
Trichloroethene	*0.535*
cis-1.2-Dichloroethene	*0.0757*

H-GP-2, 6'-8' (mg/Kg)	
Arsenic[2]	**3.8**
Trichloroethene	*0.510*

H-MW-2 0'-2' (mg/Kg)	
Arsenic	**3.1**

H-GP-6, 5'-7.5' (mg/Kg)	
Arsenic	**7.6**

H-GP-4, 2'-4' (mg/Kg)	
Arsenic	**2.1**
Benzo(a)pyrene	**0.0777**
Dibenzo(a,h)anthracene	***0.0178J***

H-GP-4, 4'-6' (mg/Kg)	
Arsenic[2]	**3.9**
Trichloroethene	*0.043J*

H-GP-8, 8'-10' (mg/Kg)	
Arsenic	**3.9**

H-GP-9, 2'-4' (mg/Kg)	
Arsenic	**3.1**
Trichloroethene	*0.732*
Benzo(a)pyrene	**0.0288**

H-MW-1 2.5'-5' (mg/Kg)	
Arsenic[2]	**8.3**

H-GP-3, 4'-6' (mg/Kg)	
Arsenic[2]	**4.6**
Selenium	*1.0J*
Trichloroethene	*0.0930*
Benzo(a)pyrene	**0.0638**
Dibenzo(a,h)anthracene	**0.0153J**

H-GP-3, 8'-10' (mg/Kg)	
Arsenic	**10.8**
Barium	*272*

H-GP-5, 2.5'-5' (mg/Kg)	
Arsenic	**3.8**
Lead	*42.8*
Benzo(a)anthracene	**0.176**
Benzo(a)pyrene	**0.186**
Benzo(b)fluoranthene	**0.240**
Chrysene	*0.204*
Dibenzo(a,h)anthracene	**0.0366**

H-GP-10, 5'-7.5' (mg/Kg)	
Arsenic	**8.0**
Benzo(a)pyrene	**0.100**
Dibenzo(a,h)anthracene	**0.0202J**

BOLD	Concentration exceeds NR 720 Wisconsin Administrative Code Residual Contaminant Level (RCL) for **industrial direct contact**.
Bold	Concentration exceeds NR 720 Wisconsin Administrative Code Residual Contaminant Level (RCL) for **non-industrial direct contact**.
Italics	Concentration exceeds NR 720 Wisconsin Administrative Code **Protection of Groundwater** Residual Contaminant Level (RCL).
2	Background threshold values are trace element maximum levels in Wisconsin surface soils from the USGS Report at: http://pubs.usgs.gov/sir/2011/5202.
J	Estimated concentration since the value is less than the Contract Required Quantitive Limins (CRQL) but greater than zero.

NOTE: THIS DRAWING WAS PREPARED IN COLOR. REPRODUCTION BY MEANS OTHER THAN EQUIVALENT COLOR COPYING MAY CAUSE SOME DATA TO BE LOST OR MISREPRESENTED.

LEGEND

- PROPERTY BOUNDARY
- H-GP-5 — GROUND PROBE
- H-MW-1 — MONITORING WELL

6/23/2016
W:\Bentley V8i\WorkSpace\Standards\pltcfg\Ayres_pdf.pltcfg
W:\Bentley V8i\WorkSpace\Standards\Engineering Services\pltcfg\ES.Standard.tbl
W:\ENV\CAD\Environmental\Deerfield\Exceedances in soil.dgn

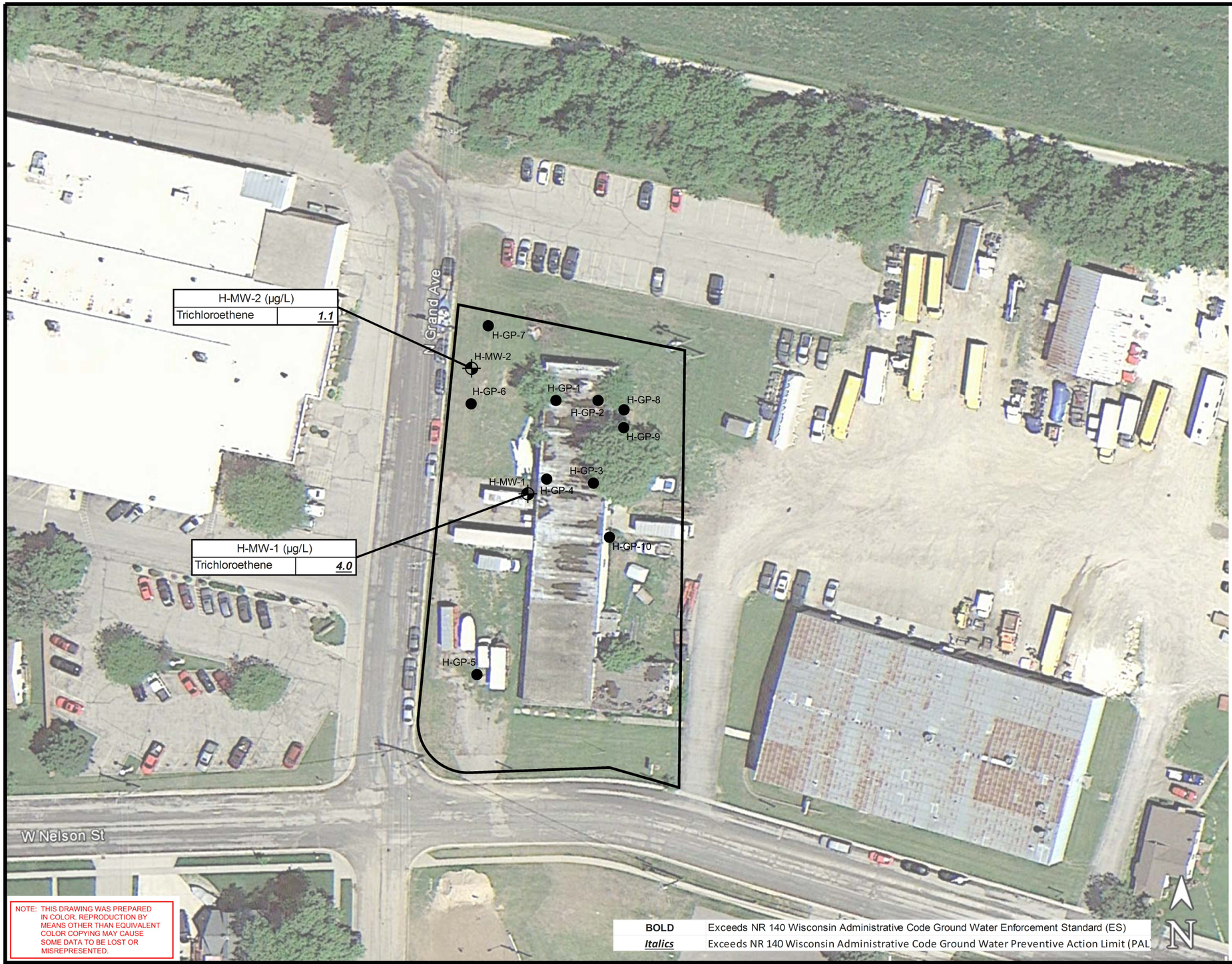
DR.BY	T. SHUPERT	BOOK NO.						
CHK.BY	E. GROSS	JOB NO.	19-0590.10					
DATE	JUNE 2016	SCALE	AS SHOWN	NO.	DATE	REVISION	NO.	DATE	REVISION

HILLEQUE PROPERTY
40 W. NELSON STREET
DEERFIELD, WISCONSIN

AYRES ASSOCIATES
Eau Claire, Wisconsin

SUMMARY OF ANALYTE EXCEEDANCES IN SOIL

DRAWING NO. 7



NORTH

0 30 60
FEET

LEGEND

- PROPERTY BOUNDARY
- H-GP-5 — GROUND PROBE
- H-MW-1 — MONITORING WELL

BOLD	Exceeds NR 140 Wisconsin Administrative Code Ground Water Enforcement Standard (ES)
Italics	Exceeds NR 140 Wisconsin Administrative Code Ground Water Preventive Action Limit (PAL)

NOTE: THIS DRAWING WAS PREPARED IN COLOR. REPRODUCTION BY MEANS OTHER THAN EQUIVALENT COLOR COPYING MAY CAUSE SOME DATA TO BE LOST OR MISREPRESENTED.

DR.BY	T. SHUPERT
CHK.BY	E. GROSS
DATE	JUNE 2016
BOOK NO.	
JOB NO.	19-0590.10
SCALE	AS SHOWN

NO.	DATE	REVISION

NO.	DATE	REVISION

HILLEQUE PROPERTY
40 W. NELSON STREET
DEERFIELD, WISCONSIN

AYRES ASSOCIATES
Eau Claire, Wisconsin

SUMMARY OF ANALYTE EXCEEDANCES IN GROUND WATER

DRAWING NO. 8