Fifth Five-Year Review Report

Hagen Farm Superfund Site

Dane County, Wisconsin

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7/06/2016
Date

Table of Contents

Tables

Figures

Attachments

Appendices

List of Acronyms

ACL	Alternate Concentration Limit
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
BRRTS	Bureau for Remediation and Redevelopment Tracking System (State of Wisconsin)
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DCE	Dichloroethene
EPA	United States Environmental Protection Agency
ES	Enforcement Standard (State of Wisconsin)
ESD	Explanation of Significant Differences
EW	Extraction Well
FYR	Five-Year Review
GCOU	Groundwater Control Operable Unit
GIS	Geographic Information System
ICs	Institutional Controls
ISVE	In-Situ Vapor Extraction
LFAS	Low Flow Air Sparge
LOD	Level of Detection
LOQ	Level of Quantification
LTS	Long Term Stewardship
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MW	Monitoring Well
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit

PAL	Preventive Action Limits (State of Wisconsin)
ppb	Parts-per-billion or micrograms per liter (µ/L)
PCOR	Preliminary Close Out Report
PRP	Potentially Responsible Party
RA	Remedial Action
RAOs	Remedial Action Objectives
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SCOU	Source Control Operable Unit
SOW	Scope of Work
SWRAU	Site-wide Ready for Anticipated Use
TCE	Trichloroethene
THF	Tetrahydrofuran
UAO	Unilateral Administrative Order
UU/UE	Unlimited Use and Unrestricted Exposure
VC	Vinyl Chloride
VOC	Volatile Organic Compound
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WMWI	Waste Management Wisconsin, Inc.

FIVE-YEAR REVIEW REPORT

I. INTRODUCTION

The United States Environmental Protection Agency (EPA) conducts Five-Year Reviews (FYR) at Superfund sites to evaluate the implementation and performance of remedial actions in order to determine if the remedies are or will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

EPA has conducted a FYR of the remedy implemented at the Hagen Farm Superfund site in Stoughton, Dane County, Wisconsin. EPA is the lead agency for developing and implementing the remedy for the site. The Wisconsin Department of Natural Resources (WDNR), as the support agency representing the State of Wisconsin, has reviewed the supporting documentation and provided input to EPA during the FYR process.

EPA prepared this FYR report pursuant to Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and in consideration of EPA policy.

The Hagen Farm site consists of two operable units (OUs), both of which are addressed in this FYR report. OU 1, the Source Control Operable Unit (SCOU), addresses the consolidated waste within the capped landfill. OU 2, the Groundwater Control Operable Unit (GCOU), addresses the groundwater contaminant plume emanating from the site.

This is the fifth FYR for the site. The triggering action for this statutory review is the completion date of the previous FYR of July 27, 2011. This FYR is required because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

Sheila Sullivan, EPA Remedial Project Manager (RPM) led the Hagen Farm FYR. Additional participants included EPA consultant David Dougherty of Subterranean Research, Inc., and Gary Edelstein, WDNR Site Manager. Potentially responsible party (PRP) participants included Mike Peterson of Waste Management of Wisconsin (WMWI) and WMWI consultant Mike Prattke of SCS Engineers. EPA notified WDNR and the PRP of the initiation of the FYR by letter on September 22, 2015 (see Attachment 1).

EPA and WDNR will place the completed FYR report in their respective Hagen Farm site files and at the local site information repository at the Stoughton Public library, 304 South Fourth Street, Stoughton, Wisconsin.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Hagen Farm Superfund Site		
EPA ID: WID980610059		
Region: 5	**State:** WI	**City/County:** Town of Dunkirk/Dane
SITE STATUS		
NPL status: Final		
Multiple OUs? Yes		**Has the site achieved construction completion?** Yes
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Sheila A. Sullivan		
Author affiliation: EPA		
Review period: September 22, 2015 – July 27, 2016		
Date of site inspection: September 25, 2015		
Type of review: Statutory		
Review number: 5		
Triggering action date: July 27, 2011		
Due date *(five years after triggering action date)*: July 27, 2016		

Site Background

Physical Characteristics

The 28-acre Hagen Farm Superfund site is located at 2318 County Highway A in the town of Dunkirk, approximately one mile east of Stoughton, Dane County, Wisconsin (Figure 1). The site includes the now-capped 10-acre former waste disposal area and is bounded on the south by Highway A and on the north by an adjacent gravel pit and a private landing strip. The Yahara River is located about 1.5 miles to the west of the site and flows in a southerly direction. Site topography is flat to gently rolling and slopes toward the river from the higher areas on the northeast and east. The closest surface water body (Sundby Pond) is located about one-half mile

south of the waste disposal area. Groundwater occurs at a depth of about 20 feet below ground surface (bgs) under the landfill area and ranges from three to 46 feet bgs nearby. Groundwater flow beneath the main disposal area is toward the south to southeast (see Figure 2).

Land Resource and Use

The landfill cap supports a variety of vegetation and the site area is frequented by wildlife, notably birds, small mammals and deer. Sensitive ecological habitats or rare or endangered species have not been observed.

The Town of Dunkirk is an unincorporated township located about 10 miles southeast of Madison in Dane County. Dunkirk is primarily a rural farming community and most of the land is agricultural. Dunkirk, together with the nearby towns of Rutland, Dunn, and Pleasant Springs, has adopted the county's exclusive agricultural zoning ordinance that limits non-farm development in rural areas. As of the mid-1990s, over 40 percent of each town's farmland was enrolled in the state's Farmland Preservation Program (Figure 3).

Current land use surrounding the site includes a private 3,000-foot landing strip, which ends directly at the northwest corner of the site (landfill) property. To the east, land is zoned rural residential with a prescribed density of 1 to 35 acres per residence. Planned neighborhood areas are to the northeast of the site. A parcel directly west and adjacent to the site property ("Lot 3") was sold by WMWI (or "Waste Management") to a developer in about 2003, and is planned for future residential development. Other adjacent land is zoned agricultural. Land south of Highway A directly across from the site property is used commercially, and is occupied by Wingra Redi-Mix, an operating concrete facility. The Hagen Farm site property is and will remain zoned as industrial.

The City of Stoughton urban service area, which includes the provision of public water supply and sanitary sewer systems, includes parts of the Town of Dunkirk. Residents living near the site obtain their water from private wells. WMWI annually samples a number of private wells around and downgradient of the site property (Figure 4). Several other hazardous waste sites are located in southern Dane County, such as the City Disposal Corp. and the Stoughton City Landfill Superfund sites.

History of Contamination

The Hagen Farm site was operated as a sand and gravel pit prior to the late 1950s. From the late 1950s to the mid-1960s, the on-site gravel pit was used for waste disposal. Solvents and other organic materials, in addition to the municipal wastes, were disposed of including acetone, butyl acetate, 1-2-dichloroethene (1,2-DCE), tetrahydrofuran (THF), solid vinyl, sludge material containing methyl ethyl ketone and xylenes, and toluene. Hazardous wastes as per the Resource Conservation and Recovery Act (RCRA), 42 U.S.C.§6901, were also disposed of at the site. The site stopped accepting waste in 1966, prior to regulation of hazardous waste disposal by RCRA Subtitle C. Table 8 of Appendix 1 ("Additional Tables") provides a chronology of all significant site activities to the present.

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

From 1980 to 1986, WDNR sampled the groundwater at on-site monitoring wells and found organic compounds, namely benzene, ethylbenzene, THF, xylenes, and toluene. The groundwater from private wells on adjacent properties showed the presence of acetone, THF, vinyl chloride (VC), xylenes, *trans*-1,2-DCE, and trichloroethene (TCE).

EPA listed the Hagen Farm site on the National Priorities List (NPL) on July 22, 1987. The two named PRPs for the site, Uniroyal and WMWI, conducted a remedial investigation and feasibility study (RI/FS) at the site from 1988 to 1992 under a July 27, 1987 Administrative Order on Consent (AOC) with EPA.

The RI defined two OUs for the site. The SCOU (OU 1), which addresses waste refuse and sub-waste soils, and the GCOU (OU 2), which addresses the groundwater contaminant plume.

Operable Unit 1 – SCOU

The 1990 RI/FS Report for the SCOU, which documented the nature and extent of contamination and evaluated possible exposure pathways, concluded that:

1. Three disposal areas were present. Most of the waste was in one main disposal area designated as "area A";

2. Hazardous substances were not detected in two smaller disposal areas (areas B and C);

3. Area A is about 6 acres in size, an average of 8 feet thick, and contains an estimated 67,650 cubic yards of waste including municipal waste, paint sludge, grease, rubber, and several industrial chemicals. The major contaminants found in the waste and groundwater were THF, xylenes, toluene, benzene, ethylbenzene, acetone, 2-butanone, semi-volatile organics, barium, lead, and mercury;

4. The waste is in contact with groundwater, thereby it acts as a continuous source of groundwater contamination; and

5. Contaminants in the waste and groundwater around the waste pose an unacceptable current and future risk to human health, primarily from direct contact, inhalation, and ingestion of on-site groundwater.

6. No unacceptable ecological risks were found.

Operable Unit 2 - GCOU

The April 1992 RI/FS Report for the GCOU included the following conclusions and observations:

1. VOCs are the major contaminants of concern in groundwater. The most prevalent VOC was THF with a maximum detected concentration of 630,000 micrograms per liter (µg/L) or parts-per-billion (ppb). Under Ch. NR 140 Groundwater Quality, Wisconsin Administrative Code (WAC), the Enforcement Standard (ES) is 50 µg/L and the Preventive Action Limit (PAL) is 10 µg/L for THF.

2. The occurrence, concentration, and distribution of THF in the groundwater suggested a THF plume originating from the disposal area and extending about 3,600 feet downgradient (south) of the site property;

3. VOCs were not detected in samples collected from private wells during the investigation;

4. The results of a treatability study indicated that THF and other VOCs in groundwater can be effectively treated using activated biological sludge; and

5. Groundwater posed a current and future unacceptable risk to human health, primarily from the potential ingestion of contaminated groundwater near the site.

Response Actions

Operable Unit 1 – SCOU

EPA, with concurrence from the State of Wisconsin, issued a Record of Decision (ROD) for the SCOU on September 17, 1990. The remedial action objectives (RAOs) included:

1. Reduce or minimize direct contact with contaminated waste and soil; and

2. Reduce or minimize release of contaminants to the groundwater.

EPA selected the following remedy for the SCOU to address the RAOs:

- Consolidate the three waste disposal areas (areas A, B, and C) into one (area A);

- Cap the consolidated waste;

- Install and operate an in-situ vapor extraction (ISVE) system through the cap;

- Evaluate natural microbial degradation of VOCs in the waste and sub waste soils during operation of the ISVE system;

- Prevent installation of drinking water wells within the vicinity of the disposal areas and protect the cap by using deed and access restrictions; and

- During the full-scale ISVE implementation, perform a treatability study to examine the feasibility of adding essential nutrients (e.g., moisture, oxygen, nitrogen, and phosphate) to the waste/sub-soils in order to enhance the natural microbial degradation of organic compounds.

The waste consolidation and capping portion of the remedial action (RA) for the SCOU would address the source of contamination and reduce potential human health risks by eliminating the direct contact and inhalation exposure routes. The cap and ISVE portion of the RA would reduce contaminant loading to the groundwater and would be the first steps towards eliminating human health risks associated with groundwater ingestion.

Operable Unit 2 - GCOU

With concurrence from the State of Wisconsin, EPA issued a ROD for the GCOU on September 30, 1992. The RAOs of the ROD for the GCOU included:

1. Restore groundwater quality so that contaminant levels meet appropriate federal and state groundwater quality standards;

2. Stop the flow of contaminated groundwater downgradient of the site property and to the Yahara River; and

3. Prevent the flow of contaminated groundwater to residential wells.

The remedy selected to meet these objectives included:

- Pump-and-treat on- and off-property groundwater;

- Treat extracted on-property groundwater using activated biological sludge (ABS) and treat extracted off-property groundwater using a technology to be determined by bench scale tests during the remedial design (RD) phase;

- Discharge treated groundwater to neighboring wetlands or the Yahara River;

- Treat and dispose of sludges generated from the groundwater treatment, and treat off-gases emitted from the treatment process;

- Use bench-scale studies to determine the effect of nutrients and/or oxygen on contaminated groundwater with the goal of enhancing bioremediation in the contaminated aquifer;

- Monitor all private wells located around the site; and

- Use deed and access restrictions to prevent the installation of drinking water wells within the vicinity of the disposal area and off-property.

The bench-scale treatment tests indicated that biological treatment was the most effective treatment technology for contaminated off-property groundwater at this site.

At the time of the ROD, EPA anticipated that the selected pump-and-treat remedy would require as much as 30 years to restore the aquifer. The ROD also stated that the time required to achieve

the RAOs was limited by the extraction technology. Remediation times are described in terms of advection flushing times. The effects of retardation and dispersion are not accounted for in the groundwater remediation time estimates. Advection flushing time was estimated to be between 10 and 15 years under the selected remedy. The addition of *in-situ* bioremediation would potentially decrease the remediation time to between 5 and 10 years, however EPA predicted the actual cleanup time to be substantially longer due to the effects of retardation and dispersion.

Status of Implementation

WMWI settled its claims against Uniroyal in December 1992 and is currently the only participating PRP. As such, WMWI conducted the remedial design and remedial action (RD/RA) for both OUs with oversight from EPA and WDNR.

Operable Unit 1 - SCOU

WMWI completed the RD/RA for the SCOU under a March 1991 Unilateral Administrative Order (UAO) issued by EPA.

In April 1991, EPA issued an Explanation of Significant Difference (ESD) to further refine the ISVE cleanup standard from the ROD goal of 90 percent removal of VOCs in the waste and sub waste soils. EPA, with state concurrence, approved the use of a groundwater/soil-gas model for each VOC detected in the waste and sub-waste soils and/or the groundwater to determine the cleanup standard for the waste and sub-waste soils. The model-predicted soil and corresponding soil-gas cleanup levels for THF were 0.1 micrograms per kilogram (µg/kg) and 0.007µg/L, respectively. The predicted soil and soil-gas cleanup levels for total xylenes are 2.6 µg/kg and 23.5 µg/L, respectively. This approach ensured cleanup goals that were measurable, reliable, and consistent with the NCP.

WMWI completed the RD for waste consolidation and capping in August 1991 and began on-site construction in September 1991. It removed about 30,000 cubic yards of refuse and non-native materials from areas B and C for consolidation into area A, and subsequently backfilled areas B and C. Area A, which now contained 97,650 cubic yards of waste, was capped. The cap complies with Ch. NR 504.07,WAC and consists of (from bottom to top) 24 inches of clay, 12 inches of drainage gravel, a non-woven geotextile fabric to provide filtration and to keep the gravel clean, 18 inches of rooting zone soil, and 6 inches of vegetative topsoil.

WMWI completed the RD for the ISVE system in August 1993 following pilot-scale testing to determine the RD parameters. The ISVE system consists of eight vapor extraction wells screened from the bottom of the waste, through the sub-waste soils, and down to groundwater. WMWI installed 29 gas probes, screened at various depths designed to monitor extraction well effects, at various locations and depths throughout and around the landfill (see Figure 5). The ISVE discharges VOCs directly to the air in compliance with the substantive requirements of a Wisconsin air-use permit (Ch. NR 445, WAC). WMWI completed the construction and startup of the ISVE system in January 1994 and continues to operate the system.

In September 1994, WMWI submitted an FS that evaluated microbial degradation of VOCs in the waste and sub-waste soils. The FS concluded that an enhanced biological treatment system would not be feasible or cost-effective as the existing ISVE system alone was capable of enhancing the needed biological activity.

Operable Unit 2 - GCOU

Under a November 1992 UAO, WMWI completed the RD and RA for the groundwater pump-and-treat system in May 1995 and April 1996, respectively. On August 27, 1996, EPA issued a Preliminary Close Out Report (PCOR) for the entire site and signed an ESD to document the following modifications to the 1992 ROD selected remedy for the GCOU:

1. Discharge treated groundwater back into the ground (reinfiltration), on-property, and upgradient of the capped waste disposal area, instead of to the Yahara River or wetlands;

2. Combine extracted on- and off-property groundwater into one influent stream and treat the single influent stream in an on-property treatment facility, as opposed to treating on- and off-property groundwater at two separate facilities; and

3. Use fixed film biological treatment (FFBT) instead of ABS to treat all extracted groundwater.

Under the RA work plan, the groundwater restoration system was to be operated until cleanup standards were achieved in the aquifer at the point of compliance, i.e., the waste boundary, and downgradient, which was anticipated to take up to 30 years. The 1992 ROD-selected cleanup standards for groundwater at this site are Wisconsin PALs, as set forth in Ch. NR 140, WAC.

Table 1 (see page 14) shows the applicable PALs and ES for chemicals found at the site, as well as the maximum concentrations of COCs from the most recent sampling data. The "Cleanup Standards" column provides the site-specific cleanup goals of the GCOU ROD (PALs) as well as other types of groundwater cleanup standards (i.e., MCLs and ESs) for comparison. The table shows a comparison of each cleanup standard in place at the time of the ROD to the current 2016 regulatory levels.

The groundwater extraction system consisted of four extraction wells within the contaminant plume: three near the landfill (EW1, EW2, and EW3) and one off-property about 800 hundred feet south of the landfill (EW5). The system was designed to pump between 80 and 130 gallons per minute (gpm). The treatment plant was constructed near the southern edge of the landfill (see Figure 2), and was designed to treat high flow rates (70-100 gpm) of moderately to highly contaminated groundwater, e.g., THF concentrations greater than 2,000 µg/L. The extracted groundwater was treated for VOCs and metals prior to discharge back into the ground, in compliance with the substantive requirements of a Wisconsin Pollutant Discharge Elimination System (WPDES) permit. Volatile organic chemicals were treated using submerged FFBT, which destroyed VOCs, making air treatment technologies to capture off-gases unnecessary. The discharge permit levels are the Wisconsin groundwater ESs in shown in Table 1.

Table 1: Groundwater Cleanup Standards and Maximum Concentrations Detected for COCs

Chemicals	Maximum Concentrations Found between 1/2010-6/2016 (µg/L)		Cleanup Standards (µg/L)					
	Date	Concentration (Well)/Location	ES		PAL		MCL	
			GCOU ROD	2016*	GCOU ROD	2016*	GCOU ROD	2016**
Organic								
Benzene	6/7/10, 4/13/10	3.1 (P17C)/on-property	5	5	0.067	0.5	5	5
1,1-DCE		ND	7	7	0.024	0.7	7	7
cis-1,2-DCE	2/17/10	0.53J (P7B)/on-property	NL	70	NL	7	NL	70
trans-1,2-DCE		ND	NL	100	NL	20	NL	100
Ethylbenzene	5/12/11	0.85J (MW26)/on-property	1,360	700	272	140	700	700
Tetrahydrofuran	8/17/12	9,700 (MW7)/on-property	50	50	10	10	NA	NA
Toluene	8/27/15	1.3J (P35B)/off-property	343	800	68.6	160	1,000	1,000
Trichloroethene	6/5/15	0.54J (P26B)/on-property	NL	5	NL	0.5	NL	5
Xylenes	1/21/10	91 (P17C)/on-property	620	2,000	124	400	10,000	10,000
Vinyl Chloride	6/7/10	6.7 (P17C)/on-property	0.2	0.2	0.0015	0.02	2	2
Inorganic (dissolved)								
Arsenic	2/22/12	8.5 (MW22)/on-property	50	10	5	1	50	10
Barium	2/18/15	99.7 (OB8M)/off-property	1,000	2,000	200	400	2,000	2,000
Iron	2/18/10	5,740 (P22B)/on-property	300	300[3]	150	150[3]	300[1]	300[1]
Lead	2/15/11	5.1 (MW27)/off-property	50	15	5	1.5	15[2]	15[2]
Manganese	2/10/16	99.6 (P32B)/off-property	50[3]	300 and 50[3]	25[3]	60 and 25[3]	50[1]	50[1]
Mercury	8/17/12	0.13J (P7B)/on-property	2	2	0.2	0.2	2	2

ES – Enforcement Standard, NR 140, WAC
PAL – Preventive Action Limit, NR 140, WAC
MCL – Maximum Contaminant Level, Safe Drinking Water Act
NL – Not listed in the ROD document
NA – Not Available as MCLs have not yet been promulgated for this chemical
J – Estimated value
[1] Secondary MCL based on aesthetic qualities of drinking water
[2] Action Level value
[3] Wisconsin Public Welfare Standard
□ – Criterion exceeded by Maximum Detection

Treated groundwater was discharged on-property to an infiltration gallery (IG) instead of to the Yahara River. Studies and modeling indicated that the IG would expedite the cleanup by flushing contaminants through the ground into the pumping wells, enhancing bioremediation through the introduction of oxygen-rich effluent water into the aquifer. Figure 6 depicts the locations of the extraction and monitoring wells, as well as IG area 4 in the northeast corner of the fenced area.

GCOU Low-Flow Air Sparge System Pilot Test

In August 2000, WMWI submitted a proposal to pilot test a Low Flow Air Sparge (LFAS) system at the site. The proposed system was to enhance natural degradation by raising the dissolved oxygen (DO) level in the groundwater. Past studies have shown that THF undergoes microbial degradation in an aerobic environment, while VC can degrade either aerobically or anaerobically. The PRP predicted the LFAS would attain cleanup goals for the remaining groundwater contamination and would ultimately replace the existing pump-and-treat system.

In fall 2000, EPA in consultation with WDNR, allowed WMWI to install and begin operating the LFAS system. Six shallow air sparge wells (AS01-AS06) were installed to a depth of about 50 feet, and are configured in a line about 60 feet apart and just downgradient of the landfill (the anaerobic zone), as depicted in Figure 5. Once the air sparge monitoring data indicated some increase in DO levels, WMWI proposed to shut down the pump-and-treat system temporarily in order to pilot test the full-scale operation of the LFAS system. EPA allowed the temporary shutdown of the pump-and-treat system on September 4, 2001 in order to determine the effectiveness of the LFAS system as an exclusive technology for restoring the groundwater. EPA's review of the 2004 groundwater data showed:

- The system had little overall effect on DO concentrations in the aquifer.
- VC continued to exceed standards across a large area and there was no downward trend in VC concentrations.
- The effectiveness of the LFAS system on all the remaining COCs, primarily THF, was questionable.
- Benzene and THF increases at well P17C were of concern.

EPA directed WMWI to address the THF and benzene levels at well P17C; to adjust the LFAS system to ensure desired DO levels were being generated; and, to evaluate alternative treatment options for THF in lieu of air sparging. If the planned enhancements and actions taken by WMWI were not able to meet groundwater standards in a reasonable time, then WMWI would be required to restart the pump-and-treat system or perform source removal. Further, if sampling results from the new monitoring well OBS2C (located about 300 feet downgradient from the waste boundary) indicated groundwater cleanup goals were being exceeded, then pumping from EW1 was to be resumed.

WMWI implemented the following corrective actions:

- Installed four additional deeper air sparging wells (AS07 - AS10) perpendicular to the plume and downgradient from the source area generally in the area of the shallow sparging wells. These wells began operating in April 2005 (see Figure 7).
- Installed additional groundwater monitoring wells.

- Conducted more intensive groundwater monitoring, including monthly monitoring over a specific period for certain wells.

After reviewing the results of the work, including monitoring results, EPA found that:

- THF levels declined in well P17C but were still well above cleanup standards and historical concentrations found in the well between 1999 and 2002.

- Lab methods for VC should achieve a lower method detection limit that is closer to the groundwater cleanup standard.

Groundwater data through March 2006 indicated that several key wells did not show discernible downward concentration trends for COCs and there were increasing concentrations in more than one well. Further, no real increase in DO levels was evident throughout the aquifer. Some wells showed lower THF and VC concentrations since the deeper sparging system was installed, but no corresponding rise in DO levels to indicate increased biodegradation of contaminants. Groundwater data did not show a significant trend towards improvement in groundwater quality throughout the aquifer beyond the waste boundary, which would be expected if the remedy was to achieve groundwater cleanup standards in a reasonable period of time.

In April/May 2007, WMWI installed an oxygen generator and air dryer to improve the effectiveness of the LFAS system. The generator produces up to 2.5 cubic feet per minute (cfm) of oxygen that feeds into the existing compressed air supply to the sparge points. This would increase the oxygen concentration in the air delivered to groundwater at the sparge points, as compared to ambient air, and increase the DO in local groundwater. The PRP installed the air dryer to remove moisture from the compressed air supply, as the compressed air lines had occasionally frozen during winter operation. These two enhancements have increased the effectiveness of the LFAS system by increasing the system run time, reliability, and DO concentration in local groundwater.

In September 2007, EPA and WMWI signed a consent decree (CD) requiring WMWI to perform studies and remedial response work at the site. The CD includes a Scope of Work (SOW) for the RA Work Plan that requires continued implementation of the remedy through strict adherence to the SOW, RD/RA guidance and work plans, RODs, ESDs, all approved operation and maintenance (O&M) plans and EPA guidance.

Under the 2007 SOW, if EPA determines that the LFAS cannot remove remaining groundwater contamination at an acceptable rate, then WMWI must implement appropriate corrective measures to ensure the remedy continues to be protective of human health and the environment. The CD also provides detailed requirements for the scope, implementation, maintenance, and enforcement and Long Term Stewardship (LTS) of the institutional controls (ICs).

The 2011 FYR recommended adding sparge points to the LFAS system in order to achieve groundwater cleanup goals (PALs) within a reasonable period. In November 2012, WMWI proposed to reconfigure two existing groundwater monitoring wells (P7B and P26C) and one groundwater extraction well (EW-1INF) as additional air sparge points. Over a series of correspondences, conference calls and meetings held between November 2012 and May 2014,

WMWI revised its design and work plan as per EPA and WDNR review. EPA approved the work plan on June 20, 2014.

The PRP implemented the approved upgrades to the LFAS system between July and November 2014 by reconfiguring monitoring well P7B and extraction wells EW1-INF and EW-3 as sparge points to the existing LFAS system. Figure 7 provides a closer view of these additional locations. WMWI installed a new interface panel to provide more flexibility in operation of the sparge points. The panel allows air to be directed to individual sparge points for variable periods and the cycle (i.e., sparge point order) to be adjusted as needed.

The current LFAS system includes 13 sparge points (AS01 to AS10, EW-1, EW-3 and P7B) generally oriented in a line perpendicular to the direction of groundwater flow, downgradient of the waste mass at the site. The design establishes an "aerobic treatment zone" for downgradient groundwater flowing from beneath the waste mass at the site. The installation and operation of the additional sparge points is expected to further promote aerobic conditions in the subsurface, and accelerate the natural degradation processes for contaminants identified in groundwater.

Access and Institutional Controls

ICs are non-engineered instruments, such as administrative and legal controls that help to minimize the potential for exposure to contamination. The ICs may consist of governmental or proprietary controls such as zoning ordinances, deed restrictions and environmental covenants. ICs are required to assure long-term protectiveness for any areas that do not allow for UU/UE, as well as to protect and maintain the integrity of the remedy.

Decision Document

Both the 1990 SCOU ROD and the 1992 GCOU ROD required that ICs and access restrictions be implemented at the site. The ICs were included as part of the remedy in order to:

- Prevent the installation of drinking water wells in the vicinity of the disposal area;
- Protect the cap and the treatment facility; and
- Protect the remedy and safeguard human health and the environment during implementation of the remedy.

The GCOU remedy also specifies that off-property ICs should be used to the extent necessary to implement and protect the remedy and to safeguard human health and the environment during implementation of the remedy.

As part of the SCOU remedy, WMWI installed a site security fence in 1991 around the entire on-property area to protect the cap and treatment facility, and to prevent public access. In addition to these access controls, a variety of institutional and administrative controls are in place to prevent exposure to contaminants at the site. Table 2 below provides a detailed summary of IC identification, purpose, objective, and area of coverage. Figures 4 and 8 depict these restricted areas. As previously mentioned, ICs are also specifically called out in the September 2007 CD (United States v. Waste Management of Wisconsin (07-C-0424-C)).

Table 2: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Document	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Area of the site where soil has been remediated to commercial/industrial cleanup levels.	Yes	Yes	PIN# 026-0511-103-9500-0 (16.5 acres) PIN# 026-0511-103-8000-7 (39.7 acres) PIN# 026-0511-103-8905-0 (3.73 acres)	Prohibit residential or commercial use of the on-site property, including but not limited to filling, grading, excavating, building, drilling, mining, farming, or other development, or placing waste material, except with approval from EPA, in consultation with the state, as consistent with the ROD and CD requirements.	The following on-property deed restrictions and conditions and access restrictions were recorded: All property owned by WMWI Sect.10, Twp. 5 North, Range 11 East, town of Dunkirk, Dane Co. (recorded in Dane Co., WI, May 15, 1991, Vol. 15889, Page 36, Doc. 2262327); All property owned by WMWI Sect. 10, Twp. 5 North, Range 11 East, town of Dunkirk, Dane Co., WI except lots 1-3 south of County Highway A (recorded in Dane Co., WI, August 26, 1991, Vol. 16585, Page 1, Doc. 2284942); East ½ of the Southwest ¼ of Sect. 10, Twp. Range 11 East, town of Dunkirk, Dane Co., WI, except that part south of Co. Highway A (recorded in Dane Co., WI, January 4, 1993, Vol. 24133, Page 13, Doc. 2428937.
Groundwater – On-site and Off-site: Areas where groundwater plume exceeds groundwater cleanup goals or PALs				Prohibit any consumptive or other use of the groundwater that could cause exposures to humans or animals until PALs have been achieved, thus guaranteeing the safety of groundwater migrating off-property.	On-property deed and access restrictions to prevent the use of groundwater and the installation of public wells were recorded in 1991 and 1993 (see above). Off-property IC addressing contaminated groundwater is WDNR requirement NR 812.08(4)(g), which prohibits the installation of a water supply well in a known contaminated aquifer or within 1,200 feet of a landfill without prior approval from WDNR. WMWI sold a portion of its property on the west side of the site property (Lot 3) to a developer, however the sales agreement requires that municipal services be provided to that area if/when development occurs in compliance with current deed restrictions. WDNR informational IC that requires placement of hazardous waste sites on an Internet accessible database (GIS Registry). The Registry requires WDNR approval for well construction if residual

					groundwater COC levels exceed NR 140 ES. ICs beyond (downgradient of) the 1,200-foot restrictive boundary [(NR 812.08(4)(g)] will be implemented to the extent necessary to protect human health and the environment downgradient of the site property until contamination is remediated. (planned)
Waste, Soil, and Groundwater On-site Remedial Components: - Consolidate and cap waste; - Install and operate an ISVE system in source area (through the cap); - Extract, combine, and treat on-and off-property groundwater via FFBT; - Discharge treated groundwater to reinfiltration area on the site property and upgradient of cap; - Use LFAS to enhance bioremediation in the aquifer; - Monitor all private wells located around the site annually.				Prohibit any residential or commercial use including but not limited to filling, grading, excavating, building, drilling, mining, farming, or other use or activity that may interfere with the work to be performed and long term O&M of all remedial components, including the cap, ISVE, LFAS and groundwater pump-and-treat systems, and groundwater monitoring.	On-property deed and access restrictions were recorded in 1991 and 1993 (see above). These controls have been applied to all lands owned by WMWI in proximity to the Hagen Farm site and shall run with the land as provided by law and shall be binding on all parties and all persons claiming under WMWI. Restrictive Covenants or a mixture of governmental controls (i.e., Township ordinance), periodic monitoring. (planned)

Status of Access Restrictions and ICs

WMWI placed deed restrictions on the property that it currently owns, or has owned in the past. On-property deed restrictions were recorded in 1991 and 1993 and run with the land (see Figure 8). The IC-specific objectives are stated in Table 2.

In June 2006, WMWI performed an IC study that included a title commitment search at EPA's request (Appendix 2). The study confirmed that deed restrictions were placed on portions of all three of the property parcels owned by WMWI at the Hagen Farm site. The entire contiguous restricted area is a smaller area than the WMWI property and lies within the property boundary. The restricted area is fenced and the restrictions run with the land.

In about 2003, WMWI sold a portion of its property (Lot 3) on the west side of the site to a developer. The 4.84-acre lot (PIN# 281-0511-103-8921-2) is identified as the future development of Stone Crest Park. The sales agreement between WMWI and the developer requires that

municipal services be provided to that area if/when development occurs. The developer recently indicated that the city of Stoughton has since annexed Lot 3 and other parcels slated for future development. Development of Lot 3 is not anticipated to occur for many years. Figure 9 shows the relationship between the Hagen Farm site and the City of Stoughton municipal boundaries.

In 2010, EPA requested that WMWI update the IC study in anticipation of a Site-wide Ready for Use (SWRAU) determination. One prerequisite for a SWRAU is that all institutional or other controls required as part of the response action have been implemented to ensure long-term protection. WMWI informed EPA at that time that ICs had not changed since the 2006 IC study. WMWI confirmed to EPA again in May 2011 during the previous FYR that ICs were in place and effective. As per the 2011 FYR, EPA required WMWI to update the IC study and to recertify the status of the ICs each year.

Governmental and administrative controls include a variety of local and state regulations that can affect potential development in the area of the site. Ch. NR 812.08(4)(g), WAC prohibits the installation of a water supply well in a known contaminated aquifer or within 1,200 feet of a landfill without prior approval from WDNR. This regulation is implemented through a requirement imposed on licensed well drillers. Well drillers in Wisconsin are required to assess potential drilling sites, relative to this requirement, prior to work and are also required to submit logs of new well installations and abandonments.

Additional mechanisms that provide notice of the site and potential risks associated with contact with contaminated media include the WDNR's Bureau for Remediation and Redevelopment Tracking System (BRRTS). This IC identifies the site on an internet accessible database-- the Geographical Information System Registry of Closed Remediation Sites (GIS Registry). Both closed and open hazardous waste sites are placed on this system, which provides detailed site-specific information and maps. Well drillers also use the GIS registry to identify sites of potential contamination, including landfills, to comply with NR 812.08(4)(g).

Current Compliance

Routine inspections of the perimeter fencing and access controls (i.e., gates) did not identify any issues with regard to potential trespass during this reporting period. The PRP maintains the fencing and access gates in accordance with the O&M plan for the site. In addition to the notice signs posted on the access points (i.e., gates), there are several other mechanisms, such as the previously identified GIS Registry, that provide notice regarding the presence and conditions at the site. These notices are expected to minimize the potential for undesirable actions near the site.

There was no evidence identified during this reporting period that the deed restrictions have not been effective. There was no new development or changes to land use or ownership of the owned portion of the site during this reporting period.

As per EPA's 2011 request for annual reporting on ICs, WMWI has been assessing the ICs to ensure they are in place and effective throughout the current FYR period. Annual monitoring and reporting concerning ICs is provided as a routine O&M activity within a separate IC monitoring section of the Annual Reports that WMWI submits to the agencies. Some of the items monitored

and reported include change of property ownership, grandfathering of replacement wells, and changes to Wisconsin administrative rules or statutes relevant to ICs.

For example, as part of its assessment of the effectiveness of the ICs, WMWI has reviewed the WDNR Well Construction Report and WDNR Water Well and Well Filling and Sealing Report System (WARs) databases over the past five years. WMWI performed searches to identify any wells recently installed within about one mile of the edge of the waste boundary on the site property. Review of these databases indicated that no new wells were installed or abandoned in 2011, 2012, 2014 and 2015.

In September 2013, one well was installed within one mile of the edge of waste on the site property. According to the construction report, a new high capacity well (Wisconsin Unique Well Number YK139) was completed on in the northeast quarter of the northwest quarter of Section 10, Township 5 north, Range 11 east. The Public Land Survey System land description suggests the well is located about 2,000 to 3,300 feet north of the edge of waste at the site. The identified property owner is Payne & Dolan, which suggests that the well may have been installed to support ongoing mining activities in an area north of the site. Given the well construction and location upgradient of the site, operation of the new well is not anticipated to adversely affect the ongoing remedial activities at the site, nor will the current site conditions impact operation of the new well.

In 2013, one new commercial well (PW3) was installed to replace a previous well on the former Sundby property, now owned by Wingra Redi-Mix. This well is located within the 1,200-foot radius of the waste boundary. As mentioned previously, the off-property private wells, including PW3, are annually monitored for site-related contaminants. Over the past five years, TCE was detected in 2012 (1.0 µg/L) and in 2013 (1.4 µg/L), which are above the PAL (0.5 µg/L) but below the ES and MCL of 5 µg/L. There were no TCE detections in 2011, 2014, and 2015.

WMWI informs the property owner of the results via annual letters. The letters indicate that the concentration is "below the federal drinking water criteria", but do not explain the criteria and whether there are any health implications. The letters do not reference the contaminant-specific Ch. NR 140 WAC criteria or indicate if the PAL has been exceeded. The private well data is further discussed in the Data Review section of this report.

In 2015, a well located about one mile north of the site was abandoned. WMWI furnished the Well Abandonment Report to EPA in Appendix G of its 2015 Annual Report.

Follow-up Actions Required

Since the 2011 FYR, the agencies believe that the ICs for the site should be enhanced to ensure long-term protectiveness of the remedy.

The agencies are concerned that VC continues to be detected in off-property monitoring well OB08M, which is located downgradient and beyond the 1,200-foot radius that restricts potable well installation under NR 812.08(4)(g). Vinyl chloride concentrations at this well exceed the PAL of 0.02 µg/L, which is the cleanup goal identified in the GCOU ROD. Some of the VC

levels also exceed the ES (0.2 µg/L), but do not exceed the MCL (2 µg/L). Another off-property downgradient well (P32B) shows VC above the PAL but not above the ES or MCL. Though adverse health effects are not anticipated, these findings reinforce the need for enforceable ICs at certain properties located beyond the 1,200-foot protective zone provided by Ch. NR 812.08(4)(g).

The sales contract under which WMWI sold Lot 3 to a developer requires that municipal services be provided to the property when it is developed. Given that the parcel has been annexed by the city since the 2011 FYR, the current and future enforceability of the contract is unlikely to be an issue of concern; however, the agencies should verify that the restrictions will run with the land and bind any future developers or owners of developed properties.

The ICs are in place and effective; however, in order to afford long-term protection of the downgradient groundwater, enforceable ICs should be implemented for unrestricted areas downgradient from the site property where site-related contaminants, namely VC, continue to be detected above the PALs and/or ESs. This would include areas beyond the current requirement to obtain WDNR approval for a well that is constructed within 1,200 feet of the edge of the landfill. A Wisconsin Environmental Protection Easement and Declaration of Restrictive Covenant may be an appropriate instrument to afford this protection. Other mechanisms could be pursued if it is found that it is not possible to place a Restrictive Covenant on specific properties.

The IC study prepared in 2006 should be replaced by IC and LTS Plans that meet current EPA guidelines and account for the addition of ICs in areas outside of the 1,200-foot restriction.

Long-Term Stewardship

Since compliance with ICs is necessary to assure the protectiveness of the remedy, planning for LTS is essential. Long-term stewardship will ensure that effective ICs are maintained, monitored and enforced and that the remedy continues to function as intended with regard to ICs. The PRP will be required to revise the site O&M plan to document LTS procedures. The revised plan should require annual certification of ICs to ensure their long-term effectiveness. The agencies and WMWI will also explore the use of communications plan and the state's One Call System.

System Operation/Operation and Maintenance (O&M) Activities

The O&M activities involve the SCOU and GCOU remedy components, as well as the attendant performance monitoring. The current O&M contractor is SCS Engineers of Menominee Falls, WI. A local contractor, Compressed Air Technologies (CAT) performs non-routine repairs or significant scheduled maintenance of the compressors, oxygen generator, or air dryer. Enterprise Electric and Machine Control Specialists (MCS) supported evaluation and resolution of electrical issues associated with the PLC.

SCOU Annual O&M Reporting

The SCOU components include a cap over the waste mass, an ISVE system constructed through the cap into the waste, and institutional and administrative controls at the site.

Each year, the PRP contractor typically performs the following activities:

- Site inspections are conducted in late July of each year;
- Cap mowing to control the growth of woody vegetation is usually completed in August of each year, except for 2013 and 2014 when it was performed in October;
- Monthly performance monitoring at the ISVE blower station and gas extraction wells for flow, temperature, header pressure, differential pressure and vapor composition (oxygen, carbon dioxide, and methane);
- Quarterly (February/March, May, August and November) performance monitoring of the probes for pressure and vapor composition (oxygen, carbon dioxide, and methane);
- Semiannual (May and November) sampling for VOCs from the operating extraction wells and the blower inlet station; and
- Periodic measuring of the condensate level in the condensate/underground storage tank (UST) and removing the liquid when necessary.

The contractor visits the site on a weekly basis to conduct O&M activities. Routine maintenance of the ISVE system includes checking belt tension, filter function, and lubricant levels at the blower, and management of the liquid (i.e., condensate) that collects in the UST.

The air dilution valve regulates the available vacuum to the collection header and extraction wells. The dilution valve is typically closed to maximize the available vacuum in the system, without drawing in excessive volumes of water from the extraction points. The water collects in the condensate tank and causes the system to shut down when the tank becomes full. Vacuum is present throughout the reporting period at nearly all of the probes at the site, indicating that the ISVE system is successfully creating a zone of influence in the waste mass at the site.

Over the five-year reporting period, methane concentrations remained low and were not consistently identified at the probes. Methane concentrations above five percent by volume (the lower explosive limit for methane), were typically observed during one to two quarterly sampling events per year at one to three probe locations within the waste mass. No methane was detected at the probes located outside the perimeter of the waste mass. The highest detections occurred in 2013 when GP06S showed 28.3 percent methane (November) and GP07D showed 60.7 and 39 percent methane (August and November, respectively).

Oxygen concentrations at the gas probes are generally greater than 20 percent by volume but lower at probes where methane and/or carbon dioxide is present. During 2011, oxygen concentrations at probes GP03S, GP04S, GP22M, GP23D, and GP23M, located closest to the air sparge system, were greater than the atmospheric concentration (20.9 percent) during at least one of the quarterly sampling events in 2011. During each successive year, the probes showing oxygen in excess of atmospheric concentrations increased in number and frequency. This indicates that the air sparge and ISVE systems are working as designed to facilitate natural attenuation at the site by promoting an aerobic environment in the subsurface. The probes are located on the southern edge of the waste mass near several air sparge points. In 2014, oxygen concentrations at the gas probes were generally greater than 20 percent by volume. The mean concentration for all measurements at all of the probes was 20.1 percent by volume for this reporting period.

The following are the more notable SCOU O&M occurrences during this FYR period:

2011
From February 4 to March 14, the ISVE system did not operate due to failure of the electric motor, preventing the collection of monitoring data in February. On two occasions, the motor was replaced and the system was restarted. The motor and blower have run without significant interruption since then.

2012
The level in the UST reached the high alarm on February 28. On March 1, about 745 gallons of liquid were removed from the UST. During the two-day interval, the ISVE system did not operate.

While mowing the cap in August, the PVC well casing of EW5 was broken off just below the ground surface. Staff replaced the damaged section of the casing and repaired the well on August 15. Well EW1AR was not operated under vacuum, but remained open to promote airflow into the waste mass.

2013
The blower was shut down on January 30 to remove about 599 gallons of liquid from the UST. Maintenance of the extraction wells (i.e., replacing damaged or broken sample ports and connecting/tightening loose fittings) was performed as needed. Well EW1AR was not operated under vacuum, but remained open to promote airflow into the waste mass.

2014
Liquid condensate was removed from the UST on two respective occasions--on January 24 (776 gallons) and on December 30 (732 gallons). Well EW1AR was not operated under vacuum, but remained open to promote airflow into the waste mass.

GCOU Annual O&M Reporting

Since September 2001, LFAS has been the sole remediation system for groundwater, essentially replacing the pump-and-treat system. The capital costs for LFAS amounted to about $500,000. The annual O&M costs for LFAS are about $160,000/year, which is about half of the O&M costs for the pump-and-treat system.

Two compressors, each rated to produce 77 cfm of air at 125 pounds per square inch (psi), provide air to the sparge points. The units run in lead-lag mode, in that one unit provides most, if not all, the compressed air, while the other unit only contributes air if needed to meet the pressure demand. Both the oxygen generator and air dryer use compressed air as a part of their operation.

Compressed air is routed to one of the four deep sparge points and one of the six shallow sparge points under the control of the Programmable Logic Controller (PLC). The PLC controls the cycling interval, which is currently set at 15 minutes per cycle. A valve regulates the pressure of the compressed air at the individual sparge points. The PLC also operates an autodialer that provides notification when system operation is disrupted.

Each year, the PRP contractor typically performs the following activities:

- Conduct weekly site visits to verify that the compressor(s), air dryer, and oxygen generator are operating and are maintained (i.e., maintain lubricant levels in the compressors and periodically drain moisture from system components);
- Monthly routine maintenance;
- Scheduled semi-annual maintenance of compressors, oxygen generator and air dryer;
- Monthly monitoring of the air sparge points for pressure and flow data; and
- Routine groundwater monitoring, at which time DO data are collected.

The semiannual sample results from the operating extraction wells and the blower inlet station show some variation in individual VOC concentrations between the two sampling events, but the data are generally consistent with results from past sampling events. The most significant variation has been for xylene, which is not expected to be an air emissions concern. Total VOCs discharged from the blower stack have remained below the potential air emission limit identified in Ch. NR 419, WAC of 216 pounds per day. Using the VOC data collected from the blower exhaust in November of each year, as the most conservative value, the daily total VOC discharge from the ISVE system is currently less than one pound per day.

The following are the more notable GCOU O&M occurrences during this five-year period:

2011
The LFAS stopped working on July 20. The power supply on the PLC was replaced on August 5.

Unit 1 compressor did not consistently operate for several months and was removed from service on March 9, when a circuit/control board was also removed for service. Prior efforts to improve the run time of the compressor, including replacement of the motor starter relay on February 11 were unsuccessful. The circuit board was repaired and reinstalled on June 8. Unit 1 operated normally for the remainder of 2011.

A pressure deficiency was detected at sparge points AS03 and AS05 in late 2010 because the PVC risers were broken at both points about six feet bgs. The air flow to these points was shut off until repairs were made. The soil near the sparge points was removed and new parts were solvent welded in place to reconnect the existing PVC pipes in April.

2012
Several short-term shutdowns of one or both of the compressors occurred. Most of the issues were not significant, so that operation could resume upon reset of the unit. The PLC power supply issues also resulted in system call-outs and the associated downtime. Periodic issues with the PLC were resolved with replacement of the PLC power supply in July.

Groundwater monitoring well P22C had a sheared or broken casing belowground. The dedicated sampling pump was no longer operational and could not be removed from the well, preventing sample collection during the August sampling event. Depth to water measurements at this well in August and November were also not able to be reported.

2013
Short-term shutdowns of one or both of the compressors occurred over the year. Most of the issues were not significant (e.g., broken drive belts and seals), so that the operation could resume upon reset of the unit. The PLC power issues during this period also resulted in system call-outs and associated downtime. The issues with the PLC were resolved with replacement of the PLC processor and power supply in April and November.

2014
WMWI reconfigured monitoring well P7B and former extraction wells EW1INF and EW3 as air sparge points and added them to the existing LFAS in October.

The PLC was upgraded with an interface panel to allow more flexibility in controlling the air supply to each sparge point-- the cycle time and sequence is now adjustable. The cycle interval during this reporting period was set between 15-20 minutes, with the longer duration utilized at the recently installed sparge points. The pressure of the compressed air is regulated at the individual sparge points by a valve.

The compressors are typically shut down for routine maintenance and service during site visits. The compressors will also shut down in response to signals from various system sensors, including high temperature, low fluid level, electrical faults, etc. There were short-term shutdowns of one or both of the compressors, though most of the issues were not significant (e.g. frozen filters, oil filter leaks), so that operation could resume upon reset of the compressor units.

2015
A lightning strike on June 6 damaged the power supply to the PLC and interfered with the distribution of compressed air to the sparge points. The power supply was replaced and operation of the LFAS system resumed on June 23.

Well MW1, located on property owned by Payne & Dolan (north of the site property) had been damaged by earthmoving equipment used to clear brush. WMWI abandoned the well in accordance with Ch. NR 141 Groundwater Monitoring Well Requirements on November 16 and installed a replacement upgradient monitoring well (MW100) south of MW1 (on WMWI property) on November 16. WMWI developed the new well on December 1, and provided the completed Soil Boring Log Information, Monitoring Well Construction, and Monitoring Well Development forms for MW100, and Well Filling and Sealing Report for MW1 to EPA and WDNR on January 4, 2016.

Well MW29 was damaged by water that had frozen between the inside of the protective casing and the outside of the PVC well. The PVC well was crushed at the soil surface, so that the water level probe could not pass and the tubing to the dedicated sampling pump did not function. The well was repaired by removing the protective casing and dedicated sampling pump, which allowed the PVC to be cut below where it was damaged, and a new section of PVC added using a slip collar. The protective casing was replaced on November 18. The dedicated sampling pump was repaired and reinstalled in December.

III. PROGRESS SINCE THE LAST REVIEW

The protectiveness determinations/statements and the issues/recommendations evaluated in the previous FYR for the Hagen Farm site are provided in the Tables 3 and 4 below.

Table 3: Protectiveness Determinations/Statements from the 2011 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The Source Control OU protects human health and the environment in both the short and long term. The source of contamination is not accessible to humans as it was consolidated and capped. Access and ICs, including fencing and deed restrictions, respectively, have been implemented to prevent current and future exposures to on-site groundwater and prevent residential/ commercial activities for the on-site property.
2	Short term Protective	The Groundwater Control OU protects human health and the environment in the short term. Access controls and ICs, including fencing, deed restrictions, and governmental controls have been implemented to prevent current and future exposures to on-site and off-site groundwater. Residences downgradient of the site property that rely on private groundwater wells are sampled annually to ensure their groundwater is safe. Currently, there are no exceedances of VC above MCLs in the off-property monitoring and private wells. Long term protectiveness of the OU2 remedy will be achieved by enhancing the current LFAS system and ensuring its continued effective operation and maintenance; maintaining and enforcing the effectiveness of existing ICs; and implementing additional enforceable ICs further downgradient of the site property where ROD-specified groundwater cleanup goals are being exceeded until groundwater cleanup goals have been achieved throughout the plume.
Site wide	Short term Protective	The remedy is protective of human health and the environment in the short term. The remedy will be protective in the long term when ROD-specified groundwater cleanup goals are achieved throughout the plume. Until such time, it will be necessary to continue groundwater remediation, and to institute, maintain and enforce effective ICs at the site.

Table 4: Status of Recommendations from the 2011 FYR Report

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status/ Completion Date
2	The SOW appended to the 2007 CD states that the LFAS system must restore the groundwater within a reasonable time period. Groundwater data evaluated to date show a reduction in contaminant	1. The LFAS, currently in use for groundwater remediation, was enhanced to achieve greater effectiveness in contaminant reduction. The PRP should continue to monitor the effectiveness of the system and, if necessary, propose	PRP	EPA/ WDNR	Sept. 2013	Completed November 26, 2014

	concentrations in some wells since the previous FYR, but not a significant overall declining trend throughout the aquifer, especially for VC. This is necessary if the remedy is to achieve cleanup goals within a reasonable time period.	additional enhancements to the system and implement them according to a schedule. The groundwater pump-and-treat system should remain on-site and operational until it has been demonstrated that the LFAS is sufficiently optimized. 2. At such time when the LFAS has been enhanced or demonstrates improved remedial effectiveness, a decision document should be prepared to memorialize the GCOU remedy change.	EPA		Sept. 2014	In Progress

Recommendation 1

Following the recommendations of the 2011 FYR to add additional sparge points to the LFAS system, in November 2012, WMWI proposed reconfiguring two existing groundwater monitoring wells (P7B and P26C) and one groundwater extraction well (EW-1INF) as additional air sparge points. During a series of correspondences, conference calls and meetings held between November 2012 and May 2014, the PRP revised the proposal and prepared the work plan as per EPA design oversight and WDNR input. EPA approved the final LFAS expansion work plan on June 20, 2014.

The PRP implemented the upgrades to the LFAS system between July and November 2014. One existing groundwater monitoring well (well P7B) and two former groundwater extraction wells (EW1-INF and EW-3) were reconfigured as air sparge points to the existing LFAS system. These points were selected to address contaminant concentrations currently identified in groundwater, in an effort to further enhance the effectiveness of the existing LFAS system. The current LFAS system now consists of 13 sparge points generally oriented in a line perpendicular to the direction of groundwater flow, downgradient of the waste mass at the site (Figure 7). Following the completion of the construction in November 2014, WMWI collected an initial round of samples. Since then, six quarters worth of post-startup data have been collected to assess the effectiveness of the LFAS system, as discussed in the Data Review and Technical Summary sections of this report.

Recommendation 2

This recommendation called for EPA to prepare a decision document once it determined that the LFAS had been enhanced and/or demonstrated improved remedial effectiveness. After six quarters of groundwater monitoring data following the LFAS system expansion as detailed in the next section, it is now evident that the remedy is effectively reducing contaminant levels in groundwater. The LFAS component for the GCOU remedy is an effective replacement to the original groundwater pump-and-treat component. Throughout this time, the pump-and-treat remedy components have remained on-site. EPA has determined that the LFAS GCOU remedy should be memorialized in a ROD Amendment. WDNR concurs with this plan.

In addition to the specific recommendations discussed above, EPA, in consultation with WDNR approved several modifications to both the remedy performance and groundwater quality components of the monitoring program during this review period, thereby optimizing some remedial operations. These are summarized as follows:

- On August 10, 2011, EPA approved discontinuing the annual analysis for SVOCs, including pesticides, herbicides, and PCBs from routine groundwater monitoring program, including those samples collected annually from the 11 private wells near the site.

- On September 17, 2012, EPA approved changing the frequency of the performance monitoring from monthly to quarterly. The same sample point locations and parameters to assess the performance of the cap, ISVE and LFAS remedial components will be used.

  The revised monitoring program also included removing EW2 from the monitoring program due to well construction issues affecting sampling of the well; removal of the points proposed to be reconstructed as LFAS points (EW-1INF, P7B and EW-3) from the monitoring program; and removal of well P22C proposed to be abandoned from the monitoring program due to well integrity issues.

- On June 20, 2013, EPA approved of decommissioning and removing the major pump-and-treat components, i.e., bioreactors, mixing tanks, clarifiers and associated pumps and piping, with the caveat that a resumption of pump-and-treat may be required under certain conditions, thus requiring a replacement system. WMWI will maintain the existing treatment building, infiltration gallery, and influent piping system from the extraction wells.

- In 2013, EPA approved reducing the number of private wells located downgradient and side-gradient from the site property that are annually sampled in August from 11 to five wells. The wells removed from the monitoring plan have not shown any contamination and are not assessed to be at risk from site-related contaminants. The off-property wells that will continue to be annually sampled include PW2, PW3, PW4, PW5, and PW9. Figure 10 shows the locations of the private wells removed from the annual monitoring program, as well as those that remain in the program.

- In May 2014, EPA approved a reduction in VOC sampling frequency at the operating extraction wells and blower inlet from semi-annual to annual, provided that the sampling was performed in November to reflect worst-case conditions.

- In March 2016, EPA approved discontinuing annual VOC sampling at individual ISVE wells but continuing annual sampling at the blower inlet in November to reflect worst-case conditions. The agencies also recommended one full round of confirmatory samples at all ISVE wells every five years to coincide with FYRs. EPA also approved discontinuing quarterly field measurements at gas probes but continued annual measurements at 11 gas probes outside the waste mass to ensure no off-property migration of contaminants.

The full text of the letters cited above is provided in Appendix 3. The current groundwater quality monitoring program is provided in Attachment 2.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement and Site Interviews

EPA placed a public notice in the local newspaper, the *Stoughton Courier-Hub*, on March 10, 2016, stating that there was a FYR underway and inviting the public to submit any comments to EPA (Attachment 3). At the same time, EPA posted a new web page for the site. The results of the review and the report will be made available at the local site information repository located at the Stoughton Public Library, 304 South Fourth Street, Stoughton, Wisconsin.

A notice will be published in the same local newspaper at the conclusion of this FYR. The notice will announce the completion of the FYR report and that the results of the review and the report are available to the public at the Stoughton Public Library as well as the EPA Region 5 and WDNR offices.

Because this is the fifth FYR at this site and no community-related issues have been brought to EPA's attention, formal community interviews were not conducted. Messrs. Peterson and Prattke visit the site regularly and were questioned as to whether any community concerns or other issues have been raised over the past five years that require follow-up. There were no notable issues; however, Mr. Edelstein (WDNR) indicated that they receive about one inquiry per year from parties interested in building large homes in this rural setting. Since this area is outside of the city municipal lines, they ask about groundwater quality.

Document Review

This FYR included a review of relevant documents including O&M records and reports. The 2011 through 2015 Annual O&M Reports submitted by WMWI and SCS Engineers were the most recent comprehensive submittals reviewed. In addition, technical reports and correspondences between the stakeholders were reviewed. Attachment 4 provides a list of documents reviewed for this report.

Data Review

The hydrogeological data provided by WMWI in the Annual Reports from 2011 through 2015, as well as available 2016 data continue to indicate a downward gradient from the water table to deeper pervious strata over a significant portion of the past five years. As a result, contaminants can be driven downward into the fractured bedrock where it is more difficult to both monitor and remove them than in the shallow sand and gravel aquifer. In addition, flow characteristics in the fractured rock are not well characterized, e.g., the degree to which the fractured rock acts as a porous medium or as a network of preferential pathways. Although these factors need to be better understood, a more expedient way to increase protectiveness is to define and use a "buffer zone" around the estimated plume to accommodate flow direction uncertainties.

Attachment 5 provides graphs that depict trends for the major COCs in groundwater at the site. The data represent concentrations seen in on- and off-property monitoring wells over the past five years. The monitoring data in recent years has shown VC, and occasionally THF, concentrations in the fractured bedrock in excess of the groundwater PALs. Since its 2014 expansion, the LFAS has been effective in reducing the THF and VC concentrations even in the fractured bedrock, however, additional monitoring data are needed to better evaluate progress to achieving the groundwater cleanup criteria.

Table 5 (see Appendix 1) provides monitoring results for wells located on the site property where the concentration either met or exceeded the ESs over the last five years. Table 6 (see Appendix 1) provides results for wells located downgradient of the site property where the ES was either met or exceeded during the same period.

Tetrahydrofuran

THF has historically been found in concentrations in the thousands of ppb at the waste boundary, with values that decrease with distance from the boundary. In recent years, WMWI has made substantial progress in reducing THF concentrations in groundwater. Since the end of 2011, THF concentrations have been below the ES and PAL criteria at all monitored wells except for two monthly samples during 2012 at OBS-1C (on-property), where 47 µg/L and 13 µg/L were detected in March and August, respectively, and a single isolated sample in 2014 at P-17C of 16 µg/L.

A number of samples at MW-7, which is located adjacent to the waste boundary, showed THF levels exceeding the PAL and ES criteria. Notably high levels were seen in August 2011 (5,400 µg/L) and August 2012 (9,200 µg/L). In August 2013, levels decreased to 750 µg/L, but were reported to be 3,400 µg/L in February 2014. THF concentrations at MW7 have dropped to non-detects (with a LOD less than PAL) following the October 2014 enhancement of the LFAS system. It should be noted that as part of the enhancement, nearby well (P7B) was converted to a sparge point in 2014 to address the high THF concentrations in groundwater.

Vinyl Chloride

The LFAS has been less effective in reducing VC concentrations than it has with THF. Between the end of 2011 and February 2014, a number of samples at P-17C, which is located within about 300 feet of the waste boundary and on-property, showed VC concentrations greater than the MCL (2 µg/L). The highest values being 5.0 µg/L (2011), 3.3 µg/L (2012), 2.7 µg/L (2013) and 2.2 µg/L (2014), but there have been none since February 2014. These levels have been slowly and consistently declining in value since the oxygen concentrator was added to the treatment system in 2007, and appear to be trending toward values below the ES in the near future under current operating conditions. In addition, the DO concentration at P17C has increased significantly since 2014 and is expected, if it continues, to be beneficial to remediation progress.

Since the end of 2011, numerous VC concentrations exceeding the ES (0.2 µg/L) have been detected near the waste boundary at P7B (prior to its conversion to a LFAS point), near the fenced boundary at P26B and P17C, and off-property at OB08M. Some of these higher levels have also been detected at off-property well P32B. During this same period, a number of VC levels

exceeding the PAL were also found at or near the waste boundary at MW7 and P22B, on-property at OBS-1C, and off-property at P32B.

VC concentrations ranging between the ES and MCL have persistently occurred at off-property downgradient well OB08M for the entire life of the remedy. A visual scan of the plot of VC concentrations over time at OB08M reveals a slight but noticeable increase from "never above 1 µg/L" before 2009 to "often above 1 µg/L" after 2009. Monitoring well OB08M is about 1,900 feet from the waste boundary and therefore not subject to Wisconsin Chapter NR 812.08(4)(g) requirements. Even if the LFAS localized treatment of the groundwater plume can reduce the VC levels that currently extend off-property to OB08M, it could take an indeterminate number of years to remediate the contamination found at OB8M. Until additional temporal data obtained since the 2014 expansion of the LFAS demonstrate that the LFAS intercepts and adequately treats the entire plume that exists and, in the past, has migrated off-property within the fractured bedrock, the outlook for OB08M is not clear. Further, the monitoring network is not sufficient to identify the preferential paths in which the plume migrates.

Monitoring well OB08M is located outside the zones of influence of both the LFAS and the original pump-and-treat system, and is reportedly already aerobic (with DO concentration usually exceeding 3 mg/L). The fact that VC concentration has been increasing slightly and not decreasing under aerobic conditions presents an unresolved concern for remediation of VC in groundwater to meet the ES at OB08M.

The time required for "treated" groundwater to travel from the sparge line to OB08M can only be roughly estimated. There are no studies that provide definitive data. Using several data sources, EPA determined a range of travel times from one to 18 years, with the most likely being about six years. Because the oxygen concentrator was added to the LFAS in 2007, one would expect to begin seeing the impacts of remedial activities at OB08M by now, although they would likely be diminished due to various biochemical and hydrogeological factors, including the relatively low VC concentrations (about 1 µg/L). Continued attention to VC concentrations at P32B may prove helpful in future assessments.

As a result of the VC plume extent and concentrations, additional downgradient off-property ICs should be considered south of the property at least as far south as OB08M. Although VC levels at this well are below the MCL, they are greater than the current PAL and ES criteria. The plume length should be conservatively estimated when delineating IC areas. Plume time-to-cleanup estimates would inform stakeholders as to the timeframe during which groundwater cleanup standards should be achieved under the current remediation scenario, as well as under potential changes that could be made to the system.

Benzene

The remedy has demonstrated significant progress in the reduction of benzene concentrations. The only consistent benzene concentrations in excess of the PAL (0.5 µg/L) during this reporting period were from samples collected from well P17C in 2011. The maximum concentration during this reporting period was 2.3 µg/L in January 2011. Since 2011, benzene concentrations exceeding the PAL (but not ES or MCL) were found at P17C several times; however,

concentrations showed a declining trend and no values greater than PAL have been found since May 2014 when 0.63 µg/L was detected in P17C.

Trichloroethene

Since 2011, TCE has not been found in any of the site-related monitoring wells. Of the eleven private wells[1] that have been annually sampled and analyzed by WMWI, TCE has been found twice in the annual water quality sample of private drinking water well PW3 on the former Sundby property, and was not detected in the three other annual samples. The detected concentrations were 1.0 and 1.4 µg/L (both estimated values between the limits of detection and quantitation) in 2012 and 2013. While these levels exceed the PAL of 0.5 µg/L, they are less than the ES and MCL (5 µg/L). The 2011 FYR indicated three out of five annual samples from PW3 had TCE concentrations between PAL and ES/MCL, and earlier annual samples (between 2003 and 2006) were non-detects. TCE has not been found at other private wells. Typical degradation products of TCE, such as *cis*-1,2-DCE and VC have not been detected in private wells. No products that typically degrade to TCE, such as tetrachloroethene, have been detected either.

As previously discussed, the property owner receives a letter from WMWI of the annual results. In the case of PW3, the letter states that the result is "below the federal drinking water criteria," but does not explain the criteria and whether there are any health implications. The letter does not reference the contaminant-specific Ch. NR 140 WAC criteria or indicate that the PAL has been exceeded and the implications thereof.

Inorganics

Since 2011, arsenic concentrations exceeding the PAL (1 µg/L) have been observed at twenty-one monitoring wells (IG-04, MW7, MW22, MW23, MW26, MW27, MW32, MW33, OB08M, OBS-1B, OBS-1C, P7B, P17B, P17C, P17DR, P22B, P26B, P27B, P28B, P35B, and P40D). In the same period, arsenic concentrations consistently greater than current ES and MCL were observed at monitoring wells P22B (waste area) and P27B (off-property). Annual sampling in 2011 and 2012 at private wells showed arsenic at wells PW6, PW9, and PW10 at concentrations greater than PAL and less than ES and MCL. Arsenic occurs naturally in some Wisconsin groundwater, but no specific Alternate Concentration Limit (ACL) has been proposed for the Hagen Farm site at this time. While there is no evidence that the dissolved arsenic originates in the landfill, it does not necessarily mean that dissolved arsenic is unrelated to the site.

Since 2011, two samples each showing a lead concentration greater than current PAL (1.5 µg/L) were found at MW1 in 2011 and 2012. In late 2014, MW1 was irreversibly damaged and has not been replaced. One other result greater than current PAL for lead was found at MW27 in 2011. No samples showed lead concentrations greater than the ES (5 µg/L) or MCL (15 µg/L, Action Level) since 2011. During the annual sampling of private wells, lead was detected once at a value of 2.8 µg/L in PW2. This value is greater than PAL and less than both the ES and MCL. As noted in previous FYR reports, this detection may be related to plumbing.

[1] Beginning in 2013, the number of private wells annually monitored was reduced from 11 to five wells. The six eliminated wells have never shown any detections and are not directly downgradient of the site. Well PW-3 continues to be annually monitored.

No mercury was found at concentrations greater than the PAL value in any monitoring well since 2011. Mercury has not been detected in private wells.

Iron and manganese concentrations greater than the PAL, and in some locations the ES and MCL, are common or even typical. Similar results are also found in the private wells. In locations where iron concentrations are found in two different depths, the deeper screens tend to have a greater proportion of values greater than ES and MCL. A similar pattern is not found for manganese.

Nitrate-plus-nitrite is found in concentrations typically greater than ES (10 mg/L) in several wells off-property, split between greater than the PAL (2 mg/L) and ES in three other off-property wells, and typically greater than PAL at three on-property and one off-property location. Private well sampling demonstrates a number of off-property values greater than PAL and/or ES. These results for nitrate-plus-nitrate are not uncommon, and may result from agriculture, fertilizer use, or other human activities.

MNA Parameters

Routine monitoring program at the site includes a number of MNA parameters, some of which were discussed in previous paragraphs:

- Dissolved oxygen (DO)
- Dissolved nitrate plus nitrite (NO_3+NO_2)
- Dissolved iron (Fe)
- Dissolved manganese (Mn)
- Dissolved sulfate (SO_4)
- Oxidation-reduction potential (ORP)

These MNA parameters indicate whether the groundwater chemistry environment is conducive to certain biological conditions in the aquifer that break down the COCs. The LFAS creates a locally oxic environment, and adjacent to the latter is a nitrate-reducing environment. The expansion of the LFAS appears to have had a distinct and beneficial local effect. Data indicate that natural seasonal variability exists in the redox environment. Table 7 (see Appendix 1) provides a summary of DO levels for wells on the site property over the last five years. The table reflects three quarters of data (February 2015 through August 2015) collected since the most recent LFAS expansion after November 2014.

EPA's interpretation of the MNA parameter values are similar to the previous FYR and are summarized below:

- There are sometimes contradictory results in the MNA parameters data, but they generally are useful for describing the local oxidation-reduction environment.

- The LFAS is creating a locally oxic environment and, in combination with precipitation and, because regional groundwater flow is toward the south, is making the redox environment less reducing to the south.

- The MNA parameter data continue to have value for evaluation of the current remedy and will be useful for future changes that may be proposed.

Annual Reporting

The annual O&M reports or Annual Reports affect the evaluation of field activities and data. As such, the reports should include more than the currently provided information, such as COC concentrations vs. time for a greater number of sampling locations. This information would help to provide a more comprehensive picture as to the efficacy of LFAS.

Site Inspection

The site inspection was conducted on September 25, 2015. In attendance were Sheila Sullivan, EPA Remedial Project Manager (RPM); EPA consultant David Dougherty of Subterranean, Inc., Gary Edelstein, WDNR Site Manager, Mike Peterson, WMWI, and Mike Prattke, SCS Engineers.

The discussions focused on the LFAS operations and potential options for remedy enhancement and optimization.

Attachment 6 provides a copy of the FYR site inspection form. The purpose of the inspection was to assess the protectiveness of the remedy, including the status of access restrictions and ICs. A survey of the cap revealed no disturbances. The grass cover was healthy and in good condition, having been mowed two weeks prior to the inspection. The parties walked the site and observed all site features. The perimeter fence appeared to be in good condition and signs are posted on all four sides of the property, however the EPA RPM contact phone number should be updated.

No significant issues were identified at any time regarding the drainage structures. A riprap layer acts as a toe drain for the gravel drainage layer situated above the clay cover. A geotextile layer above the drainage layer, which appears to be installed between the gravel and the riprap. The agencies also closely examined the three wells that were recently reconfigured to new air sparge points, as well as the recently abandoned wells.

The agencies checked the treatment plant building, which in addition to the current treatment system machinery and equipment, still houses the pump-and-treat system components. The parties also inspected the air compressor units, oxygen generator and air dryer, all of which were in good condition. The manifold/solenoid bank was expanded by the three new sparge lines and the upgraded PLC appeared to be cycling the sparging points. Attachment 7 provides photographs taken during the site inspection.

V. TECHNICAL ASSESSMENT

Question A: ***Is the remedy functioning as intended by the decision documents?***

Yes. The review of documents and the results of the FYR site inspection indicate that the SCOU portion of the remedy is functioning as intended by the ROD and ESD. The consolidation and capping of the wastes, in combination with the access restrictions and ICs effectively block the exposure routes of concern and reduce overall human health risk on-site, as well as protect the

remedy. WMWI has effectively operated and maintained the ISVE system such that contaminant loading from the source to the groundwater has been successfully reduced. This review found that O&M of the cap and drainage structures has also been effective.

The GCOU portion of the remedy no longer employs all of the components documented in the OU2 ROD and ESD. The GCOU currently utilizes only the upgraded LFAS system to address groundwater contamination. This has been the situation since 2001, when after receiving EPA approval, the PRP substituted a LFAS system for the pump-and-treat system on an interim basis in order to achieve *in situ* treatment. Since most of the remaining groundwater contamination is in the anaerobic zone immediately downgradient of the SCOU, WMWI installed the LFAS system to aerate this zone and provide more efficient remediation than was provided by the groundwater pump-and-treat system. The LFAS is well maintained and, as a result of the systematic upgrades made to the LFAS system over the years, shows the ability to effectively reduce contaminants.

Comprehensive groundwater data, O&M records and other information pertaining to the current LFAS system indicate that it is operating as well as can be expected. Its configuration was changed at the end of 2014 by converting one groundwater monitoring and two extraction wells into LFAS wells. The limited monitoring data subsequent to this enhancement suggest that it is accomplishing its goals. Although down-gradient VC contamination remains a concern, because VC is not present in off-property wells at levels exceeding the MCL, the current protectiveness of the remedy is intact.

The agencies expect that the comprehensive enhancements that have been made to the LFAS over the years will maintain and ensure protection in the long term, and that the data do not warrant recommissioning the pump-and-treat system. In its oversight capacity, EPA will continue to evaluate groundwater monitoring data and consult with WDNR to ensure that the system continues to be upgraded in a timely fashion, if warranted. However, the data trends and current conditions indicate that the LFAS has been demonstrated to be the most effective GCOU remedy in combination with the SCOU. EPA in consultation with WDNR believes that the LFAS has proven itself to be the preferred remedy and is currently planning to memorialize the GCOU remedy change from pump-and-treat to LFAS in a ROD Amendment.

WMWI conducted a detailed IC study with title search in 2006, which was updated and recertified in 2011 and each year thereafter. As a result of its assessment of ICs with respect to the most recent groundwater data, EPA believes that while on-property ICs are protective in both the short and long term, off-property ICs should be enhanced to ensure long-term protectiveness. This would involve the use of ICs further downgradient (south) of the landfill property, at least as far as monitoring well OB08M. The downgradient VC levels detected at two locations (OB08M and P32B) outside of the 1,200-foot restrictive boundary [(NR 812.08(4)(g)] exceed the PAL, and in some cases, the ES, but do not exceed the MCL. This finding reinforces the need for off-property ICs to prevent the potable use of groundwater. If the plume length and breadth is estimated in a conservative fashion, then future concentrations at OB08M could be used as part of a "trigger" to modify restrictions. These measures would ensure long-term protectiveness of human health and the environment downgradient of the site property.

Question B: ***Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy selection still valid?***

Yes. There have been no changes in the physical conditions of the site since the last FYR that would affect the protectiveness of the remedy. There are no changes in current land use or exposure assumptions on or near the site that would alter the protectiveness of the remedy. As discussed, Lot 3, which is directly west of the site property, has been planned for future development. The sales agreement between WMWI and the developer requires that municipal services be extended to the property before development can occur. Recent information indicates that Lot 3 has been annexed by the city of Stoughton, which will guarantee municipal services to the property. Several other development lots have been annexed as well. Occasional inquiries have been made by prospective developers and purchasers regarding site-related contamination. This interest is expected to continue given the attractive rural environs.

Changes in Standards and To-Be Considereds (TBCs)

There have been changes to groundwater cleanup standards for several chemicals since EPA issued the GCOU ROD in 1992. Changes to Wisconsin Ch. NR 140 Groundwater Quality have resulted in less stringent standards for toluene, xylenes, barium, and manganese, as well as more stringent standards for ethylbenzene, arsenic and lead. The PAL values have been increased for benzene, 1,1-DCE and VC, although their respective ES and MCL values are unchanged. The MCL has decreased for arsenic. Two chemicals pertinent to the site have been added to the state and federal standards since the ROD-- *cis*-1,2-DCE, and *trans*-1,2-DCE. Finally, TCE was not listed as a detected COC in the 1992 GCOU ROD. TCE was added to the routine monitoring schedule in November 1996; its MCL and ES have not changed since the 1992 ROD was issued, though its PAL has increased. These changes do not affect the validity or protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The assumptions used in the baseline risk assessment are considered conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions or the cleanup levels developed from them is warranted. There have been no changes to the standardized risk assessment methodology that would affect the protectiveness of the remedy.

Expected Progress toward Meeting RAOs

The comprehensive remedy is making more progress toward achieving RAOs than has ever been demonstrated in the past. The LFAS system has been enhanced several times since it was first installed in 2001, with the most recent expansion implemented at the end of 2014. The improvements appear to have increased the overall effectiveness of contaminant reduction in groundwater. The agencies will continue to review monitoring data to ensure that any indicated improvements or expansions to the system are implemented to ensure that the LFAS system will achieve groundwater remediation goals within a reasonable period.

Question C: ***Has any other information come to light that could call into question the protectiveness of the remedy?***

No. There is no new information available since the 2011 FYR that challenges the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU 1 –Source Control Operable Unit

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): OU 2	**Issue Category:** Institutional Controls			
	Issue: ICs should be implemented downgradient of the site property where groundwater cleanup standards are exceeded to prevent potable use of contaminated groundwater.			
	Recommendation: WMWI needs to investigate the use of ICs further downgradient (south) of the landfill site property. The VC levels detected at two downgradient off-property locations (OB08M and P32B) exceed the cleanup criteria (PAL), and in some cases, the ES. These known locations are outside of the authority of Wisconsin Ch. NR 812.08(4)(g), which prohibits the installation of a water supply well in a known contaminated aquifer or within 1,200 feet of a landfill without prior approval from WDNR.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/WDNR	3/31/2017
OU(s): Site wide	**Issue Category:** Institutional Controls			
	Issue: A LTS plan that meets EPA guidelines needs to be prepared and implemented.			
	Recommendation: WMWI should update the site O&M plan to include documented procedures that will ensure ICs and LTS at the site. The LTS plan should include procedures for monitoring and tracking compliance with the ICs, communications procedures, and annual certification to EPA that ICs remain in place and are effective.			

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA/State	3/31/2017

Other Findings

In addition, the following recommendations were identified during the FYR. These recommendations will promote better communication and awareness of site conditions but do not affect current or future protectiveness:

- The annual sample result letters sent by WMWI to the downgradient private well owners should explain both the state and federal groundwater quality and drinking water criteria. When detections are found, the letter should state the chemical-specific criteria that have been exceeded and the potential health or regulatory implications of the results, and actions that should be taken, if necessary.
- The EPA site contact (RPM) information should be updated on the signs posted on the perimeter fence and gates at the site property.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU 1	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy for Operable Unit 1 is protective of human health and the environment because waste consolidation, capping, and the ISVE system are functioning as intended such that the source of contamination is not accessible to humans. Access and ICs, including fencing and deed restrictions, respectively, have been implemented to protect the remedy, to prevent current and future exposures to on-site groundwater, and to prevent residential/commercial activities for the on-site property.	

Protectiveness Statement(s)	
Operable Unit: OU 2	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy for Operable Unit 2 currently protects human health and the environment because the LFAS system, which has been employed on a pilot or interim basis to replace the ROD-selected pump-and-treat system, has demonstrated its ability to effectively reduce contaminant concentrations. EPA is planning to prepare a ROD Amendment to memorialize this remedy change. Access controls and ICs, including fencing, deed restrictions, and governmental controls have been implemented to prevent current and future exposures to groundwater on	

the site property. Receptors downgradient of the site property that rely on private groundwater wells are sampled annually to ensure their groundwater is safe. Currently, there are no exceedances of VC above the MCL in the off-property monitoring wells and private wells. Long term protectiveness will be achieved by ensuring the continued effective O&M of the LFAS; maintaining and enforcing the effectiveness of existing ICs; and implementing additional enforceable ICs for unrestricted areas downgradient of the site property, where ROD-specified groundwater cleanup criteria are being exceeded, until groundwater cleanup goals have been achieved at the waste boundary and throughout the plume.

Site wide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: On a site-wide basis, the remedy is currently protective of human health and the environment because the remedy is functioning as intended. However, in order for the remedy to be protective in the long term, the following actions need to be taken: implement ICs further downgradient (south) of the landfill site property, and develop and implement a LTS plan.

VIII. NEXT REVIEW

The next FYR report for the Hagen Farm Superfund Site is required no less than five years from EPA's signature date of this review.

FIGURES

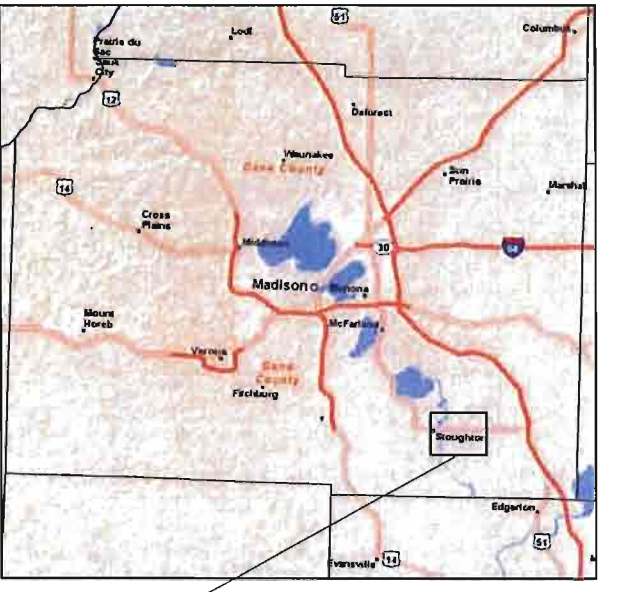
Site Location

Superfund
U.S. Environmental Protection Agency

Hagen Farm
Dane County, WI

EPA ID# WID980610059

State



County

Site

Legend

Fence

Landfill

N

0 90 180 360 540 720 Meters

Figure 1

Produced by Andrea Hicks
U.S. EPA Region 5 on May 6, 2011
Image Date: 2009/2010

EPA Disclaimer: Please be advised that aeras depicted in the map have been estimated. The map does not create any rights enforceable by any party. EPA may refine or change this data and map at any time.

GEOS
Groundwater Evaluation and Optimization System

Site Features

Superfund
U.S. Environmental Protection Agency

Hagen Farm
Dane County, WI

WID980610059

Legend

- Hagen Farm Property
- Fence
- Capped Main Disposal Area
- Groundwater Treatment Building
- Ditch
- Ponds
- Wisconsin and Southern Railroad

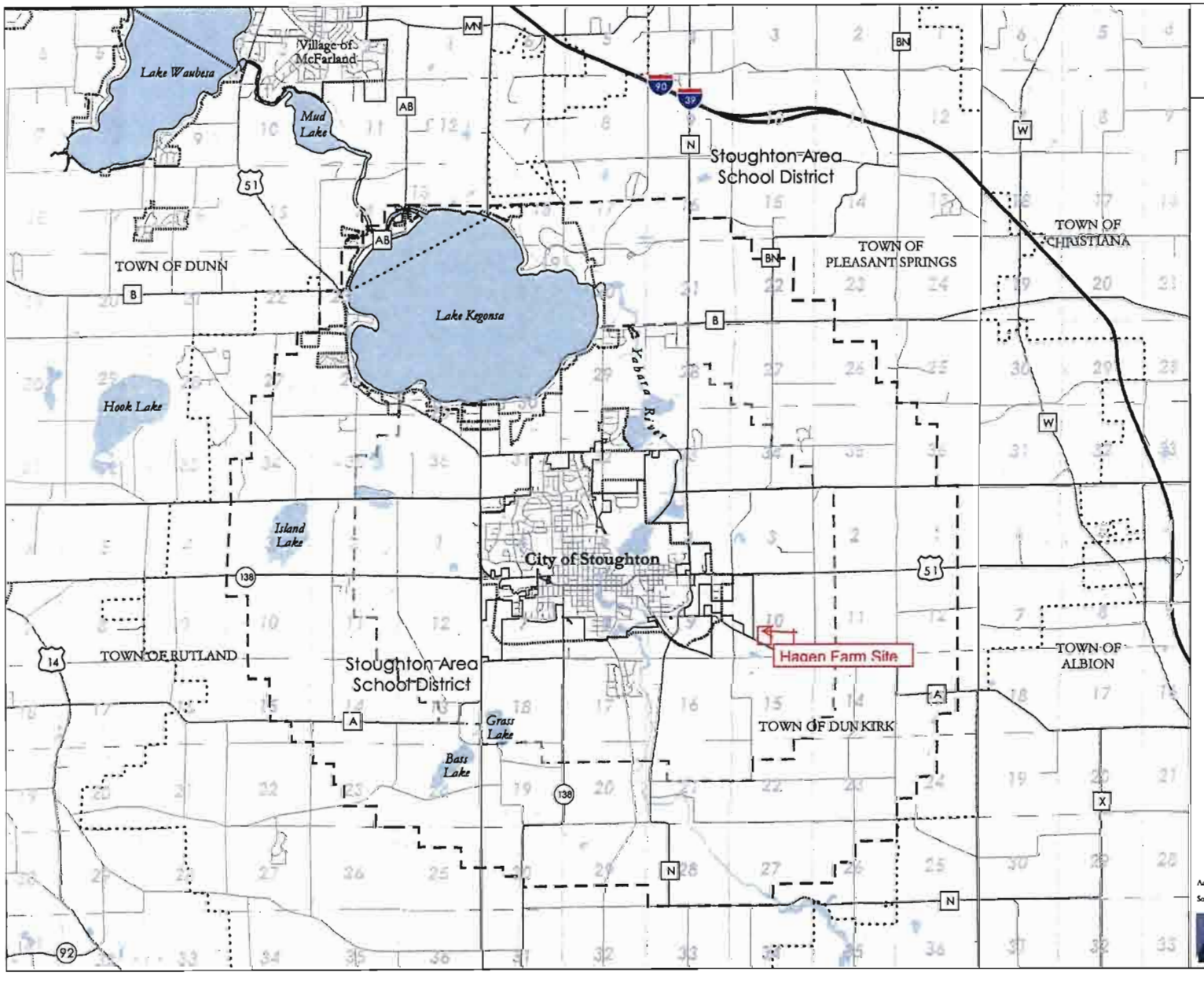
0 300 600 Feet

N

GEOS

Created by Sarah Backhouse
U.S. EPA Region 5 on 9/18/06

Figure 2



City of Stoughton Comprehensive Plan

Map 1

Jurisdictional Boundaries

- Existing ETJ Boundary (3 Miles)
- Existing ETJ Boundary (1.5 Miles)
- Municipal Boundaries
- Urban Service Areas
- School District Boundary
- Interstates
- US & County Highways
- Local Roads
- Section Boundaries

6000 0 6000 Feet

Scale: One inch equals 6,000 feet

Figure 3

Adopted: May 31, 2005

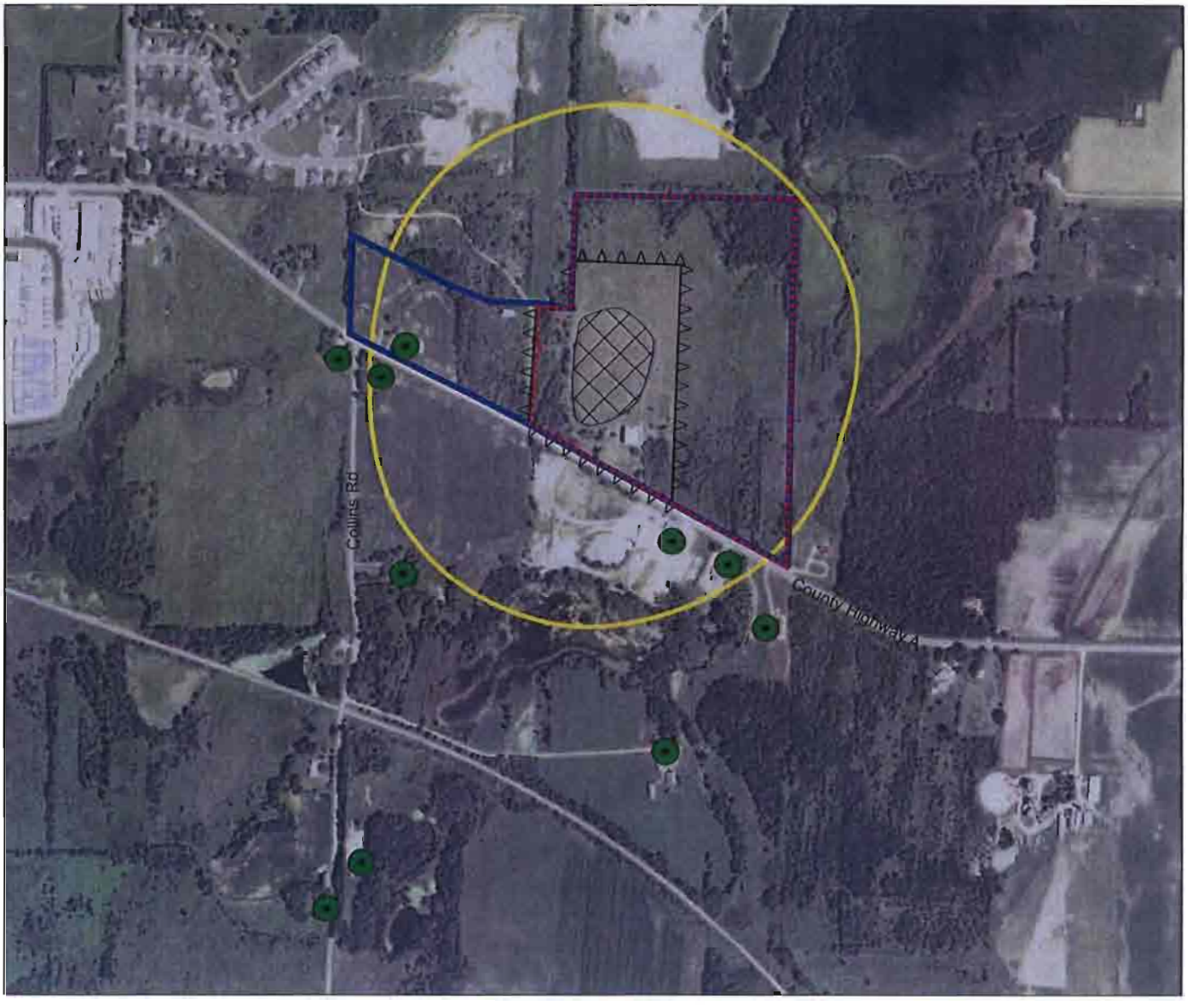
Sources: Dane County LIO.

Vandewalle & Associates
Madison, Wisconsin
Planning - Creative - Rebuilding

N

Hagen Farm
Dane County, WI

WID980610059



Legend

- Hagen Farm Property
- Land and Groundwater Restrictions*
- Well Restricted Area: 1200 feet from landfill *
- Landfill
- Fence
- Private Well Locations

N

0 0.05 0.1 0.2 0.3 0.4 Miles

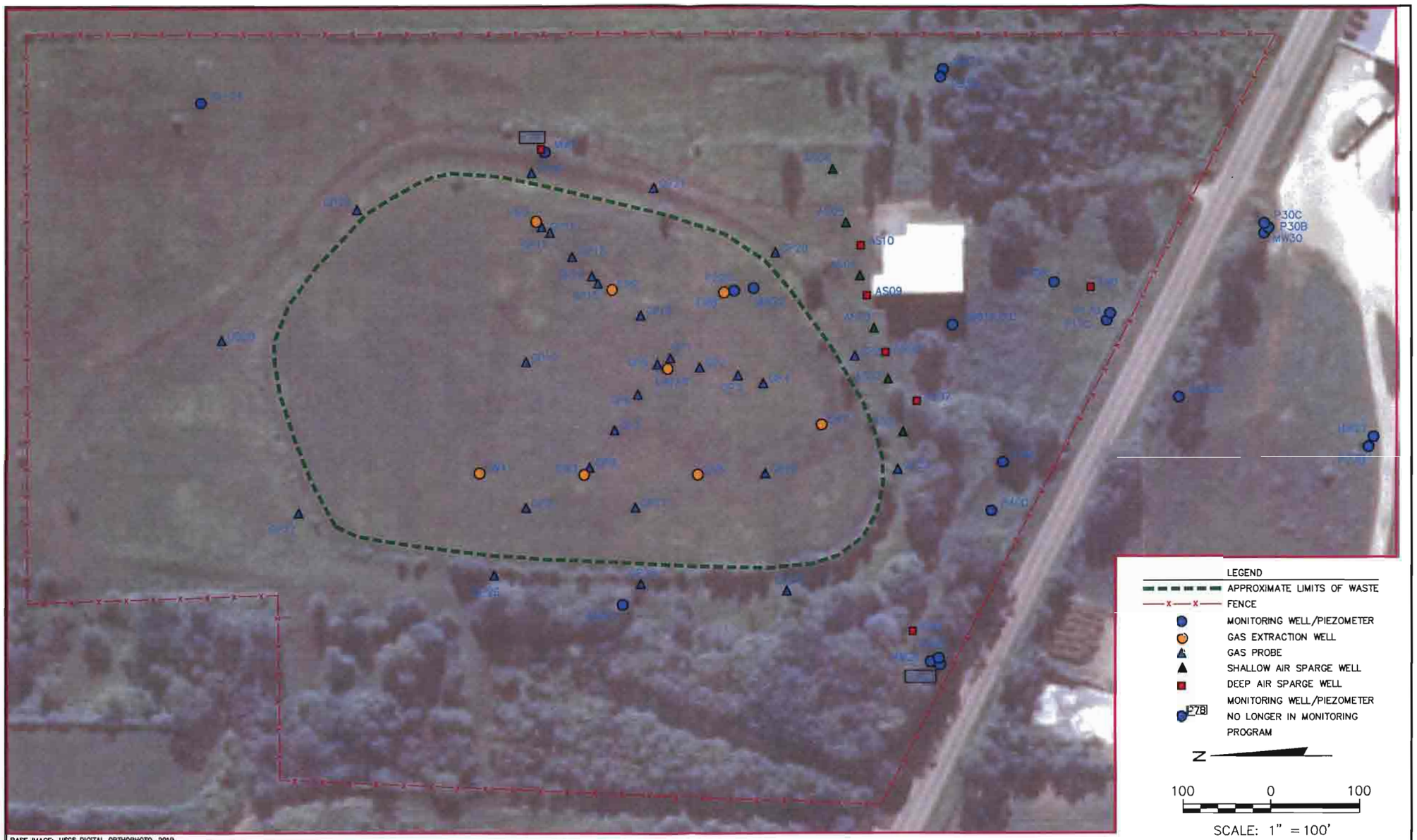
Produced by Andrea Hicks
U.S. EPA Region 5 on April 29, 2011
Image Date: 2009

GEOS
Groundwater Evaluation and Optimization System

* Well Restrictions found in the "WDNR Approved Private Water System Area" (1995)

EPA Disclaimer: Please be advised that areas depicted in the map have been estimated. The map does not create any rights enforceable by any party. EPA may refine or change this data and map at any time.

Figure 4



BASE IMAGE: USGS DIGITAL ORTHOPHOTO, 2010.

PROJECT NO.	25212002.00	DRAWN BY:	AHB
DRAWN:	02/11/13	CHECKED BY:	RJJ
REVISED:	10/14/13	APPROVED BY:	

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: WASTE MANAGEMENT

SITE: HAGEN FARM SITE
TOWN OF DUNKIRK, DANE COUNTY
WISCONSIN

EXPANDED SITE FEATURES MAP

Figure 5

BASE IMAGE: USGS DIGITAL ORTHOPHOTO, 2010.

LEGEND

- APPROXIMATE LIMITS OF WASTE
- FENCE
- MONITORING WELL/PIEZOMETER
- PRIVATE WELL

N

500 0 500

SCALE: 1" = 500'

PROJECT NO.	25212002.00	DRAWN BY:	KP	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT		SITE	HAGEN FARM SITE TOWN OF DUNKIRK, DANE COUNTY WISCONSIN	WELL LOCATIONS	Figure 6
DRAWN:	11/09/12	CHECKED BY:	ZTW								
REVISED:	1/19/16	APPROVED BY:									

LEGEND

APPROXIMATE LIMITS OF WASTE

SHALLOW AIR SPARGE WELL

DEEP AIR SPARGE WELL

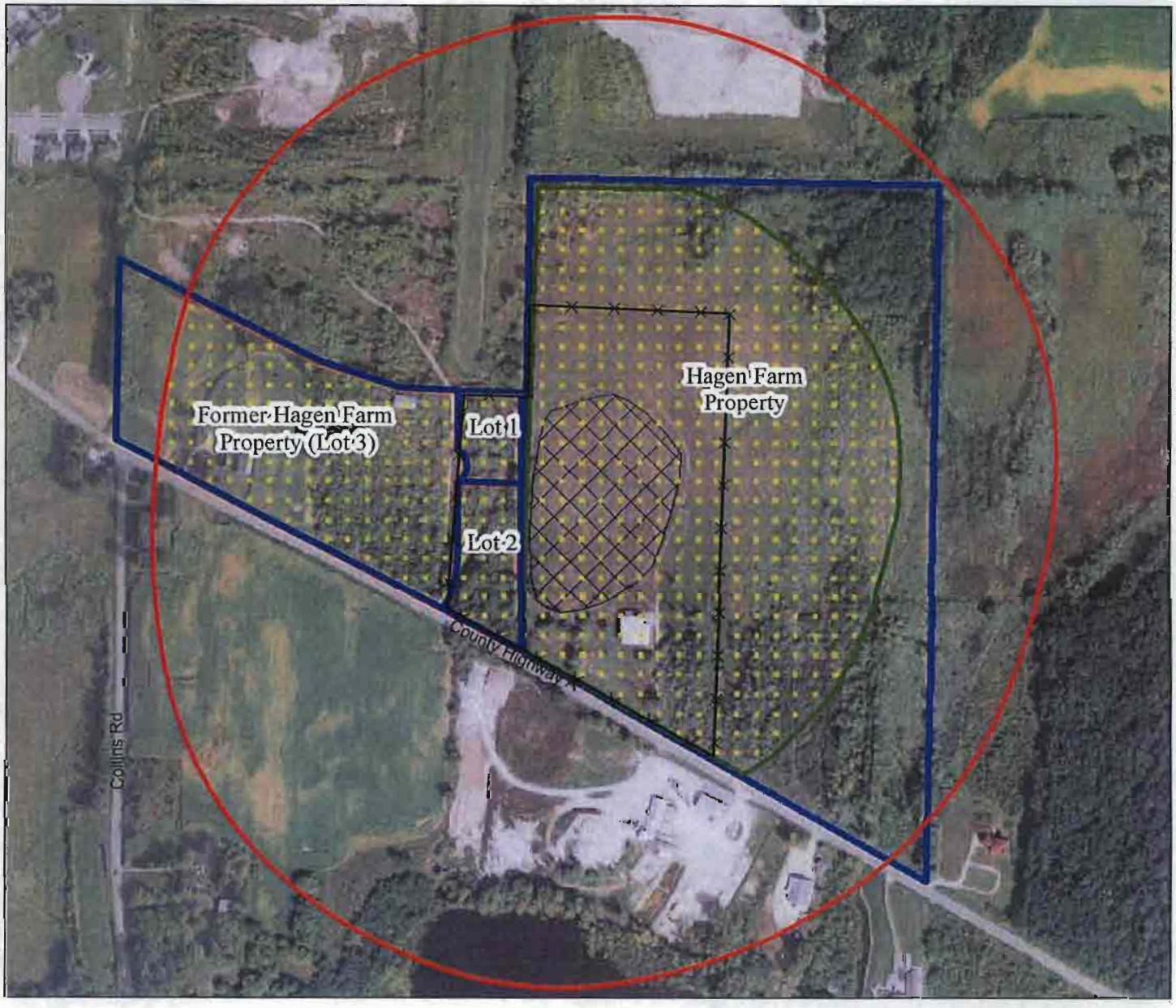
100 0 100

SCALE: 1" = 100'

CLIENT: WASTE MANAGEMENT	SITE: HAGEN FARM SITE TOWN OF DUNKIRK, DANE COUNTY WISCONSIN	EXPANDED LOW FLOW AIR SPARGING SYSTEM LOCATIONS	
PROJECT NO. 25212002.00	DRAWN BY: RLH	ENGINEER: SCS ENGINEERS	Figure 7
DRAWN: 11/09/12	CHECKED BY: RJJ	2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830	
REVISED: 03/06/13	APPROVED BY:		

Hagen Farm
Dane County, WI

WID980610059



Legend

- Land and Groundwater Use Restrictions *
- Well Restricted Area: 1200 feet from landfill **
- Well Restricted Area: 700 feet from landfill for exempted property only **
- Landfill
- Fence

0 50 100 200 300 400 Meters

N

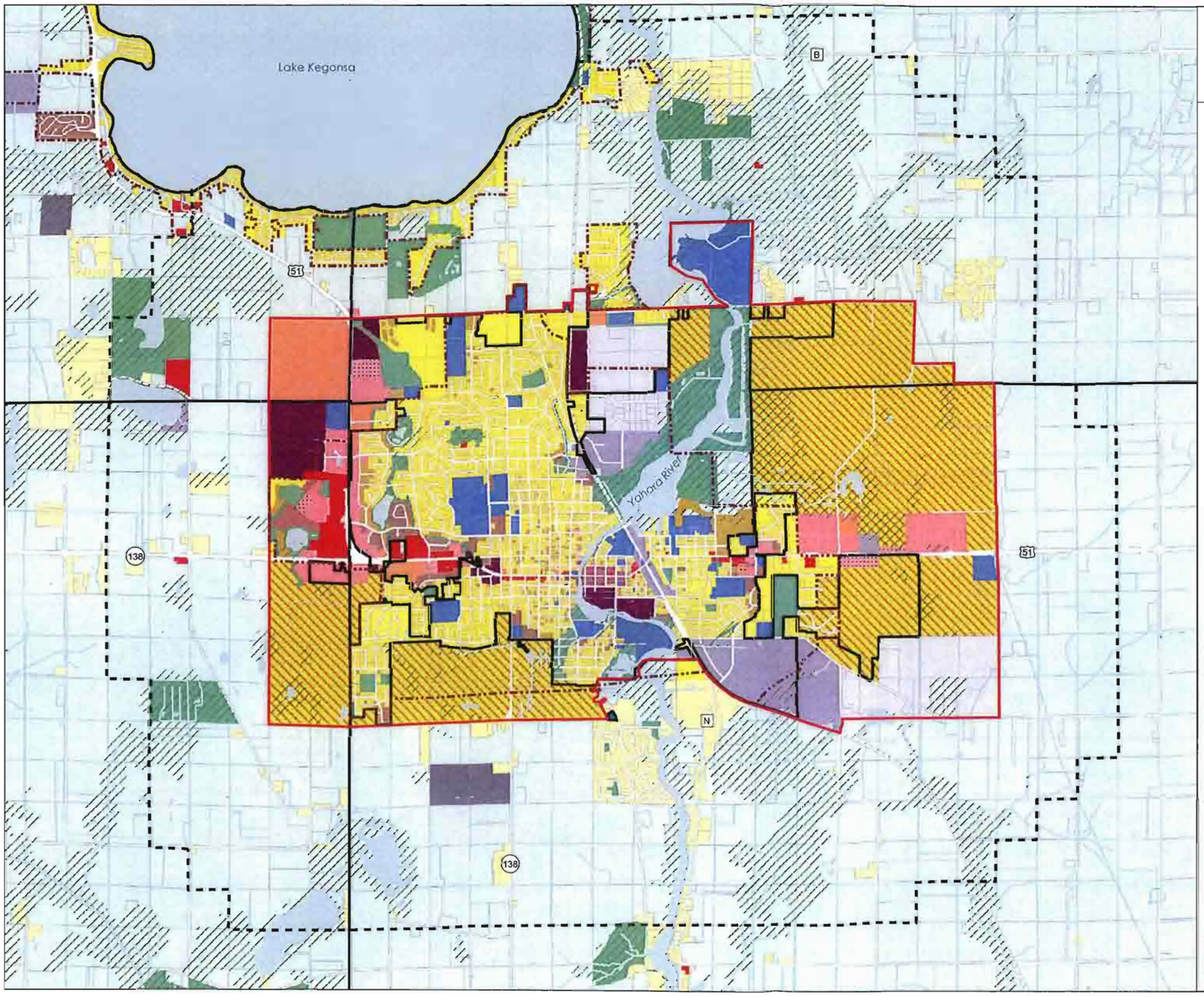
* Deed Restrictions found in the "Hagen Farm Institutional Control Study, pg.33- 38" (2006)

** Well Restrictions found in the "WDNR Approved Private Water System Area" (1995)

Figure 8

City of Stoughton Comprehensive Plan

Map 6b



Planned Land Use

- Planned Stoughton Urban Development Area**
- 2012 Urban Service Areas
- 2012 Municipal Boundaries
- 2012 ETJ Boundary

Planned Land Use

- Agriculture/Rural
- Exurban Residential
- Single Family Residential
- Two-Family Residential
- Mixed Residential
- Planned Neighborhood
- Central Mixed Use
- Planned Mixed Use
- Planned Office
- Neighborhood Office
- Planned Business
- Neighborhood Business
- General Business
- Planned Industrial
- General Industrial
- Landfill/Extraction
- Institutional
- Public Open Space
- Environmental Corridor*
- Surface Water
- Right-of-Way

1. Single Family
2. Two-Family
3. Mixed Residential
4. Institutional
5. Neighborhood Office
6. Neighborhood Business
7. Public Open Space

Shapes on map represent general recommendations for future land use. Actual boundaries between different land use types and associated zoning districts may vary somewhat from representations on this map.

*Environmental Corridors depicted on this map use generalized boundaries of environmental features identified on air photos by the DNR and the Dane County RPC. These generalized boundaries are refined through detailed on site investigation at the time of land division and site plan review.

** See Table 9 for Acreage Totals.

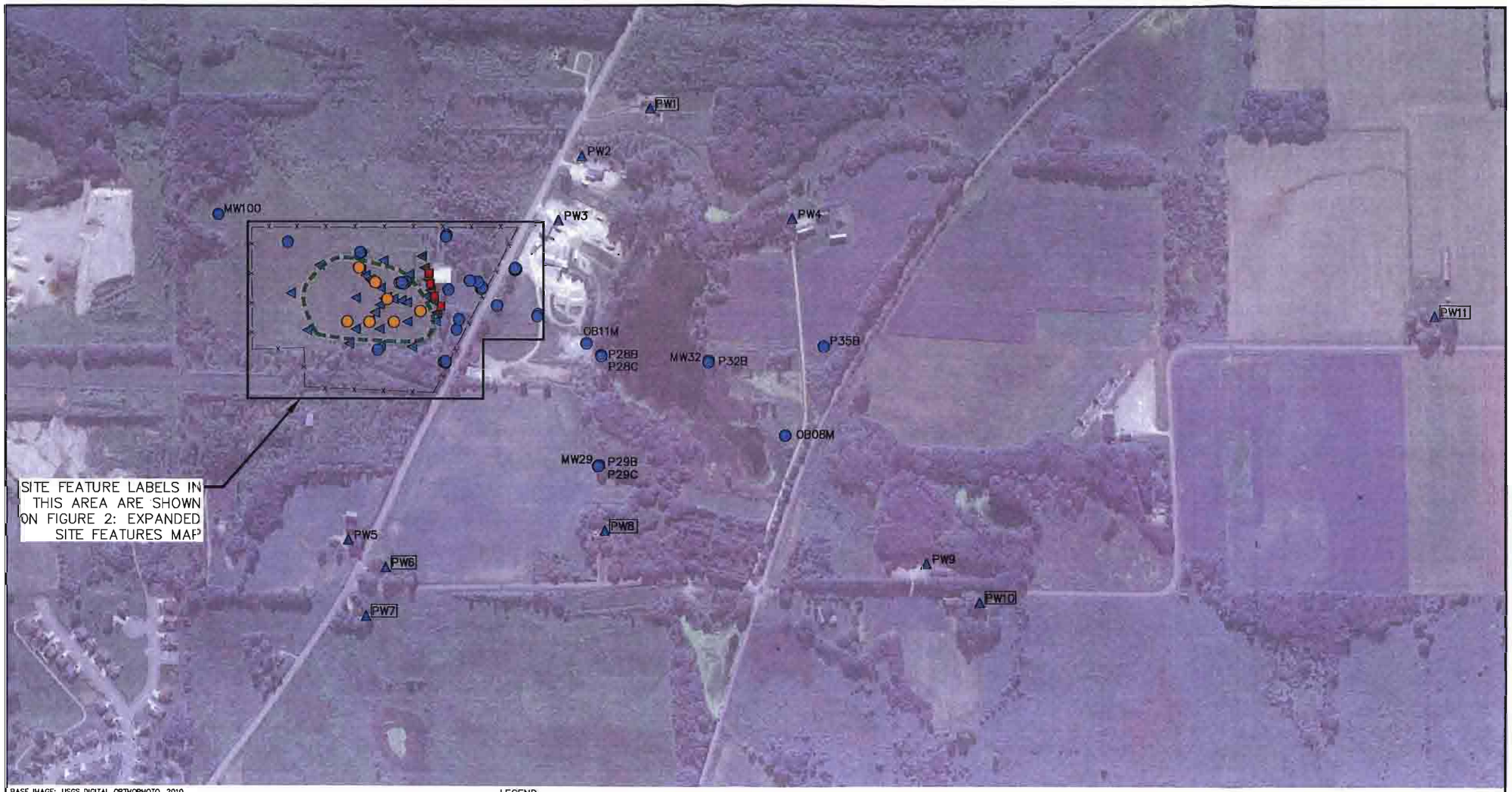
3,000 1,500 0 3,000 Feet

Adopted: May 31, 2005
Amended: June 26, 2012

Sources: Dane County LIO, City of Stoughton.

Figure 9

N



BASE IMAGE: USGS DIGITAL ORTHOPHOTO, 2010.

LEGEND

- APPROXIMATE LIMITS OF WASTE
- FENCE
- MW29 MONITORING WELL/PIEZOMETER
- PW9 PRIVATE WELL
- PW1 PRIVATE WELL NO LONGER IN MONITORING PROGRAM
- GAS EXTRACTION WELL
- GAS PROBE
- SHALLOW AIR SPARGE WELL
- DEEP AIR SPARGE WELL

N

500 0 500

SCALE: 1" = 500'

PROJECT NO.	25212002.00	DRAWN BY:	KP	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT	WASTE MANAGEMENT	SITE	HAGEN FARM SITE TOWN OF DUNKIRK, DANE COUNTY WISCONSIN	SITE FEATURES MAP	Figure 10
DRAWN:	11/09/12	CHECKED BY:	RJJ								
REVISED:	02/01/16	APPROVED BY:									

ATTACHMENTS

Attachment 1 – U.S. EPA Notification of Five-Year Review Start

Attachment 2 – Current Groundwater Quality Monitoring Program

Attachment 3 – Newspaper Notice Announcing Start of Five-Year Review

Attachment 4 – Documents Used to Prepare Five-Year Review

Attachment 5 – Groundwater Data Trend Plots for Key Wells

Attachment 6 – Five-Year Review Site Inspection Checklist for Hagen Farm

Attachment 7 – Photography Log from September 25, 2015 Five-Year Review Inspection

ATTACHMENT 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF: SR-6J

September 22, 2015

Michael L. Peterson, P.E.
Closed Sites Management Group
Waste Management
W124 N9355 Boundary Road
Menomonee Falls, WI 53051

Re: Notification of Five-Year Review Start for the Hagen Farm Site, Stoughton, Wisconsin

Dear Mr. Peterson,

This letter is to notify you that U. S. EPA is beginning work on the fifth Five-Year Review (FYR) report for the Hagen Farm site. The statutory FYR for the site will be conducted according to the requirements in Section 121 of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), to evaluate the remedy implemented at the site and determine if the remedy remains protective of human health and the environment.

The upcoming FYR is due on July 27, 2016. I am providing you with this notification so that we can begin coordinating activities with your office and the WDNR. We have made a good start by scheduling the site inspection for September 25, 2015. I would like to discuss the schedule for the FYR activities and obtaining the necessary monitoring data and other pertinent information since the 2011 FYR in order to complete the report. Some of the necessary activities and projected timeframes are:

Conduct site visit – September 25, 2015
Data and document exchange and review – ongoing
Public notification via placing notice in local newspaper – complete by March 31, 2016
Institutional Controls (IC) Study update and file review – complete by April 15, 2016
Begin drafting FYR report – January 15, 2016
Begin review/approval process of the FYR report – June 1, 2016

The above schedule is cursory, as there are many elements involved in preparing a FYR report. EPA's revised FYR report template focuses on the issues and recommendations identified during the July 2011 FYR and the progress made to resolve these issues. It will be important for us to review these issues and recommendations in order to accurately characterize the progress made at the site. For your convenience, I have attached the 2011 FYR issues and recommendations to this letter. I have also provided additional text from the document which

As we have discussed before, ICs are a very important component of the FYR analysis and final report. WMWI performed an IC Study in 2006. During the 2011 FYR, WMWI certified to EPA that the status of the ICs had not changed.

As part of the FYR process, the parties need to assess what, if any, additional ICs are necessary to ensure that the remedy is protective and in compliance with the ROD and 2007 Consent Decree. Lastly, we need to determine the enforceability of the IC instruments under State and/or Federal authorities and the need to amend ICs if necessary.

I look forward to working with you to complete the FYR report in a timely manner. If you have any questions, concerns, or related information, please do not hesitate to contact me at (312) 886-5251 or at my email address: **sullivan.sheila@epa.gov**.

Sincerely,

Sheila A. Sullivan

Sheila A. Sullivan
Remedial Project Manager
Superfund Division
U.S. EPA

Attachment

cc: Gary Edelstein, WDNR
Michael Prattke, SCS Engineers
David Dougherty, Subterranean

Attachment

July 2011 FYR Issues and Recommendations

Issue:

The SOW appended to the 2007 CD states that the LFAS system must restore the groundwater within a reasonable period of time. Groundwater data evaluated to date show a reduction in contaminant concentrations in some wells since the previous Five-Year Review, but not a significant overall declining trend throughout the aquifer, especially for VC. This is necessary if the remedy is to achieve cleanup goals within a reasonable period.

Recommendations:

1. The LFAS, currently in use for groundwater remediation, should be enhanced to achieve greater effectiveness in contaminant reduction. The PRP should evaluate alternatives, propose specific enhancements to the system, and implement them according to a schedule. The groundwater pump-and-treat system should remain onsite and operational until the LFAS is optimized.

2. At such time when the LFAS has been enhanced or demonstrates improved remedial effectiveness, a decision document should be prepared to memorialize the GCOU remedy change.

In addition, the following text from page 44 of the 2011 FYR below should be addressed/ resolved in the upcoming FYR.

"A study of the ICs at the Site was performed by WMWI in 2006 and recertified. As a result of its assessment of ICs with respect to the most recent groundwater data, U.S. EPA believes that while onsite ICs are protective in both the short and long term, offsite ICs should be enhanced to ensure long-term protectiveness.

This would involve the use of ICs further downgradient (south) of the landfill property, at least as far as the OB08M monitoring well. The downgradient VC levels detected at two locations (OB08M and P32B) outside of the 1,200-foot radius boundary exceed the PAL, and in some cases, the ES, but do not exceed the MCL. This finding reinforces the need for off-property ICs to prevent the potable use of groundwater. To assure LTS of the Site, future O&M work should include mechanisms to ensure the regular inspection of ICs and an annual certification to the agencies that ICs are in place and effective. If the plume length and breadth is estimated in a conservative fashion, then future concentrations at OB08M could be used as part of a "trigger" to modify restrictions.

ICs to restrict the potable use of groundwater should be evaluated beyond the 1,200-foot restrictive boundary [(NR 812.08(4)(g)] to the extent necessary to ensure long-term protectiveness of human health and the environment downgradient of the Site. The PRP should also report on whether the restrictions contained in its sale contract for Lot 3 also run with the land and bind future owners. The PRP should investigate and implement appropriate ICs for properties located more than 1,200 feet beyond the landfill boundary, where the PAL[1] is or may be exceeded in groundwater."

[1] This requirement may be subject to revision under the requirements of any future U.S. EPA decision documents.

ATTACHMENT 2

Groundwater Monitoring Schedule and Parameter Lists

GROUNDWATER MONITORING PROGRAM
February 2013
Hagen Farm / SCS Engineers Project #25212002.00

Well ID	Well Type	Sampling Frequency and Parameter Set		
		May/November (Quarterly)	February (Semiannual)	August (Annual)
IG04	WT		X	X
MW1	WT	(1)	(1)	X
MW7	WT		X	X
MW22	WT	X	X	X
MW23	WT		(1)	X
MW26	WT		X	X
MW27	WT		X	X
MW29	WT		(1)	X
MW30	WT	(1)	(1)	X
MW32	WT	(1)	(1)	X
MW33	WT	(1)	X	X
OBS1A	WT	X	X	X
OBS1B	PZ(BD)	X	X	X
OBS1C	PZ(BD)	X	X	X
OBS2C	PZ(BD)	X	X	X
OB8M	PZ(BD)	X	X	X
OB11M	PZ(USD)		X	X
P17B	PZ(USD)	X	X	X
P17C	PZ(BD)	X	X	X
P17DR	PZ(BD)	(1)	X	X
P22B	PZ(USD)	X	X	X
P26B	PZ(USD)		X	X
P27B	PZ(USD)		X	X
P28B	PZ(USD)		X	X
P28C	PZ(BD)		(1)	X
P29B	PZ(USD)		(1)	X
P29C	PZ(BD)		(1)	X
P30B	PZ(USD)		(1)	X
P30C	PZ(BD)		(1)	X
P32B	PZ(BD)	X	X	X
P33B	PZ(BD)		(1)	X
P35B	PZ(BD)		(1)	X
P40D	PZ(BD)		(1)	X
PW2	PW			X
PW3	PW			X
PW4	PW			X
PW5	PW			X
PW9	PW			X

Abbreviations:

(1) = Water Level Only
X = Monitoring well proposed to be sampled
PW = Private Well
PZ(BD) = Piezometer screened in bedrock
PZ(USD) = Deep piezometer screened in unconsolidated sediment
WT = Shallow piezometer screened in unconsolidated sediment

Notes:

1. Water elevations are not measured at private wells.
2. Private well samples are not filtered.

GROUNDWATER MONITORING PROGRAM
February 2013
Hagen Farm / SCS Engineers Project #25212002.00

Groundwater Parameter List		
Annual	**Semiannual**	**Quarterly**
Indicator Parameters		
Hardness-Total As CACO3 (Filtered)	Sulfate-Dissolved	Sulfate-Dissolved
Total Dissolved Solids (TDS)	Alkalinity, Filtered	Alkalinity, Filtered
Total Suspended Solids (TSS)	Nitrate+Nitrite-Dissolved	Nitrate+Nitrite-Dissolved
Chloride-Dissolved		
Sulfate-Dissolved		
Alkalinity, Filtered		
Cyanide - Soluble		
Ammonia - Dissolved		
Soluble Total Kjeldahl Nitrogen		
Nitrate+Nitrite-Dissolved		
Chemical Oxygen Demand-Dissolved		
Phosphorous-Dissolved		
Field Parameters		
pH (Field)	pH (Field)	pH (Field)
Temperature (Field Test)	Temperature (Field Test)	Temperature (Field Test)
Electrical Conductance (Field)	Electrical Conductance (Field)	Electrical Conductance (Field)
Field EH/ORP	Field EH/ORP	Field EH/ORP
Color	Color	Color
Dissolved Oxygen (D.O.) (Field Test)	Dissolved Oxygen (D.O.) (Field Test)	Dissolved Oxygen (D.O.) (Field Test)
Odor	Odor	Odor
Turbidity	Turbidity	Turbidity
Water Elevation	Water Elevation	Water Elevation
Metals		
Aluminum, Dissolved	Barium, Dissolved	Iron, Dissolved
Barium, Dissolved	Iron, Dissolved	Manganese, Dissolved
Calcium, Dissolved	Manganese, Dissolved	
Chromium, Dissolved	Arsenic, Dissolved	
Cobalt, Dissolved	Lead, Dissolved	
Copper, Dissolved	Mercury, Dissolved	
Iron, Dissolved		
Magnesium, Dissolved		
Manganese, Dissolved		
Nickel, Dissolved		
Potassium, Dissolved		
Silver, Dissolved		
Sodium, Dissolved		
Vanadium, Dissolved		
Zinc, Dissolved		
Antimony, Dissolved		
Arsenic, Dissolved		
Beryllium, Dissolved		
Cadmium, Dissolved		
Selenium, Dissolved		
Thallium, Dissolved		
Mercury, Dissolved		
VOCs		
See Attached List of Compounds (8260B)	**See Attached List of Compounds (8260B)**	**See Attached List of Compounds (8260B)**
Vinyl Chloride (SIM)	**Vinyl Chloride (SIM)**	**Vinyl Chloride (SIM)**

Abbreviations:
SIM = Select Ion Methodology

Notes:
1. Water elevations are not measured at private wells.
2. *Private well samples are not filtered.*

GROUNDWATER MONITORING PROGRAM
February 2013
Hagen Farm / SCS Engineers Project #25212002.00

Volatile Organic Compounds (Method 8260B)		
1,1,1-Trichloroethane	Bromoform	Methyl Ethyl Ketone
1,1,2,2-Tetrachloroethane	Bromomethane	Methyl Isobutyl Ketone
1,1,2-Trichloroethane	Carbon Disulfide	Methylene chloride
1,1-Dichloroethane	Carbon Tetrachloride	Methyl-t-Butyl Ether (MTBE)
1,1-Dichloroethene	Chlorobenzene	Naphthalene
1,2,4-Trichlorobenzene	Chloroethane	Styrene
1,2-Dibromo-3-Chloropropane DBCP	Chloroform	Tetrachloroethene
1,2-Dibromoethane (EDB)	Chloromethane	Tetrahydrofuran
1,2-Dichlorobenzene	cis-1,2-Dichloroethene	Toluene
1,2-Dichloroethane	cis-1,3-Dichloropropene	Total Xylenes
1,2-Dichloropropane	Dibromochloromethane	trans-1,2-Dichloroethene
1,3-Dichlorobenzene	Dibromomethane	trans-1,3-Dichloropropene
1,4-Dichlorobenzene	Dichlorobromomethane	Trichloroethene
2-Hexanone	Dichlorodifluoromethane	Trichlorofluoromethane
Acetone	Ethylbenzene	Vinyl chloride
Benzene		

STOUGHTON HISTORY
January

120 years ago (1896)

• With two tobacco warehouses running full swing, working over 100 hands, with a weekly payroll of $800, and a prospect of more to open soon, we may look for at least a partial revival of the good old times of the early '90s.

• All the men and women and boys and girls in town who can skate or think they can skate were on the river New Year's Day. It was the only fun going on in town that day.

• We hope quite a number of our subscribers – whom we might mention, but won't – made a resolution on New Year's day and keep it, and will keep themselves sqnare with the Hub.

• There are now about 300,000 white people in the Indian territory.

• Up to today, January 10th, City Treasurer Severson has received in taxes about $9,000 or close to 40 percent of the total levy.

• The original subscribers to the T. G. Mandt Vehicle Co., representing $12,300 of the cash stock, met at T. G. Mandt's office in this city Tuesday afternoon and effected a temporary re-organization.

70 years ago (1946)

• Listed as missing for more than a year in the Pacific, Second Lieutenant David C. Seamonson is now presumed dead, according to a war department announcement to his parents, Friday.

• A downtown automobile dealership handling trucks and cars becomes another postwar development with the announcement that Truman Felland will operate a car and truck dealership and complete automotive service in the large Badger Petroleum building located near the bridge on Main Street.

• The first group of returned war veterans to enroll in the Stoughton Vocational school under provisions of the G.I. Bill will start their study January 7.

• To Miss Diane Lynn Holmen goes the honor of being Stoughton's first New Year's baby of 1946.

• The 141 members of the Kegonsa Lodge F. and A. M. are today the proud owners of a new Masonic temple, the first one in Stoughton's history, according to Dr. F. B. Henderson, worshipful master at the local lodge. Yesterday, the organization completed the purchase of the Fosdahl property on N. 5th Street.

45 years ago (1971)

• It appears that Mr. and Mrs. Harry Swalheim have become parents of the first baby of 1971 born to residents of the Stoughton school district.

• Mrs. M.H. Hegge, 84, who was a well-known organist in Stoughton and the surrounding areas, died Friday afternoon.

• Stoughton residents who awake in the middle of the night with a yen for steak are going to find them readily available starting next week. The new owners of the Super-Valu have announced that they are starting a 24-hour policy to serve area residents.

• A total of 93 cases of Dutch Elm disease were reported last year.

• Evidencing a traffic snarl on Main Street, councilmen Tuesday night voted unanimously to have a hood placed over the Water-Main street stop-and-go lights for a 60-day period.

• Rev. Robert Allen submitted his resignation, effective June 30, at the annual meeting of the Calvary Evangelical Free Church.

20 years ago (1996)

• He's being called a hero, but Roger Thorson insists he's no such thing. Thorson, a Stoughton Water Utility employee, is being credited with helping capture three juveniles charged with robbing Barney's Utica Store at gunpoint around 11 o'clock Tuesday morning.

• Preliminary estimates indicate the Stoughton Area School District will receive a whopping 40 percent increase in state aid under the school property tax relief plan, a prospect local school officials say boosts the chances for success of February's facilities referendum.

• The head of Stoughton Trailers, Inc. says a soft economy is behind layoffs at the company's Stoughton factory. "Our business is tapering off, so we have to cut back some," said Don Wahlin, founder of the truck trailer manufacturing company. Wahlin expects that of the Stoughton facility's workforce of roughly 1,000 people, somewhere in the range of 5-10 percent will be affected.

• Sometime later this year, Stoughton will be joining the ranks of Belleville and Madison with something few other communities have. Tuesday the Stoughton City Council appointed an ad hoc communications committee to study the process of linking the city and various departments – as well as the school and newspaper – to the cyberspace world via the Internet with a home page.

• Hired as interim school superintendent in August, from day one Elgie Noble said he wasn't here to while away the days as a do-nothing, transitional caretaker. His direct style, reported by those who work with him as anything but wishy-washy, has earned the support of the Stoughton School Board of Education. Monday, the board voted unanimously to approve a two-year district contract making Noble the district's full-fledged superintendent.

10 years ago (2006)

• Jim Drifke, interim business manager for the Stoughton Area School District, cautions that future budgetary scenarios for Wisconsin school districts are heavy on the word "estimations," particularly when it comes to trying to predict actions by the Wisconsin Legislature and counter measures by Gov. Jim Doyle. But Drifke recently told the Stoughton Board of Education that the district could once again find itself in a financial hole for 2007-08 – facing projected budget shortfalls ranging from $726,000 to $1.25 million.

• It was a bittersweet goodbye Sunday night for members of Stoughton's Christ Lutheran Church. A candlelight vigil and the singing of hymns marked the last time the congregation would stand next to the remains of their church and the adjoining Martin Luther Christian School. Both structures were mostly total losses in the devastating fire set Aug. 17, 2005 by youths who had climbed up on the school roof.

• This most Norwegian of communities is scheduled to receive a visit from a real-life Norwegian princess. Princess Martha Louise, fourth in line to the Norwegian throne, is scheduled to visit Stoughton briefly April 24 to promote her first children's book, "Why Kings and Queens Don't Wear Crowns."

• Suzanne Hotter, unanimously approved as interim superintendent by the Stoughton Board of Education in an executive session Monday night, has strong ties to Stoughton. Her husband, Tom Hotter, served the district for 28 years (1970-98) as a teacher, guidance counselor and coach. The Hotters have two children who are Stoughton High School graduates and a grandson currently attending Fox Prairie Elementary School.

Triangle Troopers earn 4-H awards, wrap up 'Stuff a Sock' project

Tone twins get 2016 Key Award

The Triangle Troopers 4-H Club held its annual end-of-the-year awards banquet last month, where 22 of its members received Dane County 4-H project and participation awards.

Earning the highest state 4-H honor, the 2016 Key Award, were sisters Sydney and Shelby Tone. The award is presented to 4-Hers who have exhibited outstanding leadership, community service and project work throughout their entire 4-H career. The Tones were also selected by Dane County 4-H to travel mid-summer 2016 to Washington, D.C. to serve as the county's delegates to the weeklong National 4-H Citizenship/Washington Focus program.

Also specially commended were members Grace Link for community service and Lindsey Sarbacker for senior leadership.

In addition to the numerous individual awards, the club recently won recognition and a $30 prize for its National 4-H Week promotional effort. The Troopers' entry, "4-H Leaders Grow Here," was displayed in The Next Generation's storefront last fall. Dane County 4-H Leaders Association sponsored the promotional contest and prize.

Photo submitted

The 2016 Wisconsin State 4-H Key Award winners from the Triangle Troopers 4-H Club are Sydney Tone, left, and Shelby Tone, right, pictured with co-general leader Candi Sarbacker, center.

'Stuff a Sock'

The Dane County 4-H Endowment Committee also awarded the Troopers $100 in grant funding for the club's special community service project, "Stuff a Sock for a Kid." The project, held Feb. 22, was part of the club's "Make A Difference to a Kid" service theme for 2015-16.

For that project, club members filled 80 pairs of kid-sized socks with snacks and personal essential items (such as a toothbrush, toothpaste, floss, washcloth). The stuffed socks were donated to the Madison Salvation Army's Family Shelter, which provides about 40 kids and their families weekly with temporary housing.

Club members plan to prepare a display chronicling the "Stuff a Sock" project for exhibition at the Dane County Fair in July.

Dr. Thor Anderson donated the dental items for the project, and the club acquired the other items using funds awarded by the Dane County 4-H Endowment Committee via a grant it applied for last fall. Youth leaders and twin sisters Sydney and Shelby Tone led the project and wrote the funding grant application, general leader Laurie Schellinger said in an email to the Hub.

The Triangle Trooper 4-H Club members write handmade cards to go inside their stuffed socks as part of a community service project. The club stuffed 80 new pairs of kid-sized socks with snacks and personal items, which were then donated to the Salvation Army.

Service projects

The club is already moving on to its next service project, and will be collecting kid-related food items – including peanut butter, jelly and macaroni and cheese – for local food pantries throughout the month of March.

Other recently completed service projects connected to the service theme include collections and donations of warm winter clothing to Stoughton's Clothing Closet, baby-related items to Stoughton's Personal Essentials Pantry, and age-appropriate DVDs to American Family Children's Hospital. Members also banded together to assemble meals at "Food for Kidz" in October and to pack boxes for the Holiday Fund in December.

On the web

For information on the Triangle Troopers and their activities, visit:

triangletroopers4h.org

ATTACHMENT 4

LIST OF DOCUMENTS USED FOR FIVE-YEAR REVIEW

1. EarthCon Consultants, Inc.:"Technical Memorandum: Groundwater Plume Analytics (Including a Ricker Method Plume Stability Analysis), Waste Management of Wisconsin, Inc., Hagen Farm, Dunkirk, Wisconsin", Prepared for Waste Management of Wisconsin, November 2014.

2. SCS BT Squared, Inc. "2011 Annual Report, Hagen Farm, Town of Dunkirk, Dane County, Wisconsin, March 2012", Prepared for Waste Management of Wisconsin, Inc., March, 2011.

3. SCS Engineers. "2012 Annual Report, Hagen Farm, Town of Dunkirk, Dane County, Wisconsin", Prepared for Waste Management of Wisconsin, Inc., March 2013. SDMS ID: 473140.

4. Correspondence from Mr. Mike Peterson of Waste Management of Wisconsin to Ms. Sheila Sullivan of U.S. EPA regarding the 2012 Operations and Maintenance Report, March 25, 2013. SDMS ID: 454119.

5. SCS Engineers, "Low-Flow Air Sparge System Enhancement Workplan, Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin", Prepared on behalf of Waste Management of Wisconsin, Inc. for U.S. EPA Region 5., August 2013.

6. SCS Engineers. "2013 Annual Report, Hagen Farm, Town of Dunkirk, Dane County, Wisconsin", Prepared for Waste Management of Wisconsin, Inc., March 2014. SDMS ID: 473139.

7. SCS Engineers, "Low-Flow Air Sparge System Enhancement Workplan, Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin, Revision 2", Prepared on behalf of Waste Management of Wisconsin, Inc. for U.S. EPA Region 5., June 2014. SDMS ID: 473142.

8. SCS Engineers, "Documentation Report: Low-Flow Air Sparge System Enhancement, Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin", Prepared on behalf of Waste Management of Wisconsin, Inc. for U.S. EPA Region 5., January 2015.

9. SCS Engineers. "2014 Annual Report, Hagen Farm, Town of Dunkirk, Dane County, Wisconsin", Prepared for Waste Management of Wisconsin, Inc., March 2015.

10. SCS Engineers. "2015 Annual Report, Hagen Farm, Town of Dunkirk, Dane County, Wisconsin", Prepared for Waste Management of Wisconsin, Inc., March 2016.

11. Subterranean Research, Inc. "Technical Memo: Hydrologic Review of Remedy, Hagen Farm Superfund Site, Dunkirk, Dane County, Wisconsin (draft)." Prepared on behalf of U.S. EPA Region 5 Groundwater Evaluation and Optimization System, April 29, 2011.

12. Subterranean Research, Inc. Technical Memo from David Dougherty to Sheila Sullivan (U.S. EPA): "Hagen Farm Superfund Site, Town of Dunkirk, WI, WMWI Proposals for LFAS Monitoring Program and Facilities", Prepared on behalf of U.S. EPA Region 5, April 14, 2014.

13. U.S. Environmental Protection Agency, "Hagen Farm Site, WI. Source Control Operable Unit Declaration for the Record of Decision", September 17, 1990. SDMS ID: 92113.

14. U.S. Environmental Protection Agency, "Explanation of Significant Differences for the Hagen Farm Superfund Site Groundwater Control Operable Unit, Dane County, WI". August 27, 1991.

15. U.S. Environmental Protection Agency, "Hagen Farm Site, WI. Groundwater Control Operable Unit Declaration for the Record of Decision", September 30, 1992. SDMS ID: 92103.

16. U.S. Environmental Protection Agency. *Institutional Controls: A Site Managers Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups",* Office of Solid Waste and Emergency Response. OSWER Directive 9355.0-74FS-P. EPA 540-F-00-005, September 2000.

17. United States Environmental Protection Agency (U.S. EPA). June 2001. *Comprehensive Five-Year Review Guidance, Office of Solid Waste and Emergency Response. Directive 9355.7-03B-P.*

18. U. S. Environmental Protection Agency, "U.S. EPA Region V, Consent Decree [United States v. Waste Management of Wisconsin (07-C-0424-C)]. August 2007.

19. U. S. Environmental Protection Agency, Region 5. Memo from Sheila Sullivan, Remedial Project Manager and Jeffrey Cahn, Office of Regional Counsel, to Thomas Short, Chief, Remedial Response Branch 2, Regarding: "Site-Wide Ready for Anticipated Use Determination for the Hagen Farm Site, Dane County, Wisconsin." October 1, 2011. SDMS ID: 376735.

20. U.S. Environmental Protection Agency, "Five-Year Review Report, Fourth Five-Year Review for Hagen Farm Superfund Site, Town of Dunkirk, Wisconsin", Prepared by U.S. EPA Region 5, July 27, 2011. SDMS ID: 408387.

21. U.S. Environmental Protection Agency, Region 5, Letter from Sheila A. Sullivan to Michael L. Peterson of Waste Management of Wisconsin Re: "2011 Annual Report for the Hagen Farm Superfund Site, Town of Dunkirk, Wisconsin." September 27, 2012.SDMS ID: 454116.

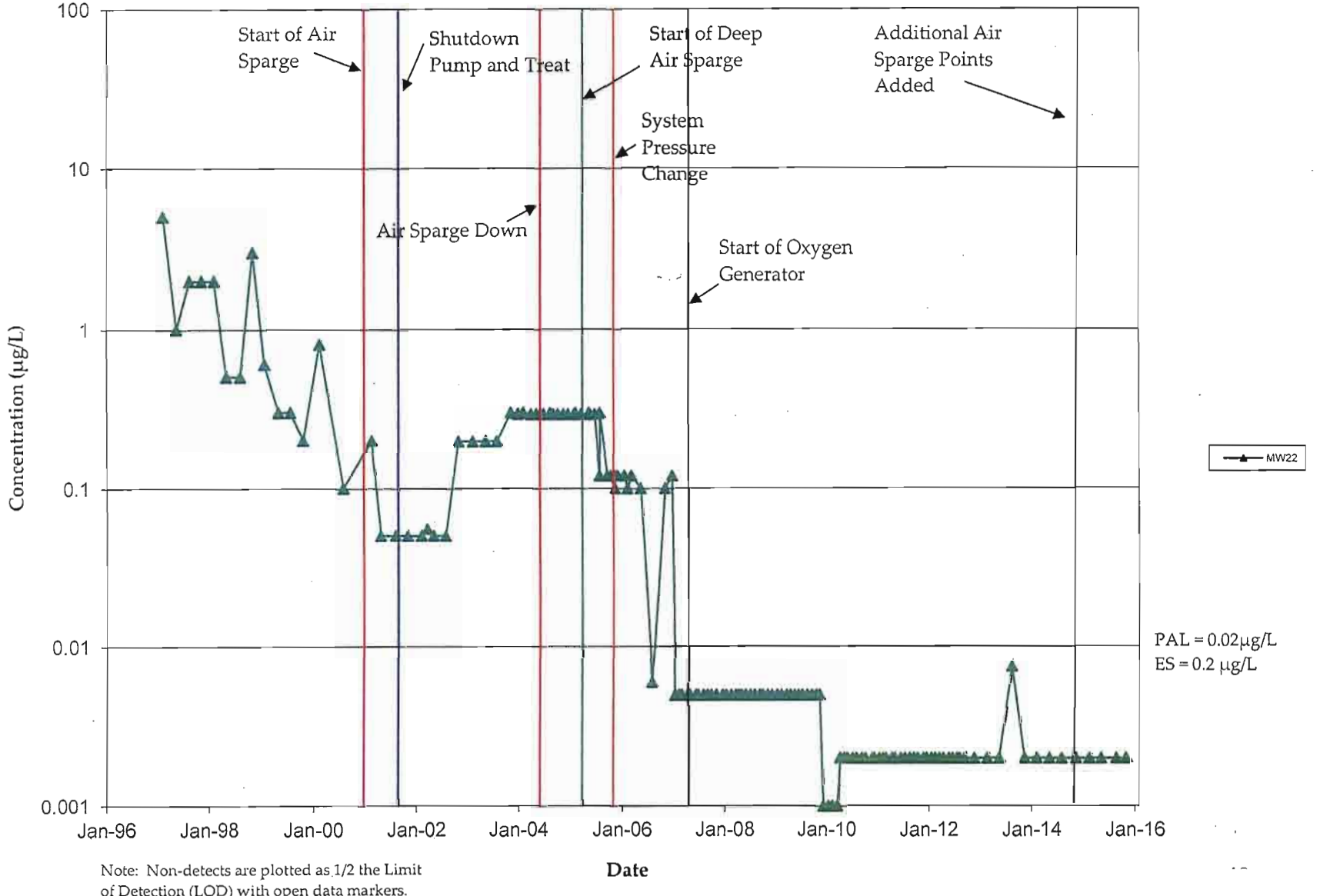
22. U.S. Environmental Protection Agency, Region 5, Letter from Sheila A. Sullivan to Michael L. Peterson of Waste Management of Wisconsin Re: "Proposal for Enhancement of the Low-Flow Air Sparge System at the Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin." June 20, 2013. SDMS ID: 473148.

23. U.S. Environmental Protection Agency, Region 5, Letter from Sheila A. Sullivan to Michael L. Peterson of Waste Management of Wisconsin Re: "Proposal for Enhancement of the Low-Flow Air Sparge System at the Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin." May 27, 2014.

ATTACHMENT 5

Groundwater Data Trend Plots for Key Wells

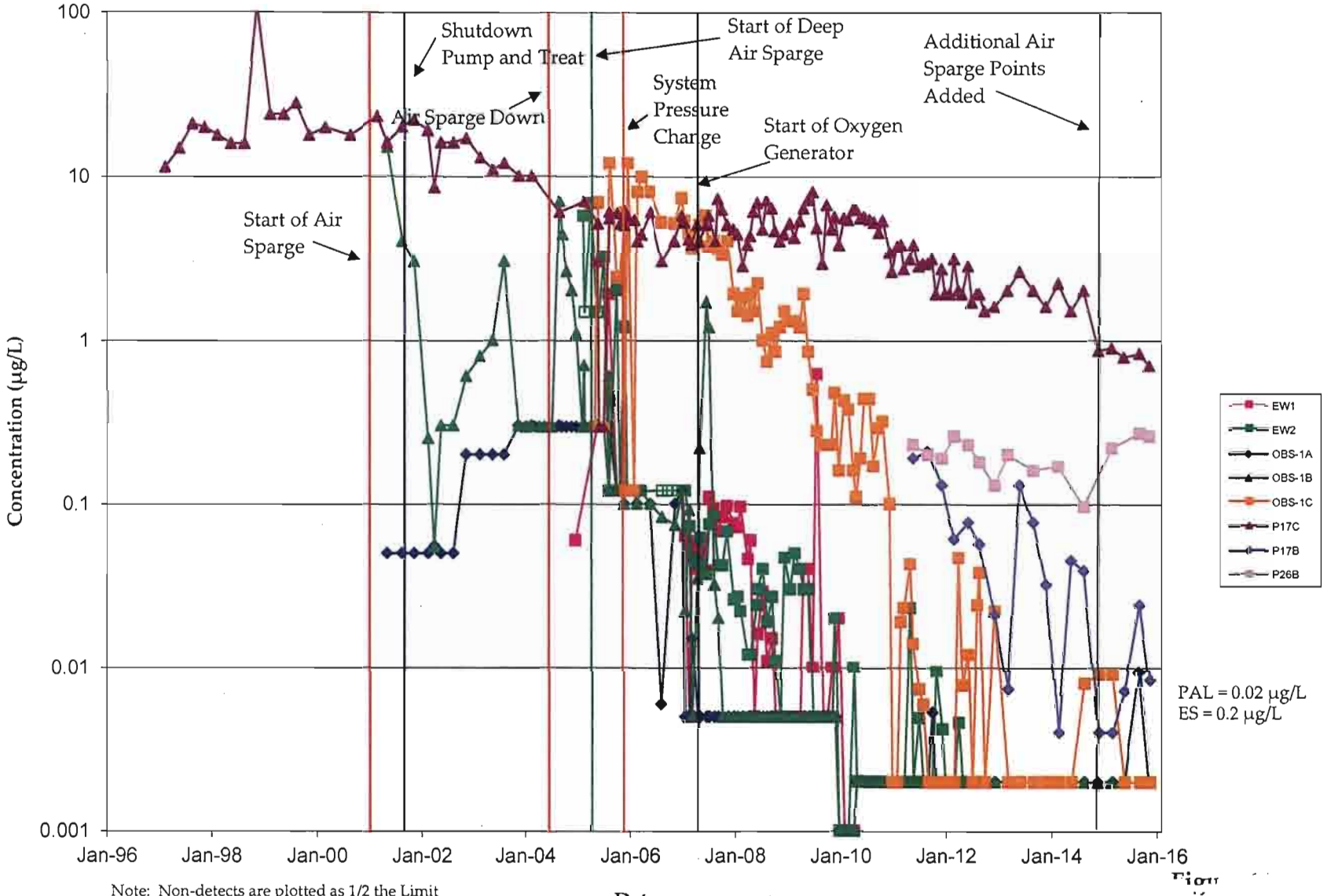
Vinyl Chloride
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

Source Area Well
Vinyl Chloride

Vinyl Chloride
Hagen Farm Site

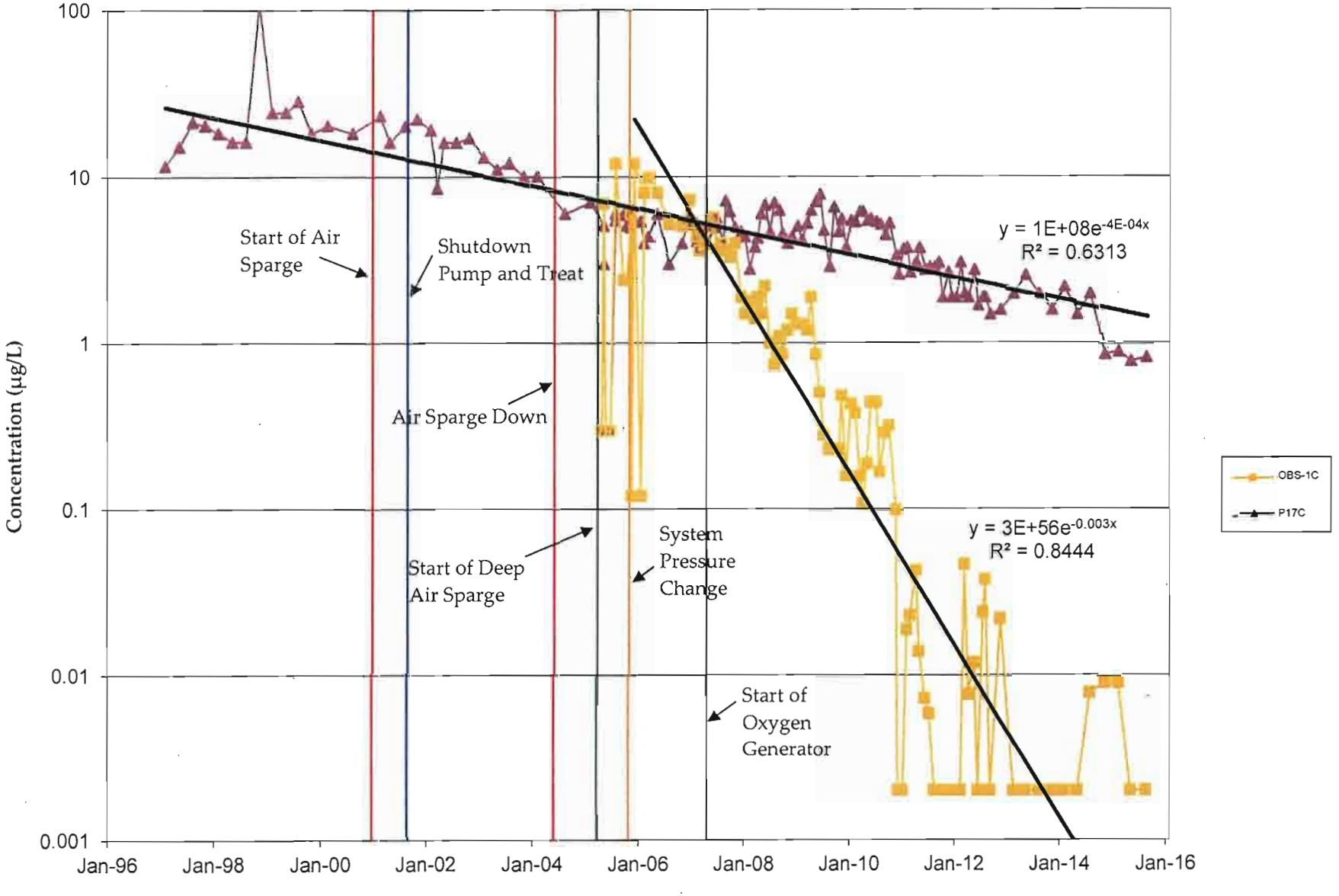


Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

Fig...

On Property Wells
Vinyl Chloride

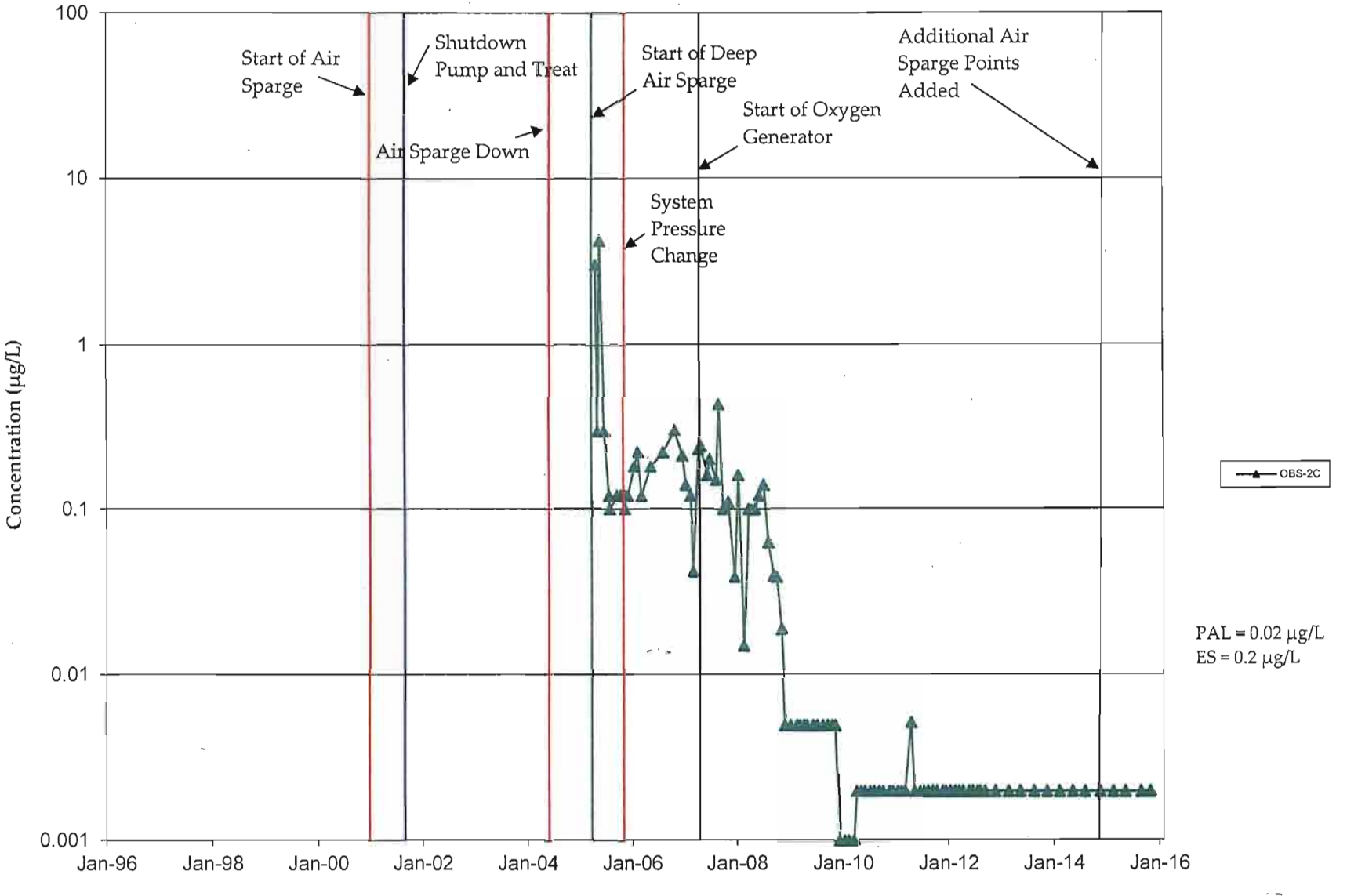
Vinyl Chloride
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

On Property
Vinyl Chloride Trend

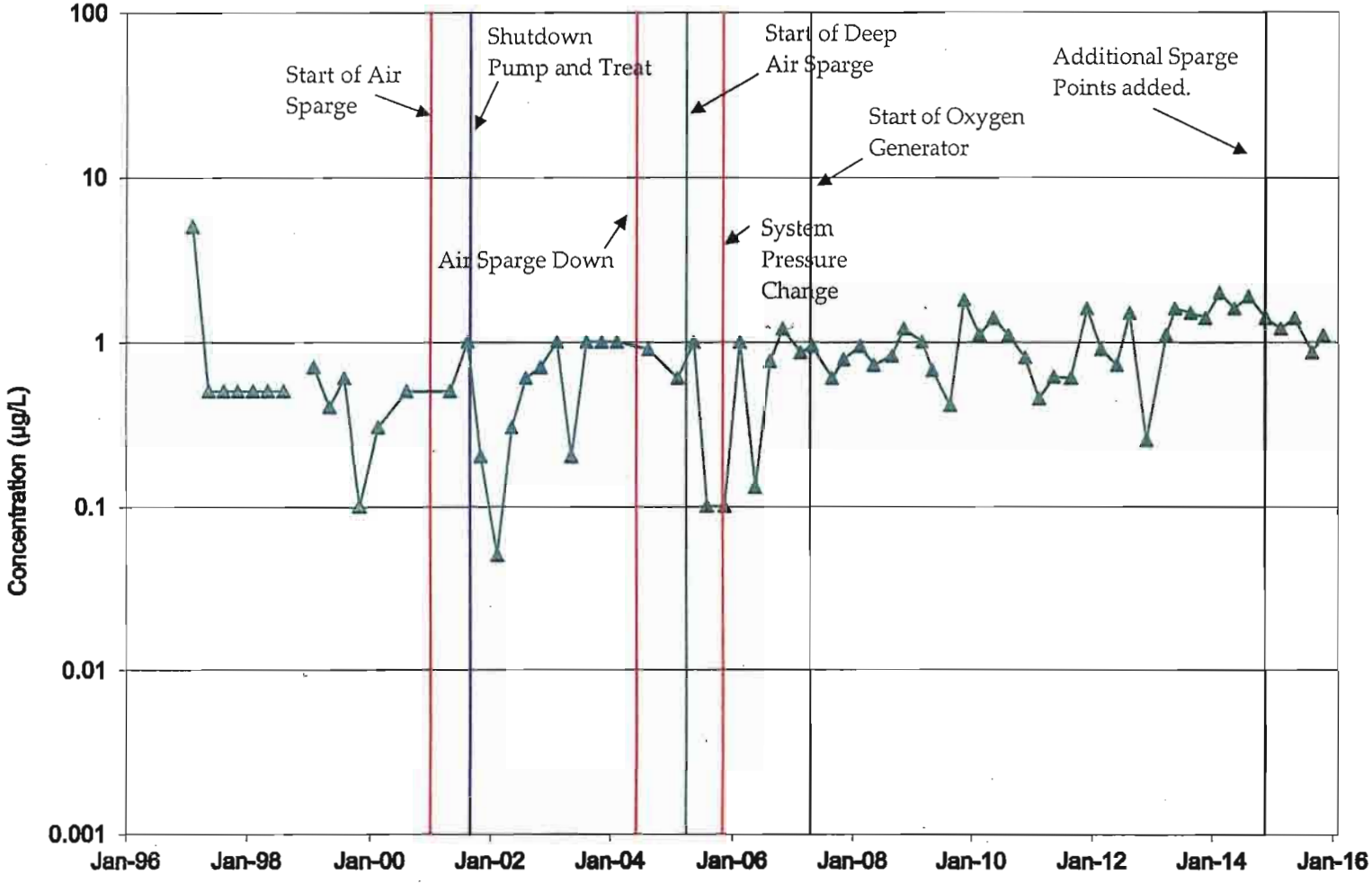
Vinyl Chloride
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

Off Property Well
Vinyl Chloride

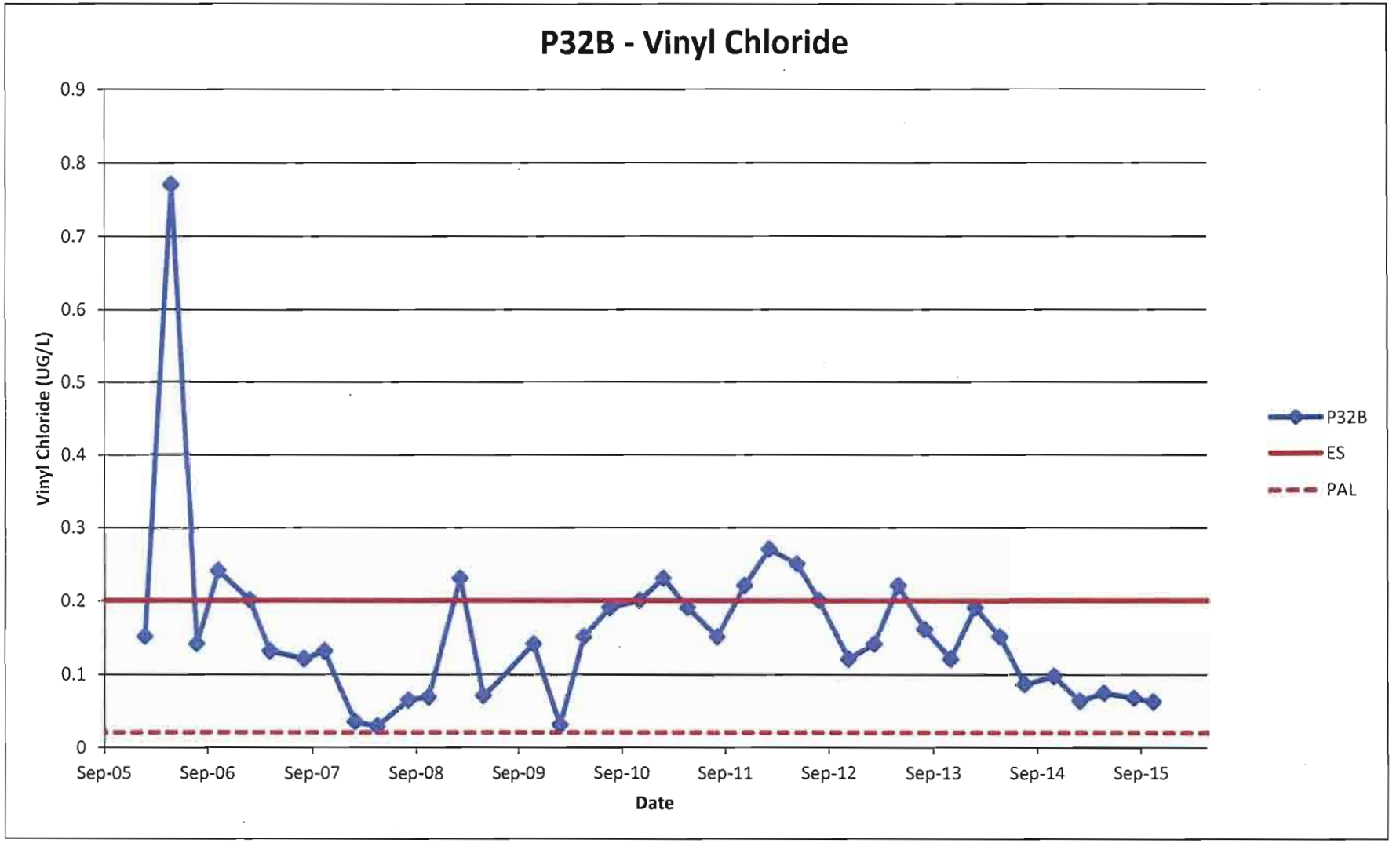
Vinyl Chloride
Hagen Farm Site



PAL = 0.02 µg/L
ES = 0.2 µg/L
MCL = 2 µg/L

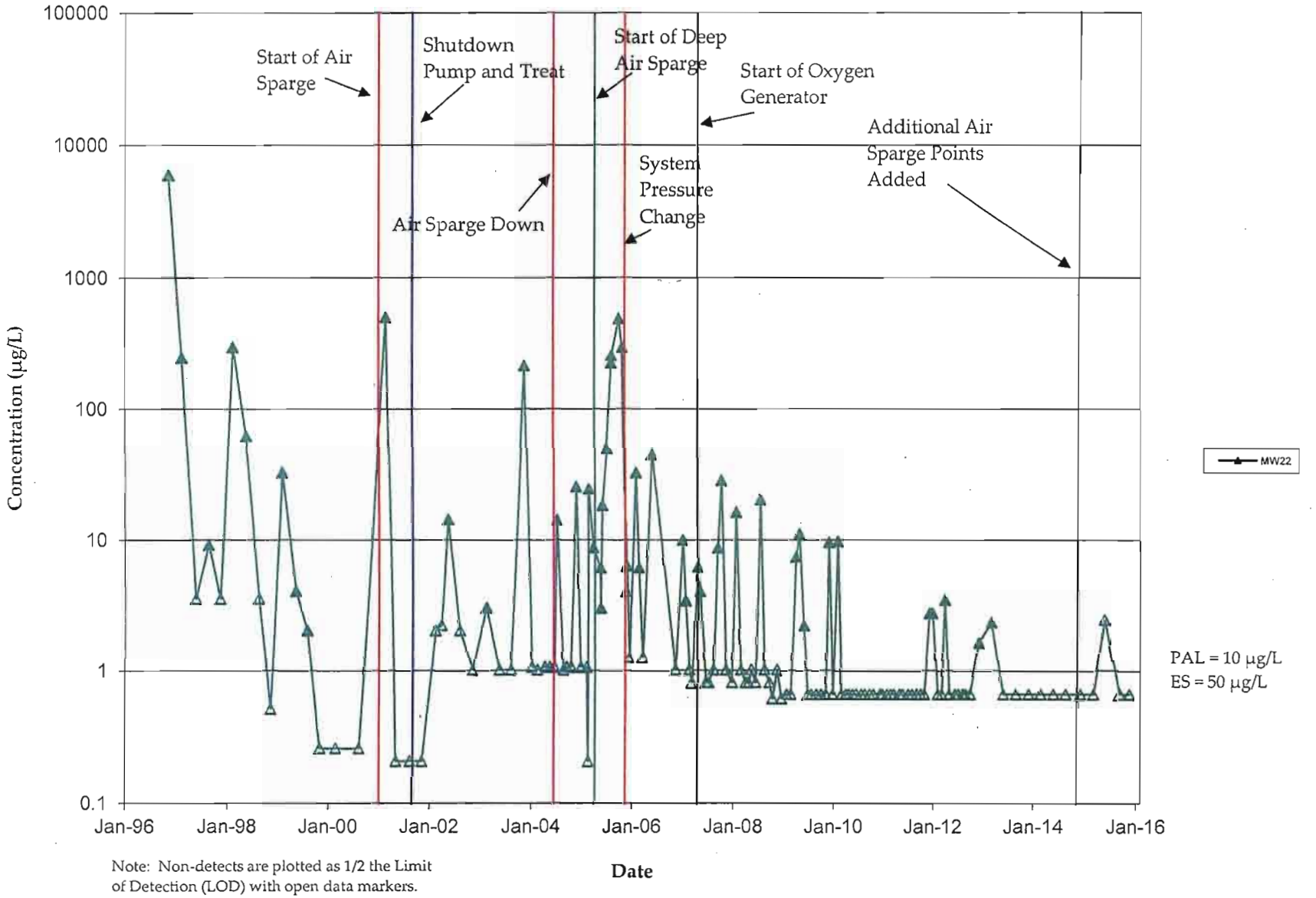
Date

OB8M
Vinyl Chloride



Off Property Well

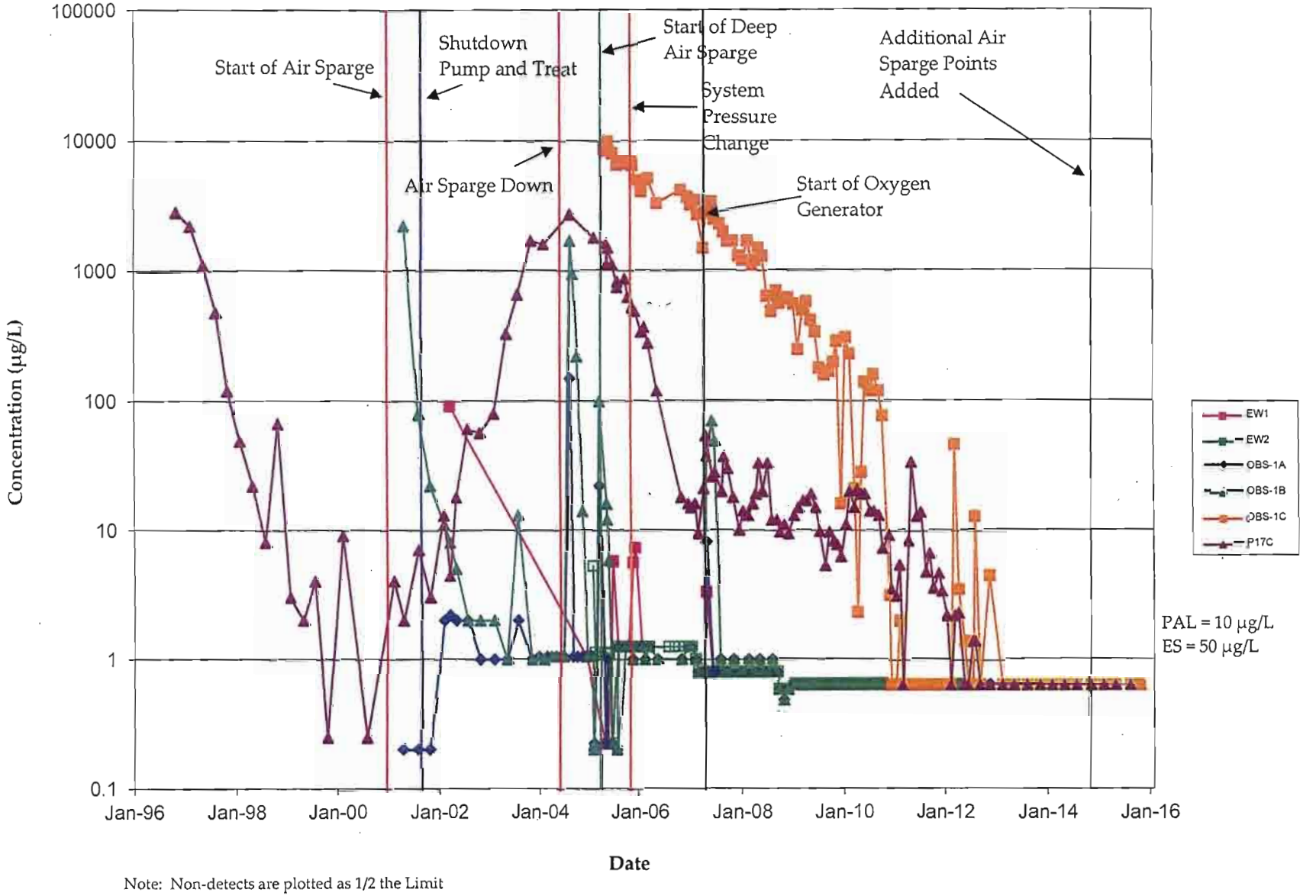
Tetrahydrofuran
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

Source Area Well
Tetrahydrofuran

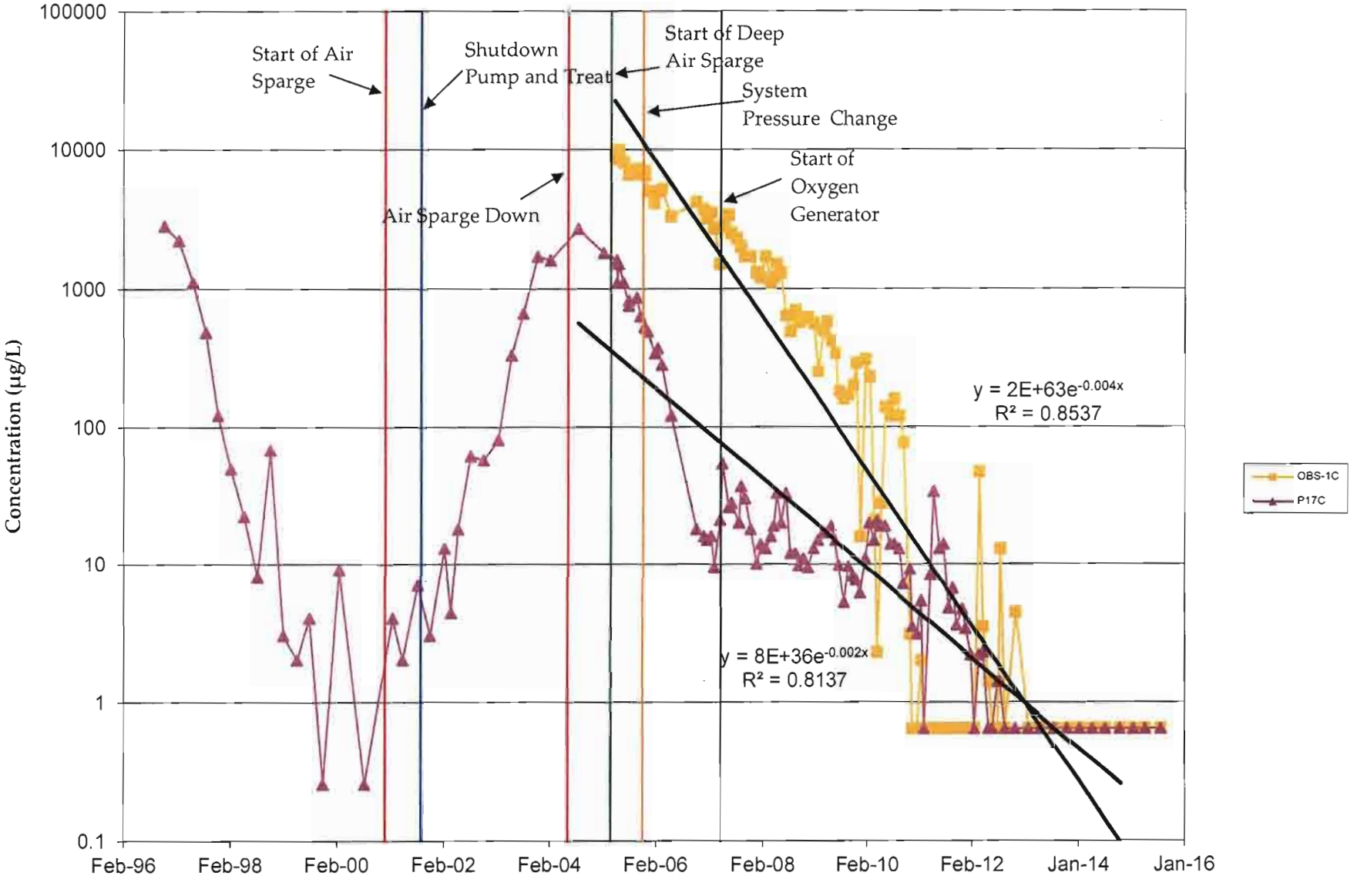
Tetrahydrofuran
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

On Property Wells
Tetrahydrofuran

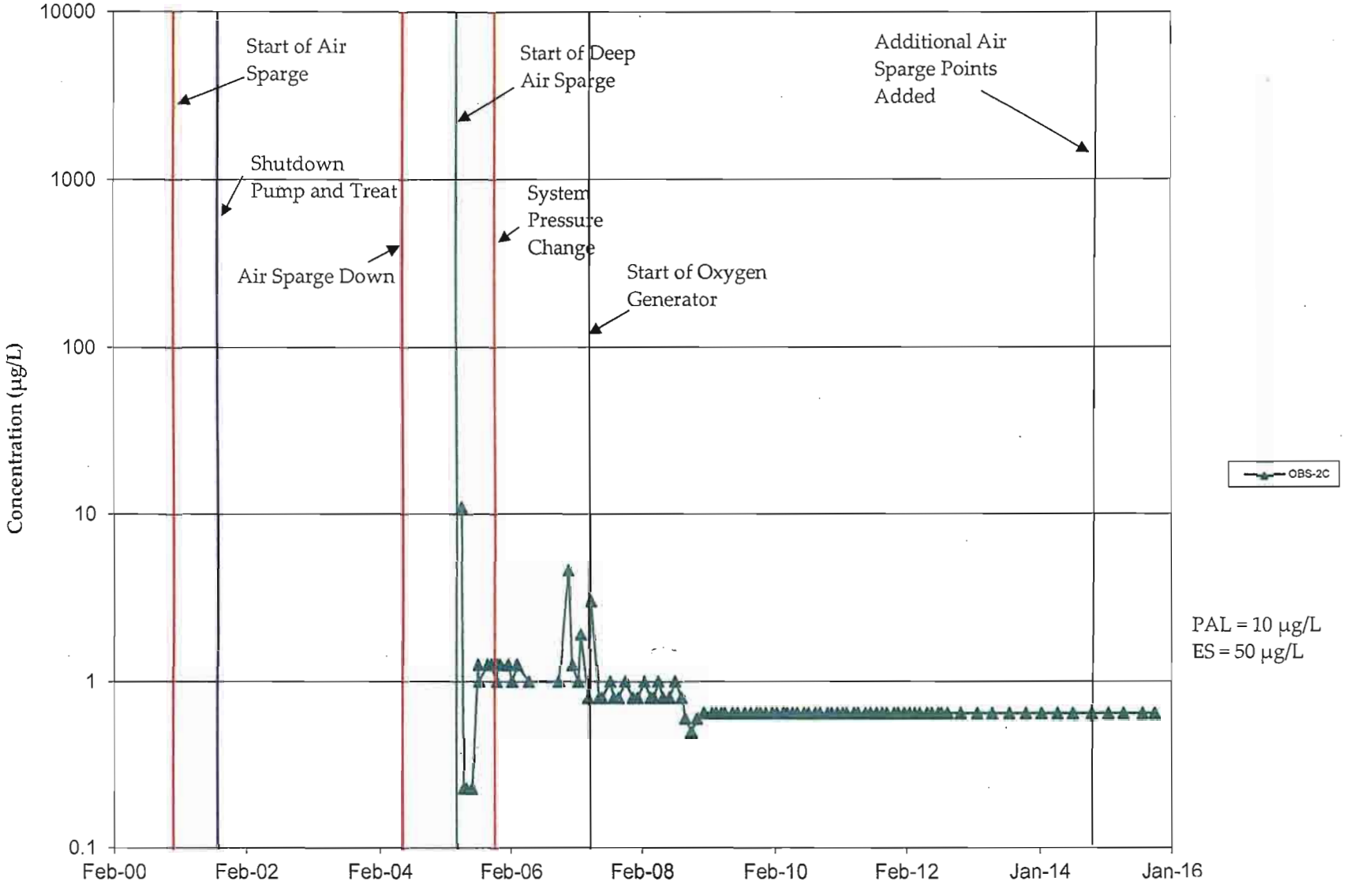
Tetrahydrofuran
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

On Property Tetrahydrofuran Trend

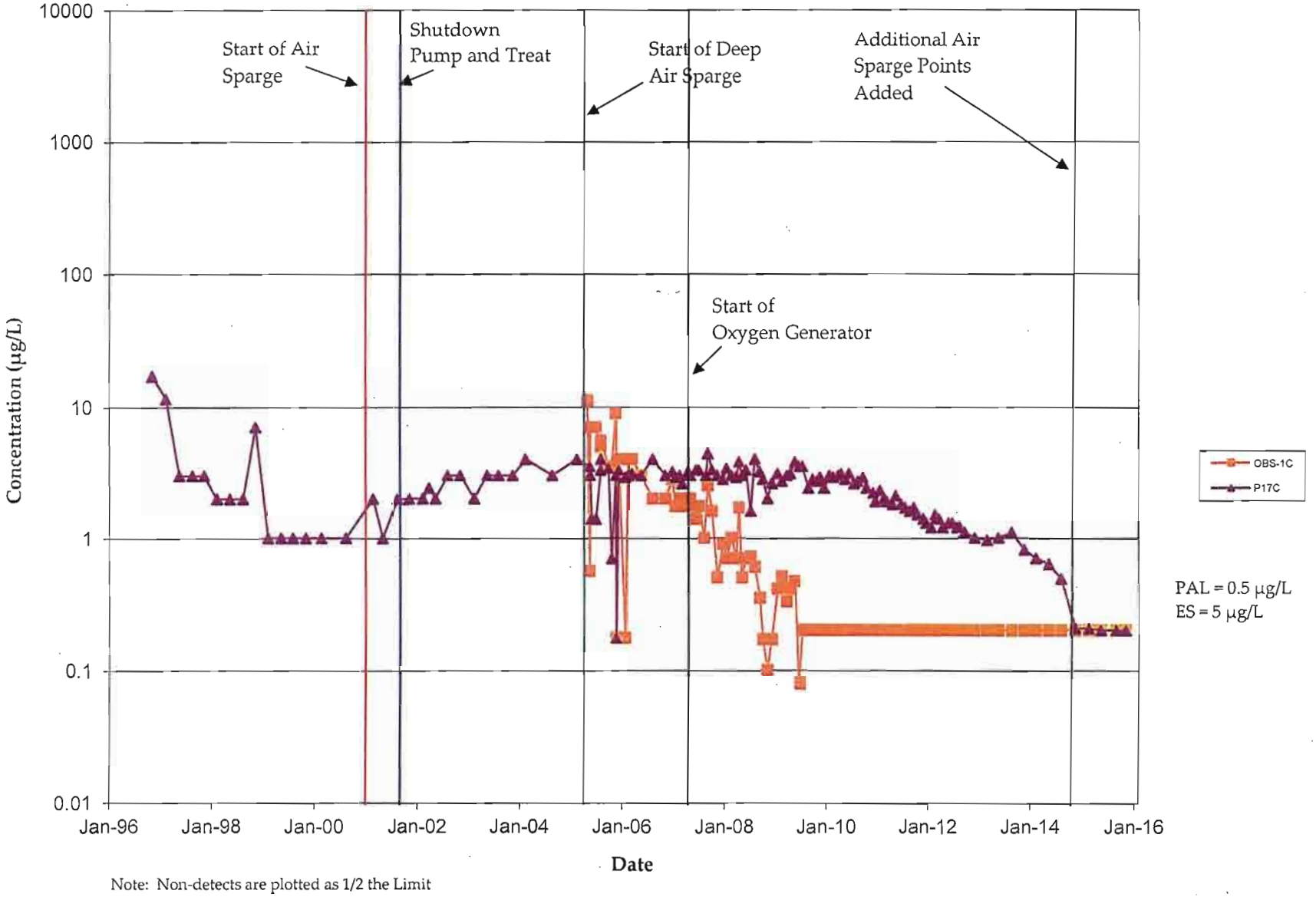
Tetrahydrofuran
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

Off Property Well
Tetrahydrofuran

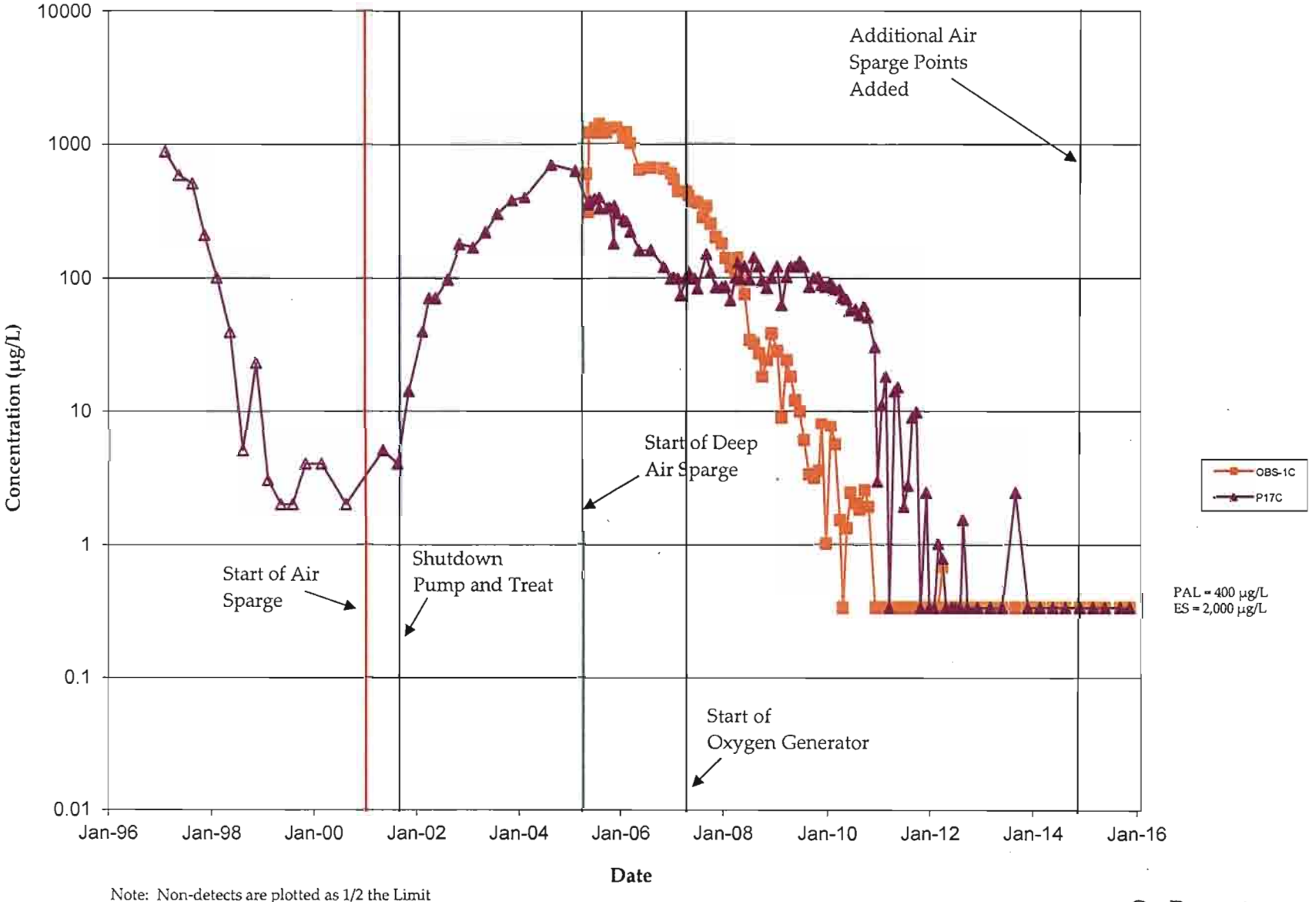
Benzene
Hagen Farm Site



Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

On Property Benzene

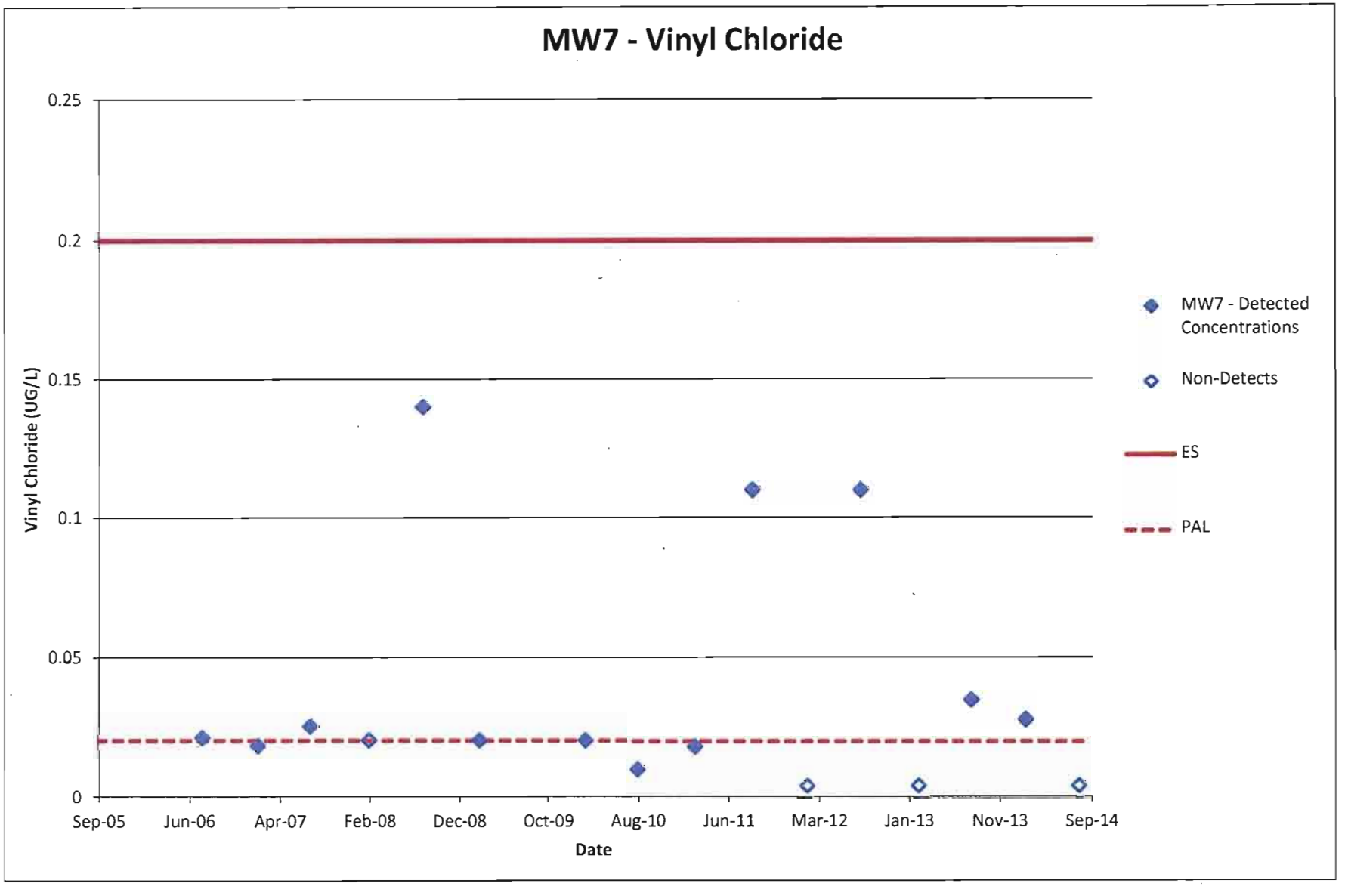
Xylenes
Hagen Farm Site

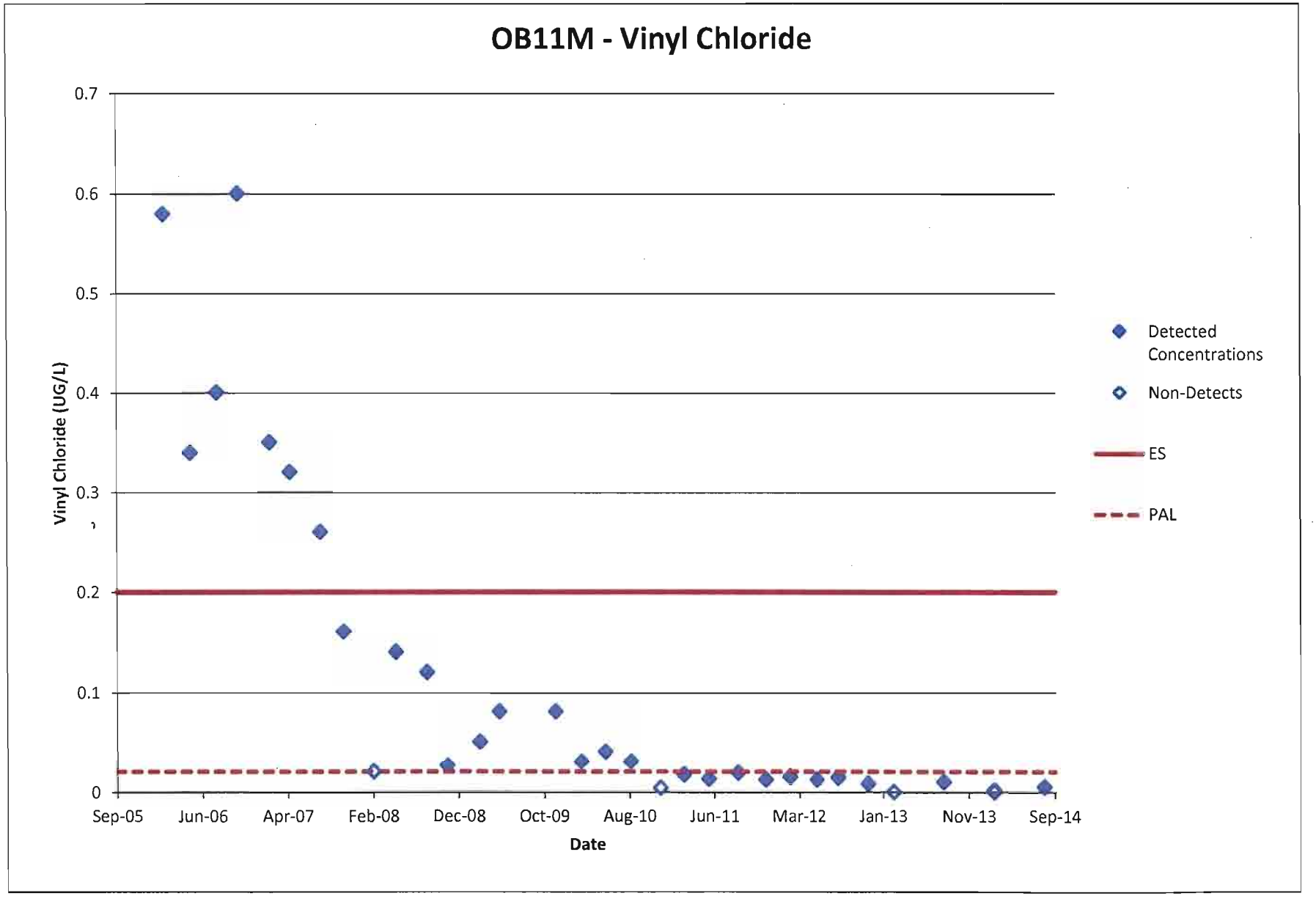


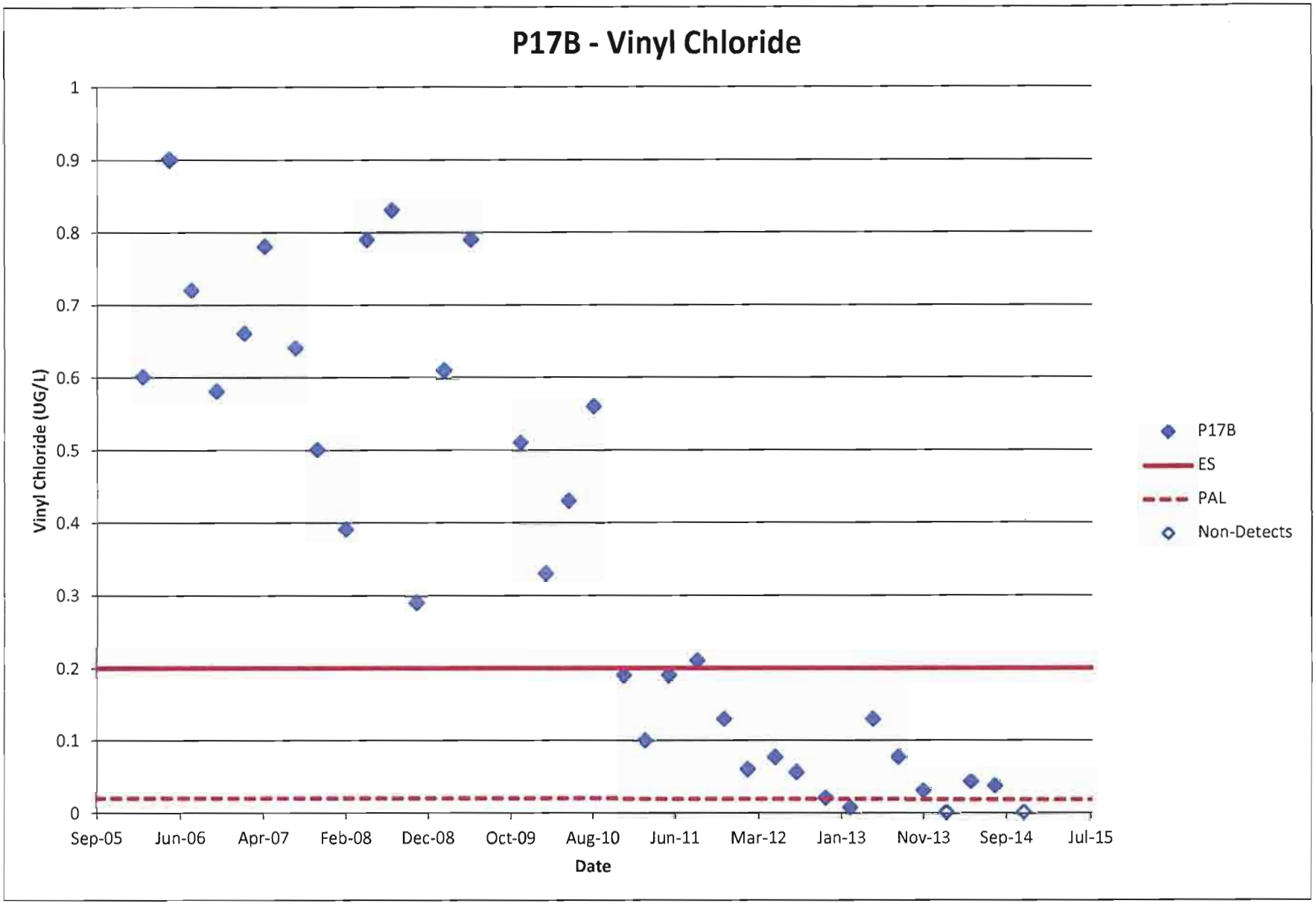
Note: Non-detects are plotted as 1/2 the Limit of Detection (LOD) with open data markers.

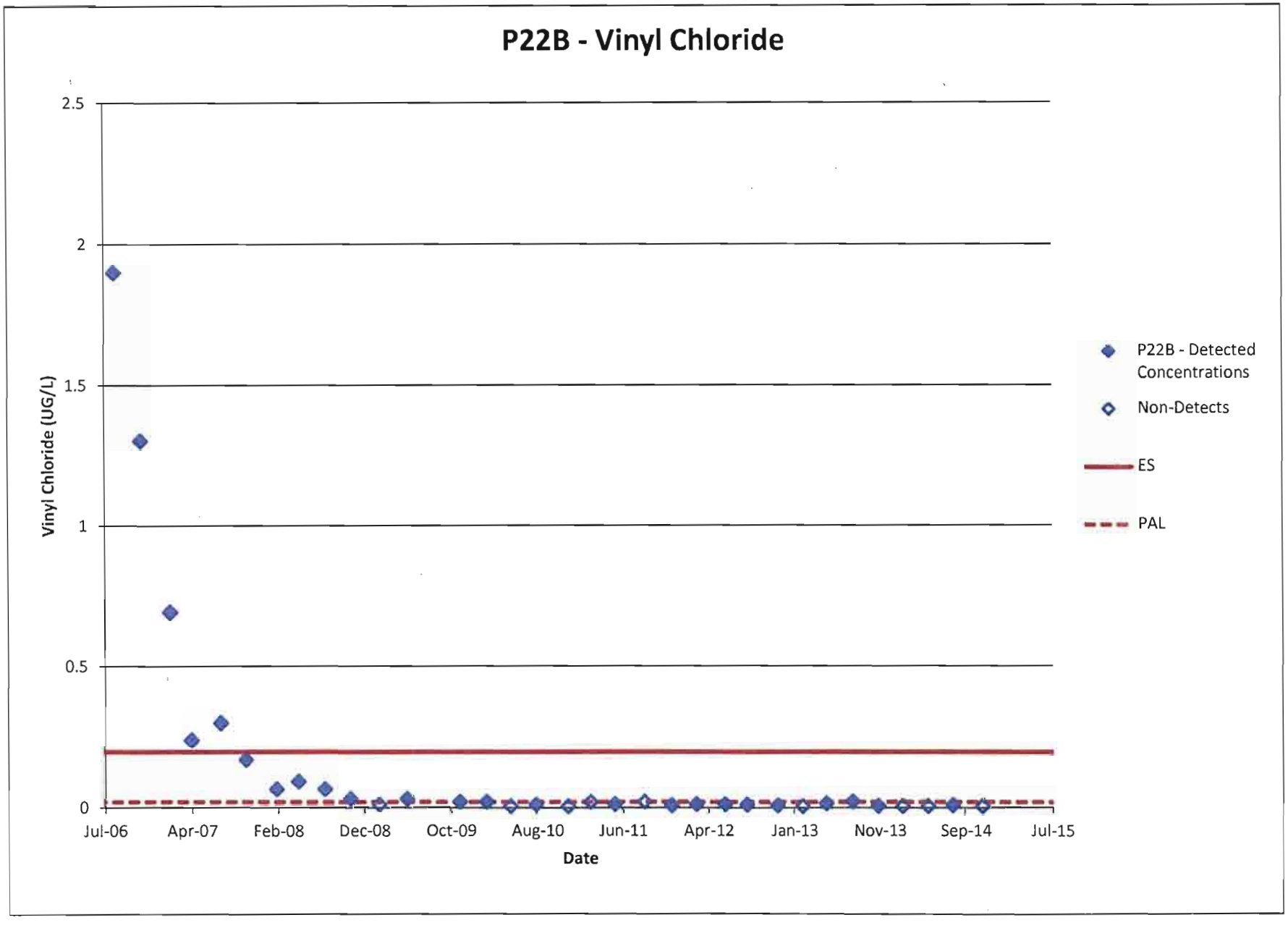
On Property Xylenes

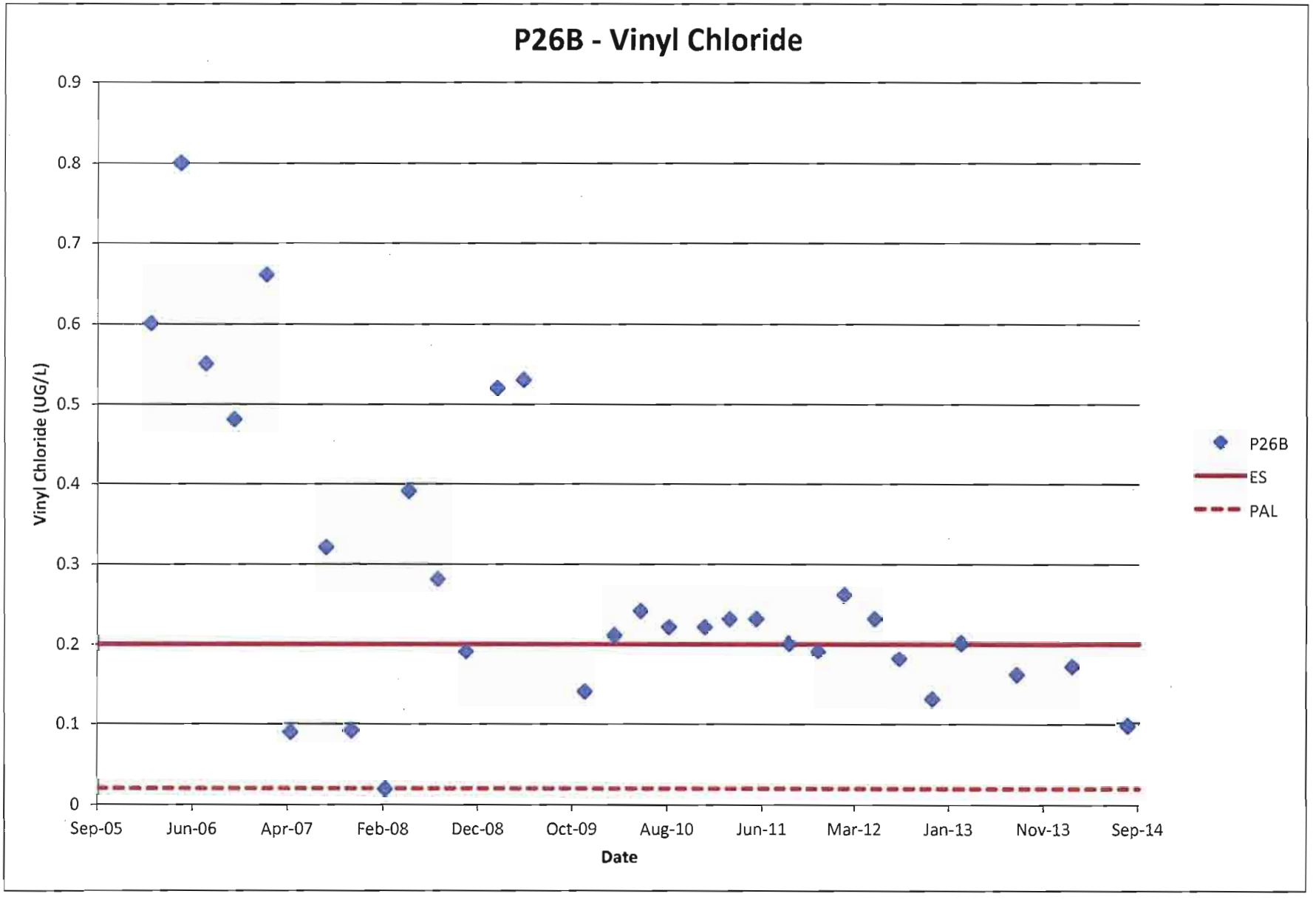
Time Concentration Plots for Other Wells;
Vinyl Chloride > PAL in 2014

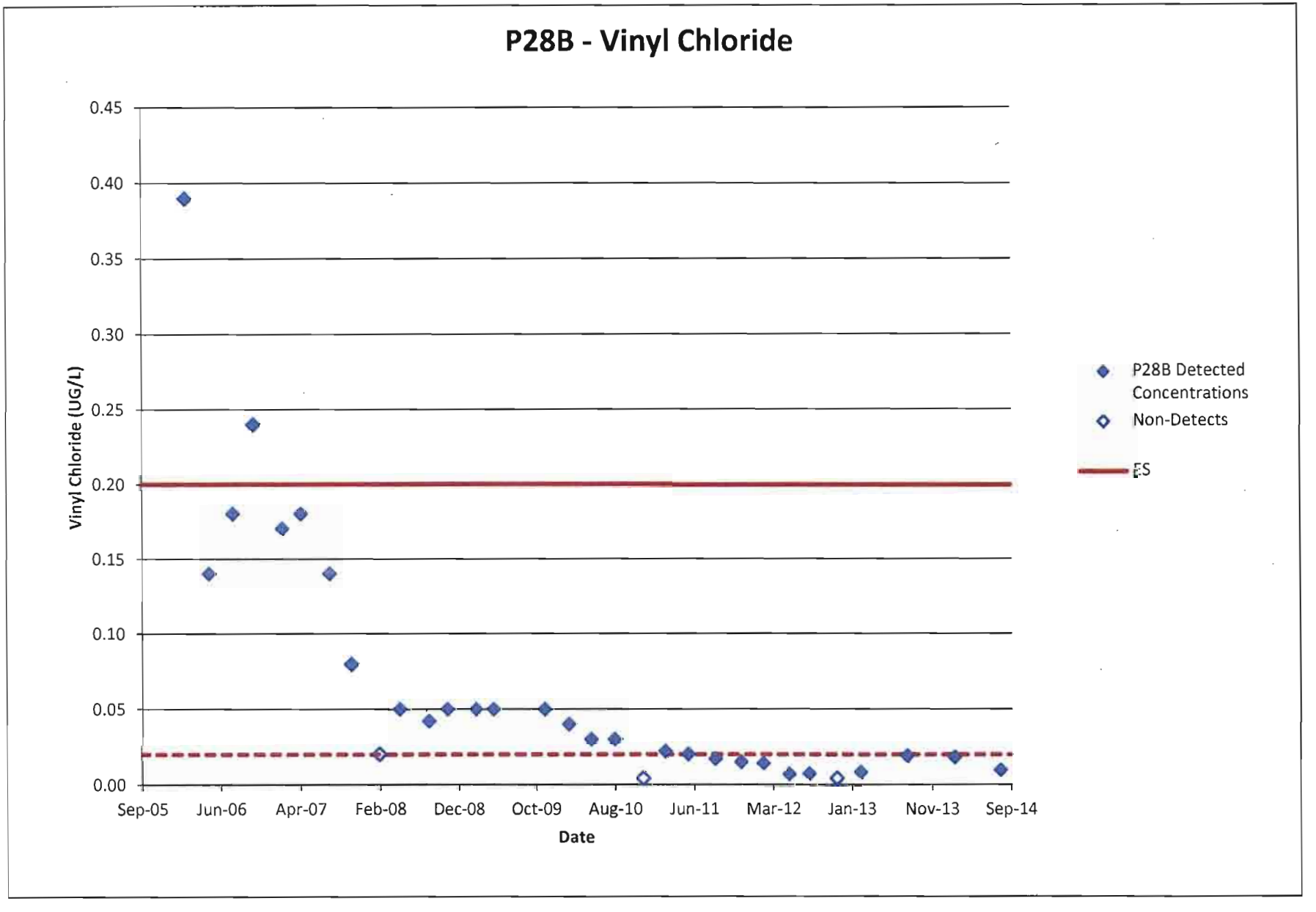

MW7 - Vinyl Chloride
0.25
0.2
0.15
0.1
0.05
0
Vinyl Chloride (UG/L)
Sep-05
Jun-06
Apr-07
Feb-08
Dec-08
Oct-09
Aug-10
Jun-11
Mar-12
Jan-13
Nov-13
Sep-14
Date
MW7 - Detected Concentrations
Non-Detects
ES
PAL


OB11M - Vinyl Chloride
Vinyl Chloride (UG/L)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Sep-05
Jun-06
Apr-07
Feb-08
Dec-08
Oct-09
Aug-10
Jun-11
Mar-12
Jan-13
Nov-13
Sep-14
Date
Detected Concentrations
Non-Detects
ES
PAL


P17B - Vinyl Chloride
Vinyl Chloride (UG/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Sep-05
Jun-06
Apr-07
Feb-08
Dec-08
Oct-09
Aug-10
Jun-11
Mar-12
Jan-13
Nov-13
Sep-14
Jul-15
Date
P17B
ES
PAL
Non-Detects


P22B - Vinyl Chloride
Vinyl Chloride (UG/L)
2.5
2
1.5
1
0.5
0
Jul-06
Apr-07
Feb-08
Dec-08
Oct-09
Aug-10
Jun-11
Apr-12
Jan-13
Nov-13
Sep-14
Jul-15
Date
P22B - Detected Concentrations
Non-Detects
ES
PAL


P26B - Vinyl Chloride
Vinyl Chloride (UG/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Sep-05
Jun-06
Apr-07
Feb-08
Dec-08
Oct-09
Aug-10
Jun-11
Mar-12
Jan-13
Nov-13
Sep-14
Date
P26B
ES
PAL


P28B - Vinyl Chloride
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Vinyl Chloride (UG/L)
Sep-05
Jun-06
Apr-07
Feb-08
Dec-08
Oct-09
Aug-10
Jun-11
Mar-12
Jan-13
Nov-13
Sep-14
Date
P28B Detected Concentrations
Non-Detects
ES

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION

Site name: Hagen Farm	**Date of inspection:** 9/25/2015
Location and Region: Town of Dunkirk, Dane Co WI	**EPA ID:** WID980610059
Agency, office, or company leading the five-year review: U.S. EPA, Region 5	**Weather/temperature:** sunny, mild / ~77°F

Remedy Includes: (Check all that apply)

- ✓ Landfill cover/containment
- ✓ Access controls
- ✓ Institutional controls
- ✓ Groundwater pump and treatment – not operating
- ✓ Surface water collection and treatment
- ✓ Other Long-term groundwater Monitoring, Low-Flow air sparging; In-situ Vapor Extraction (ISVE)
- Monitored natural attenuation
- Groundwater containment
- Vertical barrier walls

Attachments: Inspection team roster attached Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Michael Peterson (Name) — District Mgr, Closed Sites, Waste Mgmt of WI (Title) — 9/25/15 (Date)
   Interviewed ✓ at site at office by phone Phone no. 262-509-5638 (office)
   Problems, suggestions; Report attached
   mpeterso26@wm.com (e-mail)

2. **O&M staff** Michael Prattke, SCS Engineers (Name) — Div. Manager (Title) — 9/25/15 (Date)
   Interviewed ✓ at site at office by phone Phone no. _____
   Problems, suggestions; Report attached
   mprattke@SCSengineers.com (e-mail)

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency WDNR
Contact Gary Edelstein — Project Manager — 9/25/15 — (608)267-7563
Name — Title — Date — Phone no.
Problems; suggestions; Report attached
gary.edelstein@dnr.state.wi.us (e-mail)

Agency
Contact
Name — Title — Date — Phone no.
Problems; suggestions; Report attached

Agency
Contact
Name — Title — Date — Phone no.
Problems; suggestions; Report attached

Agency
Contact
Name — Title — Date — Phone no.
Problems; suggestions; Report attached

4. **Other interviews** (optional) Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - O&M manual — (X) Readily available — (X) Up to date — N/A
   - As-built drawings — (X) Readily available — (X) Up to date — N/A
   - Maintenance logs — (X) Readily available — (X) Up to date — N/A

   Remarks: Documents that are needed for O+M activities are kept in the treatment building onsite. Other documents kept by WMWI office and/or O+M contractor offices

2. **Site-Specific Health and Safety Plan** — (X) Readily available — (X) Up to date — N/A
   Contingency plan/emergency response plan — (X) Readily available — (X) Up to date — N/A

   Remarks: Copies kept by Waste Management WI (WMWI) and O+M contractors

3. **O&M and OSHA Training Records** — (X) Readily available — (X) Up to date — N/A

   Remarks: Copies of records kept at WMWI and O+M Contractor offices. The contractor's HASP and lockout/tagout plans kept on site.

4. **Permits and Service Agreements**
   - Air discharge permit — Readily available — Up to date — (X) N/A
   - Effluent discharge — Readily available — Up to date — (X) N/A
   - Waste disposal, POTW — Readily available — Up to date — N/A
   - Other permits: Septic System — (X) Readily available — Up to date — N/A

   Remarks:

5. **Gas Generation Records** — Readily available — Up to date — (X) N/A

   Remarks: Gas Management is not remedy component
   ISVE is vented to atmosphere

6. **Settlement Monument Records** — Readily available — Up to date — (X) N/A

   Remarks: O+M plan does not require routine monitoring of settlement monuments as it has never been a concern at this site

7. **Groundwater Monitoring Records** — (X) Readily available — (X) Up to date — N/A

   Remarks: Regular monitoring data sent to US EPA and WDNR, and summarized in Annual Reports. Electronic records maintained in WDNR/GEMS data base

8. **Leachate Extraction Records** — Readily available — Up to date — (X) N/A

   Remarks:

9. **Discharge Compliance Records**
   - Air — Readily available — Up to date — N/A
   - Water (effluent) — (X) Readily available — (X) Up to date — N/A

   Remarks: Maintained in WMWI offices

10. **Daily Access/Security Logs** — Readily available — Up to date — (X) N/A

    Remarks: perimeter fencing restricts access. Signs are posted at gates and on fences. Gates and on site buildings are locked, except when O+M contractor is on site.

IV. O&M COSTS

1. **O&M Organization**

State in-house — Contractor for State
(X) PRP in-house — (X) Contractor for PRP
Federal Facility in-house — Contractor for Federal Facility
Other SCS Engineers is primary O+M contractor. Subcontractors are selected as needed to perform specialized O+M functions, i.e., mowing cap; hauling condensate, etc.

2. **O&M Cost Records**

Low-flow air sparge system O+M runs about $160K/yr.

Readily available — Up to date
Funding mechanism/agreement in place
Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS (X) Applicable N/A

A. Fencing

1. **Fencing damaged** — Location shown on site map — (X) Gates secured — N/A

Remarks Fencing appeared to be in good shape. Fence is 8-ft tall with barbed wire topping. No evidence of vandalism

B. Other Access Restrictions

1. **Signs and other security measures** — Location shown on site map — N/A (~500 ft)

Remarks Signs are posted on gates (3) and on fencing at irregular intervals (~500 ft). Signs need to be updated to reflect current RPM phone number

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — Yes (X) No — N/A
Site conditions imply ICs not being fully enforced — Yes (X) No — N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Self-reporting
Frequency Annual reporting included in Annual OM&M/monitoring reports
Responsible party/agency Responsible Party - WMWI
Contact Mike Peterson, P.E. (Name) — District Mgr., WMWI (Title) — _____ (Date) — _____ (Phone no.)

Reporting is up-to-date — (X) Yes — No — N/A
Reports are verified by the lead agency — (X) Yes — No — N/A

Specific requirements in deed or decision documents have been met — (X) Yes — No — N/A
Violations have been reported - no violations have been assessed — Yes — No — N/A
Other problems or suggestions: Report attached
ICs protect remedy and prohibit groundwater use onsite and within 1200 feet of landfill boundary. May need to prohibit groundwater use further downgradient where contamination has migrated.

2. **Adequacy** — ICs are adequate — (X) ICs are inadequate — N/A
Remarks ICs may not be adequate for off-property locations where Vinyl Chloride exceeds Wisconsin NR140 PALs and Enforcement Standards. There Should be an IC in place to prohibit well installation outside of 4,200-foot restriction as per WAC

D. General

1. **Vandalism/trespassing** — Location shown on site map — (X) No vandalism evident
Remarks _____

2. **Land use changes on site** (X) N/A
Remarks No land use changes on-site property

3. **Land use changes off site** (X) N/A
Remarks No significant land use changes; however, the gravel mining operation to the north of site has been more active than in past 10 years. Activity to the south at Wingra-Redimix Concrete Plant

VI. GENERAL SITE CONDITIONS

A. Roads (X) Applicable — N/A

1. **Roads damaged** — Location shown on site map — (X) Roads adequate — N/A
Remarks Roads are in good condition

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS (*) Applicable N/A

A. Landfill Surface – Landfill cover assessed annually in July. Last inspection was 7/30/15

1. **Settlement** (Low spots) Location shown on site map (⊗) Settlement not evident
   Areal extent _____ Depth _____
   Remarks _____

2. **Cracks** Location shown on site map (⊗) Cracking not evident
   Lengths _____ Widths _____ Depths _____
   Remarks _____

3. **Erosion** Location shown on site map (⊗) Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____

4. **Holes** Location shown on site map (⊗) Holes not evident
   Areal extent _____ Depth _____
   Remarks _____

5. **Vegetative Cover** (*) Grass (*) Cover properly established (⊗) No signs of stress
   Trees/Shrubs (indicate size and locations on a diagram)
   Remarks Grass was mowed two weeks ago. Well-established vegetation
   Mowing done in fall or late Summer to promote wildlife habitat. Annual mowing prevents deep roots

6. **Alternative Cover (armored rock, concrete, etc.)** (⊗) N/A
   Remarks _____

7. **Bulges** Location shown on site map (*) Bulges not evident
   Areal extent _____ Height _____
   Remarks _____

8. **Wet Areas/Water Damage** (X) Wet areas/water damage not evident
   - Wet areas — Location shown on site map — Areal extent_____
   - Ponding — Location shown on site map — Areal extent_____
   - Seeps — Location shown on site map — Areal extent_____
   - Soft subgrade — Location shown on site map — Areal extent_____

   Remarks_____

9. **Slope Instability** Slides — Location shown on site map (X) No evidence of slope instability
   Areal extent_____
   Remarks_____

B. Benches Applicable (X) N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** Location shown on site map (X) N/A or okay
   Remarks_____

2. **Bench Breached** Location shown on site map (X) N/A or okay
   Remarks_____

3. **Bench Overtopped** Location shown on site map (X) N/A or okay
   Remarks_____

C. Letdown Channels Applicable (X) N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** Location shown on site map — No evidence of settlement
   Areal extent_____ Depth_____
   Remarks N/A

2. **Material Degradation** Location shown on site map — No evidence of degradation
   Material type_____ Areal extent_____
   Remarks N/A

3. **Erosion** Location shown on site map — No evidence of erosion
   Areal extent_____ Depth_____
   Remarks N/A

4. **Undercutting** Location shown on site map No evidence of undercutting
Areal extent_____ Depth_____
Remarks N/A

5. **Obstructions** Type_____ No obstructions
Location shown on site map Areal extent_____
Size_____
Remarks N/A

6. **Excessive Vegetative Growth** Type_____
No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent_____
Remarks N/A

D. Cover Penetrations (X) Applicable N/A

1. **Gas Vents** (X) Active Passive
(X) Properly secured/locked (X) Functioning (X) Routinely sampled (X) Good condition
Evidence of leakage at penetration Needs Maintenance
N/A
Remarks Gas vents ~~are to be~~ sampled annually, but soon will be only sampled every 5 years to correspond with FYR inspection. ISVE in good condition. All electrical panels and equipment looked good.

2. **Gas Monitoring Probes**
(X) Properly secured/locked (X) Functioning (X) Routinely sampled (X) Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks ~~Gas~~ Quarterly field measurements are taken

3. **Monitoring Wells** (within surface area of landfill)
(X) Properly secured/locked (X) Functioning (X) Routinely sampled Good condition
Evidence of leakage at penetration (X) Needs Maintenance N/A
Remarks MW P7B converted to Air Sparge point) P22B is abandoned
MW P17B had sunken casing - needs repair MW P17C had just been repaired at the seal

4. **Leachate Extraction Wells**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance (X) N/A
Remarks

5. **Settlement Monuments** Located Routinely surveyed (X) N/A
Remarks

E. Gas Collection and Treatment Applicable ⊗N/A Gas is vented to atmosphere.

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance ⊗N/A
   Remarks_____

F. Cover Drainage Layer ⊗Applicable N/A

1. **Outlet Pipes Inspected** ⊗Functioning N/A
   Remarks_____

2. **Outlet Rock Inspected** ⊗Functioning N/A
   Remarks_____

G. Detention/Sedimentation Ponds ⊗Applicable N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   ⊗Siltation not evident
   Remarks Sediment pond area, formerly present in SE area of site; is dry

2. **Erosion** Areal extent_____ Depth_____
   ⊗Erosion not evident
   Remarks_____

3. **Outlet Works** ⊗Functioning N/A
   Remarks_____

4. **Dam** Functioning ⊗N/A
   Remarks_____

H. Retaining Walls Applicable (X) N/A

1. **Deformations** Location shown on site map Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks N/A

2. **Degradation** Location shown on site map Degradation not evident
   Remarks N/A

I. Perimeter Ditches/Off-Site Discharge (X) Applicable N/A

1. **Siltation** Location shown on site map (X) Siltation not evident
   Areal extent_____ Depth_____
   Remarks

2. **Vegetative Growth** Location shown on site map N/A
   (X) Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks Some vegetation by runoff channel to infiltration pond. Pond is dry

3. **Erosion** Location shown on site map (X) Erosion not evident
   Areal extent_____ Depth_____
   Remarks

4. **Discharge Structure** (X) Functioning N/A
   Remarks

VIII. VERTICAL BARRIER WALLS Applicable (X) N/A

1. **Settlement** Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks N/A

2. **Performance Monitoring** Type of monitoring_____
   Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES (X) Applicable N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines (X) Applicable N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   Good condition All required wells properly operating Needs Maintenance N/A
   Remarks Extraction wells no longer operating. EW-3 converted to LFAS point; EW-1 converted to sparge point. BEW2 not operating. A LFAS system has been operating in place of pump and treat system

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   (X) Good condition ? Needs Maintenance
   Remarks These are in good condition with respect to being re-purposed for air sparging; however, maintenance would be needed if pump-and-treat resumed

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade (X) Needs to be provided
   Remarks Would need to be provided for pump-and-treat.

B. Surface Water Collection Structures, Pumps, and Pipelines Applicable (X) N/A

1. **Collection Structures, Pumps, and Electrical**
   Good condition Needs Maintenance
   Remarks N/A

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks N/A

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks N/A

Note: A low-flow Air Sparge System (LFAS) has replaced the pump-and-treat as a pilot for insitu groundwater treatment. The LFAS system was recently upgraded by adding 3 sparge points. These structures and equipment are in good condition and are regularly maintained. The system now includes 13 air sparge points, oxygen generator, 2 air compressors, and air dryer, plus programmer Logic controller system to regulate delivery of compressed air to sparge points on a cycled basis

C. Treatment System (X) Applicable N/A – Refers to LFAS system

1. **Treatment Train** (Check components that apply)
   Metals removal Oil/water separation Bioremediation
   Air stripping Carbon adsorbers
   Filters_____
   Additive (*e.g.*, chelation agent, flocculent)_____
   Others Air sparge points
   (X) Good condition Needs Maintenance
   (X) Sampling ports properly marked and functional
   Sampling/maintenance log displayed and up to date
   (X) Equipment properly identified
   Quantity of groundwater treated annually_____
   Quantity of surface water treated annually_____
   Remarks The groundwater is now treated in-situ via the LFAS system

2. **Electrical Enclosures and Panels** (properly rated and functional)
   N/A (X) Good condition Needs Maintenance
   Remarks PLC and solenoid panel is new and well-maintained

3. **Tanks, Vaults, Storage Vessels**
   N/A (X) Good condition Proper secondary containment Needs Maintenance
   Remarks_____

4. **Discharge Structure and Appurtenances**
   N/A (X) Good condition Needs Maintenance
   Remarks_____

5. **Treatment Building(s)**
   N/A (X) Good condition (esp. roof and doorways) Needs repair
   (X) Chemicals and equipment properly stored
   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   (X) Properly secured/locked (X) Functioning (X) Routinely sampled (X) Good condition
   (X) All required wells located Needs Maintenance N/A
   Remarks generally - some maintenance required for P17B

D. Monitoring Data quarterly monitoring data being submitted to assess expanded LFAS

1. Monitoring Data
   (X) Is routinely submitted on time (X) Is of acceptable quality

2. Monitoring data suggests:
   (X) Groundwater plume is effectively contained (X) Contaminant concentrations are declining

to some degree downgradient V.C. is not contained

→ In many wells, however some fluctuation is noted. General trend is decrease overall

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance ⊗ N/A
   Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction. LFAS is operating in lieu of pump-and-treat for groundwater Remedy

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

See Final Report -
The LFAS system was upgraded in 2014 and 3 new air sparge points were added. A total of 13 air sparge points and upgraded system are being evaluated. After 5 quarters of post-expansion data, the system appears to be effectively remediating groundwater contamination; however more data need to be evaluated over the next 2 years. It is likely that LFAS will remain the sole remedy and will be memorialized in a decision document.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The O+M is effective and achieves the stated goals. The scope of O+M has been successfully expanded to include annual IC recertification, however this should be memorialized in an updated O+M Manual.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

None are evident

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Several modifications to monitoring schedules and reduced parameters have been instituted since last FYR in 2011. LFAS performance monitoring has been optimized for the time being.

Attachment 7

Hagen Farm Superfund Site

Five-Year Review Report
Site Inspection Photos

September 25, 2015

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 1- Drainage outlet runoff to infiltration pond. The pond area is dry. The photo is taken from the northwest corner of the area with a view to the southeast portion of the site.

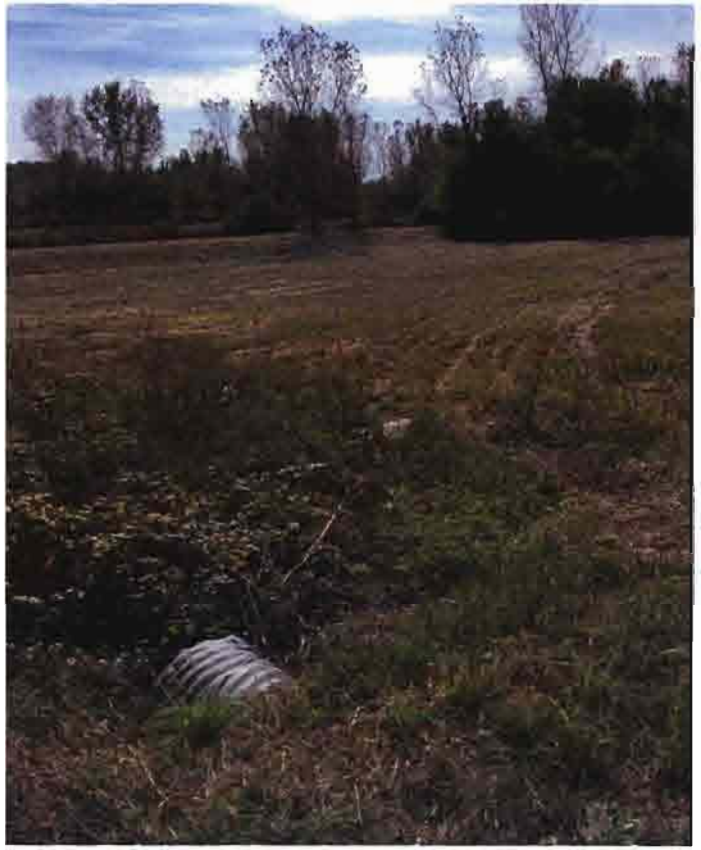


Photo 2 – View of soil vapor extraction (SVE) well EW2, located in the east-central portion of the landfill cover. The view is to the northeast. Other monitoring points, namely gas probes GP15, GP14, GP13, GP12, are visible in a line receding into the background of the photo.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 3 – View of former infiltration gallery and monitoring location IG-04 (with orange-tipped stake) located in the northeast area of the fenced property. Orientation is toward the northeast.

Photo 4- View from GP29 looking westward at the edge of the landfill cover. The photo shows the toe drain, i.e., the cobbles in the central foreground. GP29 is located on the northeast perimeter of the landfill cover.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 5- Looking northeast from the northwest portion of the property shows an overview of the landfill cover. The perimeter slope down to the drainage swale is visible in the mid-ground of the picture. The treatment plant building is visible in the background toward the right side of the photo.

Photo 6- Example of one of the signs posted on the perimeter fence and gates. The phone number needs to be updated to that of the current RPM, Sheila Sullivan.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 7– View of cover of former extraction well EW3 from the former pump-and-treat system. This well has been converted to an low-flow air sparge (LFAS) well. The protective blue cover is open.

Photo 8 – View inside the vault of EW3, which has been converted to a LFAS well. The well casing is visible. The white pipe in the back of the vault is the sparge pipe. The compressed air supply line is the black line in the center-left side of the vault. The residual pump-and-treat piping is in the foreground.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 9 –Groundwater monitoring well P17D located about 100 feet directly south of the treatment building. The lock and protective casing are well maintained. Minor sign damage is visible from a mowing event.

Photo 10 – View toward the northeast from the southeast property line of the inactive groundwater extraction well EW2 (mid-ground of photo). EW1 is located about 40 feet south of P17D. The treatment plant is visible in the background.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 11- View of the northwestern curve of the landfill showing the berm rise, drainage perimeter, and vegetation. The view is from the northwestern perimeter of the property looking directly southward. The treatment plant is barely visible in background on the left side of the photo.

Photo 12- View from EW2 to the north-northeast toward the treatment plant. Groundwater monitoring wells OBS 1A, 1B and 1C are visible in the center of the photo, directly in front of the treatment plant, and are marked by the orange-tipped stake. Air sparge well casings are visible to the left of the tree.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 13 – View of former groundwater extraction well EW1, which was recently reconfigured to an LFAS well. The view is to the southwest toward the perimeter fence line covered with vegetation. Groundwater monitoring wells P17B and P17C are visible in the background, directly in front of the fence.

Photo 14 – Close up of monitoring wells P17B and P17C. P17B, to the left of the orange-tipped marker, showed some heaving that caused the yellow casing to sink. P17C, visible on the far right of the photo, had been recently re-sealed and was in good condition.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 15 – Inside the groundwater treatment building. View of the two air compressors which feed the LFAS system. The square white compressor units on either side of the gray air receiving tank.

Photo 16 – Inside the treatment building. A view of the two-tower oxygen concentration system (light blue tanks) for the LFAS system. The oxygen concentrator works by bleeding off NO2 in order to concentrate the oxygen. The air dryer is on the far right side of the photo.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 17 – Close-up of the air drying component of the LFAS system. The air dryer contains a dessicant to remove moisture from the air in order to prevent clogging.

Photo 18 – Solenoid valves and manifold for the LFAS distribution controls. The three newest LFAS wells are controlled at top right foreground (with gauges). The new solenoids indicate the active LFAS well (in-cycle) by a light on the valve. The older solenoids (back row in photo) require feeling vibrations to determine if well is in use.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 19 – Facing northwest, view of In-situ vapor extraction (ISVE) shed. The electrical panel is visible to the left of the shed.

Photo 20 –A view inside the ISVE shed containing the ISVE system blower (back wall) and inlet manifold (black piping in left foreground of photo). The sample port of the inlet manifold is visible in the bottom left foreground.

Hagen Farm Site Five-Year Review Site Inspection, September 25, 2015

Photo 21 – Location of groundwater monitoring well OB08M. The view is from a private residential driveway looking northward. Note the lush marshland to the west (left) and north (background) of OB08M. The well is visible in the back center of the photo.

Photo 22-Close up of monitoring well OB08M. This well is located nearly 2,000 feet downgradient (south) of the southern property boundary of the site.

Appendix 1

Additional Tables

Tables 5 – 8

Table 5

Hagen Farm

Analytical Results from Wells on the Site Property where the Concentration Met Exceeded the Enforcement Standard (ES)
January 2011- March 2016

Sample Point	Analyte Name	Result	Units	Sample Date	ES
EW2	NITRITE PLUS NITRATE-DISSOLVED AS N	254	MG/L AS N	110119	10
MW-22	NITRITE PLUS NITRATE-DISSOLVED AS N	13.6	MG/L AS N	120322	10
MW7	TETRAHYDROFURAN	690	UG/L	110216	50
MW7	TETRAHYDROFURAN	5400	UG/L	110824	50
MW7	TETRAHYDROFURAN	9200	UG/L	120817	50
MW7	TETRAHYDROFURAN	750	UG/L	130822	50
MW7	TETRAHYDROFURAN	3400	UG/L	140214	50
MW7	TETRAHYDROFURAN	830	UG/L	140808	50
OBS-1C	COBALT-DISSOLVED AS CO	96.2	UG/L	110824	40
OBS-1C	COBALT-DISSOLVED AS CO	53.7	UG/L	120815	40
P17B	VINYL CHLORIDE	0.21	UG/L	110824	0.2
P17C	VINYL CHLORIDE	3.7	UG/L	110119	0.2
P17C	VINYL CHLORIDE	3.6	UG/L	110119	0.2
P17C	VINYL CHLORIDE	3.8	UG/L	110216	0.2
P17C	VINYL CHLORIDE	3.4	UG/L	110216	0.2
P17C	VINYL CHLORIDE	2.7	UG/L	110310	0.2
P17C	VINYL CHLORIDE	2.8	UG/L	110310	0.2
P17C	VINYL CHLORIDE	5.0	UG/L	110421	0.2
P17C	VINYL CHLORIDE	3.1	UG/L	110421	0.2
P17C	VINYL CHLORIDE	3.1	UG/L	110513	0.2
P17C	VINYL CHLORIDE	3.8	UG/L	110513	0.2
P17C	VINYL CHLORIDE	2.6	UG/L	110622	0.2
P17C	VINYL CHLORIDE	2.8	UG/L	110622	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	110721	0.2
P17C	VINYL CHLORIDE	2.9	UG/L	110721	0.2
P17C	VINYL CHLORIDE	2.9	UG/L	110824	0.2
P17C	VINYL CHLORIDE	3.2	UG/L	110824	0.2
P17C	VINYL CHLORIDE	3.7	UG/L	110922	0.2
P17C	VINYL CHLORIDE	3.1	UG/L	110922	0.2
P17C	VINYL CHLORIDE	2.4	UG/L	111019	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	111019	0.2
P17C	VINYL CHLORIDE	2.6	UG/L	111129	0.2
P17C	VINYL CHLORIDE	2.7	UG/L	111129	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	111221	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	111221	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	120125	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	120125	0.2
P17C	VINYL CHLORIDE	3.3	UG/L	120222	0.2
P17C	VINYL CHLORIDE	3.1	UG/L	120222	0.2
P17C	VINYL CHLORIDE	2.4	UG/L	120322	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	120322	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	120419	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	120419	0.2
P17C	VINYL CHLORIDE	2.9	UG/L	120530	0.2
P17C	VINYL CHLORIDE	2.8	UG/L	120530	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	120625	0.2
P17C	VINYL CHLORIDE	1.7	UG/L	120625	0.2

P17C	VINYL CHLORIDE	1.9	UG/L	120730	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	120730	0.2
P17C	VINYL CHLORIDE	2.4	UG/L	120815	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	120815	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	120919	0.2
P17C	VINYL CHLORIDE	1.5	UG/L	120919	0.2
P17C	VINYL CHLORIDE	1.6	UG/L	121129	0.2
P17C	VINYL CHLORIDE	2.1	UG/L	121129	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	130227	0.2
P17C	VINYL CHLORIDE	2.1	UG/L	130227	0.2
P17C	VINYL CHLORIDE	2.6	UG/L	130521	0.2
P17C	VINYL CHLORIDE	2.7	UG/L	130521	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	130822	0.2
P17C	VINYL CHLORIDE	1.7	UG/L	130822	0.2
P17C	VINYL CHLORIDE	1.9	UG/L	131120	0.2
P17C	VINYL CHLORIDE	1.6	UG/L	131120	0.2
P17C	VINYL CHLORIDE	1.2	UG/L	140213	0.2
P17C	VINYL CHLORIDE	2.2	UG/L	140213	0.2
P17C	VINYL CHLORIDE	1.5	UG/L	140513	0.2
P17C	VINYL CHLORIDE	1.4	UG/L	140513	0.2
P17C	VINYL CHLORIDE	1.1	UG/L	140808	0.2
P17C	VINYL CHLORIDE	2.0	UG/L	140808	0.2
P17C	VINYL CHLORIDE	0.87	UG/L	141119	0.2
P17C	VINYL CHLORIDE	0.90	UG/L	150219	0.2
P17C	VINYL CHLORIDE	0.79	UG/L	150513	0.2
P17C	VINYL CHLORIDE	0.83	UG/L	150828	0.2
P17C	VINYL CHLORIDE	0.70	UG/L	151103	0.2
P17C	VINYL CHLORIDE	0.65	UG/L	160211	0.2
P22B	ARSENIC-DISSOLVED AS AS	48.9	UG/L	110216	10
P22B	ARSENIC-DISSOLVED AS AS	47.6	UG/L	110824	10
P22B	ARSENIC-DISSOLVED AS AS	48.2	UG/L	120222	10
P22B	ARSENIC-DISSOLVED AS AS	46.4	UG/L	120815	10
P22B	ARSENIC-DISSOLVED AS AS	43.3	UG/L	130227	10
P22B	ARSENIC-DISSOLVED AS AS	43.2	UG/L	130822	10
P22B	ARSENIC-DISSOLVED AS AS	43.5	UG/L	140213	10
P22B	ARSENIC-DISSOLVED AS AS	29.0	UG/L	140808	10
P22B	ARSENIC-DISSOLVED AS AS	40.7	UG/L	150219	10
P22B	ARSENIC-DISSOLVED AS AS	31.5	UG/L	150827	10
P22B	ARSENIC-DISSOLVED AS AS	37.5	UG/L	160210	10
P22C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.2	MG/L AS N	110216	10
P22C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.0	MG/L AS N	110824	10
P22C	NITRITE PLUS NITRATE-DISSOLVED AS N	12.6	MG/L AS N	120222	10
P26B	VINYL CHLORIDE	0.23	UG/L	110216	0.2
P26B	VINYL CHLORIDE	0.23	UG/L	110512	0.2
P26B	VINYL CHLORIDE	0.20	UG/L	110824	0.2
P26B	VINYL CHLORIDE	0.26	UG/L	120222	0.2
P26B	VINYL CHLORIDE	0.23	UG/L	120530	0.2
P26B	VINYL CHLORIDE	0.20	UG/L	130227	0.2
P26B	VINYL CHLORIDE	0.22	UG/L	150219	0.2
P26B	VINYL CHLORIDE	0.40	UG/L	150605	0.2
P26B	VINYL CHLORIDE	0.27	UG/L	150827	0.2
P26B	VINYL CHLORIDE	0.26	UG/L	151103	0.2
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	10.4	MG/L AS N	110216	10
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.0	MG/L AS N	110512	10

P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	12.4	MG/L AS N	110824	10
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	14.4	MG/L AS N	111129	10
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.8	MG/L AS N	120222	10
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	10.0	MG/L AS N	120530	10
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	10.2	MG/L AS N	120815	10
P26C	NITRITE PLUS NITRATE-DISSOLVED AS N	10.4	MG/L AS N	121128	10
P33B	NITRITE PLUS NITRATE-DISSOLVED AS N	10.1	MG/L AS N	120222	10
P33B	NITRITE PLUS NITRATE-DISSOLVED AS N	10.5	MG/L AS N	120817	10
P33B	NITRITE PLUS NITRATE-DISSOLVED AS N	11.1	MG/L AS N	130822	10
P40D	NITRITE PLUS NITRATE-DISSOLVED AS N	10.4	MG/L AS N	110216	10
P40D	NITRITE PLUS NITRATE-DISSOLVED AS N	14.5	MG/L AS N	110825	10
P40D	NITRITE PLUS NITRATE-DISSOLVED AS N	12.6	MG/L AS N	120222	10
P40D	NITRITE PLUS NITRATE-DISSOLVED AS N	11.4	MG/L AS N	120817	10
P40D	NITRITE PLUS NITRATE-DISSOLVED AS N	11.1	MG/L AS N	130822	10
P40D	NITRITE PLUS NITRATE-DISSOLVED AS N	13.5	MG/L AS N	140808	10
P7B	TETRAHYDROFURAN	290	UG/L	110216	50
P7B	TETRAHYDROFURAN	2300	UG/L	110512	50
P7B	TETRAHYDROFURAN	210	UG/L	110824	50
P7B	TETRAHYDROFURAN	710	UG/L	111129	50
P7B	TETRAHYDROFURAN	1500	UG/L	120222	50
P7B	TETRAHYDROFURAN	2300	UG/L	120530	50
P7B	TETRAHYDROFURAN	1400	UG/L	120817	50
P7B	TETRAHYDROFURAN	490	UG/L	121129	50
P7B	VINYL CHLORIDE	1.9	UG/L	110216	0.2
P7B	VINYL CHLORIDE	2.2	UG/L	110216	0.2
P7B	VINYL CHLORIDE	1.4	UG/L	110512	0.2
P7B	VINYL CHLORIDE	1.6	UG/L	110512	0.2
P7B	VINYL CHLORIDE	1.5	UG/L	110824	0.2
P7B	VINYL CHLORIDE	1.6	UG/L	110824	0.2
P7B	VINYL CHLORIDE	1.8	UG/L	111129	0.2
P7B	VINYL CHLORIDE	1.6	UG/L	111129	0.2
P7B	VINYL CHLORIDE	2.2	UG/L	120222	0.2
P7B	VINYL CHLORIDE	2.0	UG/L	120222	0.2
P7B	VINYL CHLORIDE	1.1	UG/L	120530	0.2
P7B	VINYL CHLORIDE	1.7	UG/L	120530	0.2
P7B	VINYL CHLORIDE	1.3	UG/L	120817	0.2
P7B	VINYL CHLORIDE	1.5	UG/L	121129	0.2
P7B	VINYL CHLORIDE	1.1	UG/L	121129	0.2

Notes:
1) Results for vinyl chloride are reported from two different analytical methods, thus there may be two results associated with the same sample date.
2) Data qualifiers are not included.
3) Iron and Manganese results not included.

Z:\Projects\25212002.00\EPA MCL Analysis March 2016\[ES Exceedances DMZ 2016_0S_16.xlsx]Sheet1

Table 6

Analytical Results from Wells Downgradient of the Site Property where the Concentration Met Exceeded the Enforcement Standard (ES)

January 2011- March 2016

Sample Point	Analyte Name	Result	Units	Sample Date	ES
MW29	NITRITE PLUS NITRATE-DISSOLVED AS N	10.6	MG/L AS N	110823	10
OB8M	VINYL CHLORIDE	0.45	UG/L	110215	0.2
OB8M	VINYL CHLORIDE	0.61	UG/L	110512	0.2
OB8M	VINYL CHLORIDE	0.6	UG/L	110824	0.2
OB8M	VINYL CHLORIDE	1.6	UG/L	111129	0.2
OB8M	VINYL CHLORIDE	0.9	UG/L	120223	0.2
OB8M	VINYL CHLORIDE	0.72	UG/L	120530	0.2
OB8M	VINYL CHLORIDE	1.5	UG/L	120816	0.2
OB8M	VINYL CHLORIDE	1.5	UG/L	120816	0.2
OB8M	VINYL CHLORIDE	0.25	UG/L	121129	0.2
OB8M	VINYL CHLORIDE	1.3	UG/L	130227	0.2
OB8M	VINYL CHLORIDE	1.1	UG/L	130227	0.2
OB8M	VINYL CHLORIDE	1.6	UG/L	130521	0.2
OB8M	VINYL CHLORIDE	1.5	UG/L	130521	0.2
OB8M	VINYL CHLORIDE	1.4	UG/L	130821	0.2
OB8M	VINYL CHLORIDE	1.5	UG/L	130821	0.2
OB8M	VINYL CHLORIDE	1.4	UG/L	131120	0.2
OB8M	VINYL CHLORIDE	1.4	UG/L	131120	0.2
OB8M	VINYL CHLORIDE	1.1	UG/L	140213	0.2
OB8M	VINYL CHLORIDE	2.0	UG/L	140213	0.2
OB8M	VINYL CHLORIDE	1.3	UG/L	140513	0.2
OB8M	VINYL CHLORIDE	1.6	UG/L	140513	0.2
OB8M	VINYL CHLORIDE	1.2	UG/L	140807	0.2
OB8M	VINYL CHLORIDE	1.9	UG/L	140807	0.2
OB8M	VINYL CHLORIDE	1.1	UG/L	141119	0.2
OB8M	VINYL CHLORIDE	1.4	UG/L	141119	0.2
OB8M	VINYL CHLORIDE	0.91	UG/L	150218	0.2
OB8M	VINYL CHLORIDE	1.2	UG/L	150218	0.2
OB8M	VINYL CHLORIDE	1.4	UG/L	150513	0.2
OB8M	VINYL CHLORIDE	1.1	UG/L	150513	0.2
OB8M	VINYL CHLORIDE	0.86	UG/L	150827	0.2
OB8M	VINYL CHLORIDE	1.1	UG/L	151103	0.2
OB8M	VINYL CHLORIDE	0.90	UG/L	151103	0.2
OB8M	VINYL CHLORIDE	0.67	UG/L	160210	0.2
P27B	ARSENIC-DISSOLVED AS AS	13.3	UG/L	110215	10
P27B	ARSENIC-DISSOLVED AS AS	15	UG/L	110824	10
P27B	ARSENIC-DISSOLVED AS AS	13.7	UG/L	120223	10
P27B	ARSENIC-DISSOLVED AS AS	13.9	UG/L	120816	10
P27B	ARSENIC-DISSOLVED AS AS	11.9	UG/L	130228	10
P27B	ARSENIC-DISSOLVED AS AS	12.7	UG/L	130821	10
P27B	ARSENIC-DISSOLVED AS AS	14.3	UG/L	140214	10
P27B	ARSENIC-DISSOLVED AS AS	14.2	UG/L	140807	10
P27B	ARSENIC-DISSOLVED AS AS	14.3	UG/L	150218	10
P27B	ARSENIC-DISSOLVED AS AS	14.2	UG/L	150828	10
P27B	ARSENIC-DISSOLVED AS AS	11.8	UG/L	160210	10
P28C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.3	MG/L AS N	110824	10
P28C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.1	MG/L AS N	120816	10
P28C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.6	MG/L AS N	130821	10
P30C	NITRITE PLUS NITRATE-DISSOLVED AS N	11.2	MG/L AS N	110823	10
P32B	VINYL CHLORIDE	0.23	UG/L	110215	0.2
P32B	VINYL CHLORIDE	0.22	UG/L	111129	0.2
P32B	VINYL CHLORIDE	0.27	UG/L	120223	0.2
P32B	VINYL CHLORIDE	0.25	UG/L	120531	0.2
P32B	VINYL CHLORIDE	0.2	UG/L	120816	0.2
P32B	VINYL CHLORIDE	0.22	UG/L	130521	0.2
P35B	NITRITE PLUS NITRATE-DISSOLVED AS N	13.4	MG/L AS N	110825	10
P35B	NITRITE PLUS NITRATE-DISSOLVED AS N	13.8	MG/L AS N	130821	10

Notes:

Results for vinyl chloride are reported from two different analytical methods, thus there may be two results associated with the same sample date.

Iron and Manganese results are not presented.

Data qualifiers are not included.

Table 7

Dissolved Oxygen Levels for Wells on the Site Property
February 2011- August 2015

	MW7	MW33	P33B	P17B	P17C	P26B	MW26
Feb-11	2.5	3.5	4.2	4.6	1.4	5	3.1
Aug-11	2.7	4.4	7.5	4.3	1.5	8.1	5
Feb-12	3.2	2.1	5.1	3.7	1.6	6.5	3.4
Aug-12	3.2	3.9	6.7	6	1.6	8.4	3
Feb-13	2	2.3	NS	5.7	1	5.9	2.8
Aug-13	2.3	2.5	4.7	4.2	3.5	6.2	3.4
Feb-14	3.1	4.5	NS	10	1.3	8.2	4.1
Aug-14	3.6	3.6	6.4	7.9	3.4	8.2	6.8
Feb-15	6.9	2.5	NS	3.8	3.4	2.4	1.2
May-15	2.1	NS	NS	4	3.3	2.6	NS
Aug-15	10.2	4.6	6.9	5.9	1.7	3.7	2.7
5 Year Average	**3.8**	**3.4**	**5.8**	**5.5**	**2.2**	**5.9**	**3.6**
2015 Average	**4.5**	**2.5**	**NS**	**3.9**	**3.4**	**2.5**	**1.2**

Dissolved Oxygen concentrations in mg/L

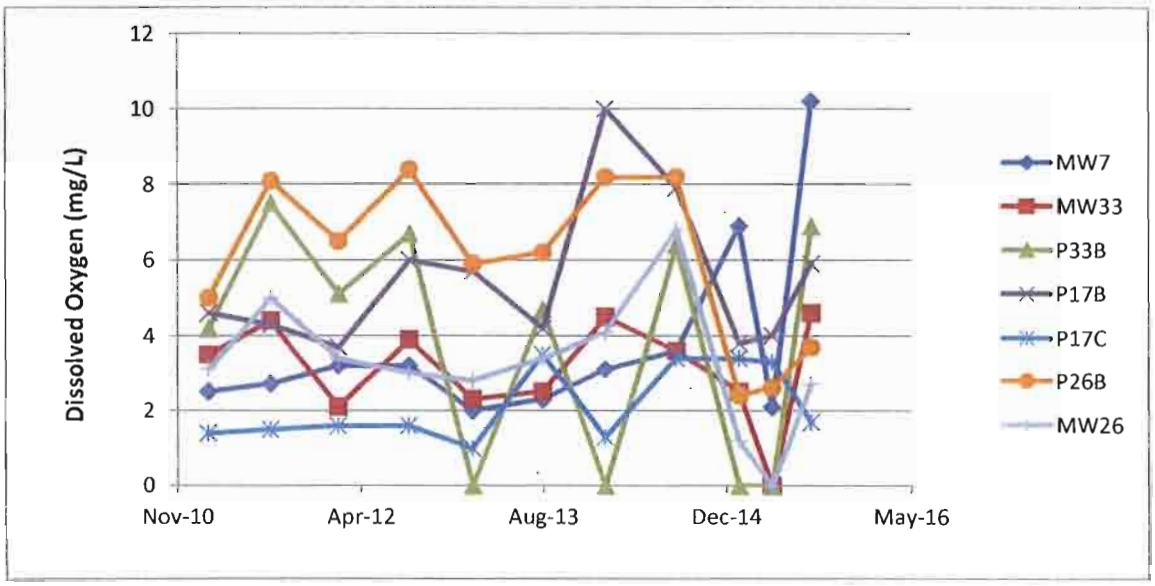


Table 8: Chronology of Significant Site Events at the Hagen Farm Site

EVENT	DATE
Site Operated as Sand and Gravel Pit	Prior to Late 1950s
Waste Disposal occurs in the Gravel Pit	Late 1950s to mid-1960s
Property purchased by Orrin Hagen	November 1977
WDNR sampled private groundwater wells in response to complaints	November 1980 - 1986
WDNR brings an enforcement against WMWI and Uniroyal for public nuisance. A civil suit was also filed by residents and was settled in 1986.	1983
Site Proposed on NPL	September 18, 1985
Site Listed on NPL and WDNR dismisses its enforcement action against Uniroyal and WMWI	July 22, 1987
AOC Signed by WMWI to conduct the RI/FS	July 27, 1987
RI/FS Conducted for the entire site	July 1988 - April 1992
ROD Signed for OU 1- SCOU	September 17, 1990
ICs and access restrictions (Deed Restrictions, Site Fence) Implemented	1991 - 1993
EPA issues UAO to PRP for SCOU RD/RA work	March 1991
ESD signed for SCOU to refine ISVE cleanup standard	April 1991
Remedial Design for SCOU Cap Completed	August 1991
RI/FS for GCOU Completed	April 1992
Construction Completion of SCOU Cap	May 1992
Final Inspection of SCOU Cap	July 28, 1992
ROD Signed for OU 2- GCOU	September 30, 1992
UAO to PRP for GCOU RD/RA Work	November 25, 1992
RD for SCOU In-Situ Vapor Extraction (ISVE) System Completed	September 1993

EVENT	DATE
Construction of the SCOU ISVE system Completed	January 1994
Final Inspection of SCOU ISVE system	January 12, 1994
RD for GCOU Completed	May 19, 1995
Construction of the GCOU Completed	April 1996
Final Inspection of GCOU and Entire Site	April 17, 1996
First Five-Year Review Completed	August 14, 1996
ESD for GCOU Signed	August 27, 1996
Preliminary Closeout Report Signed (site-wide construction completed)	August 27, 1996
EPA Approval of Low-Flow Air Sparging System Implementation Plan	January 22, 2001
Second Five-Year Review Signed	September 21, 2001
Temporary shut-down of pump & treat system	September 4, 2001
Start of Shallow Air Sparging System Operation	January 2001
Start of Expanded, Deeper Air Sparging System Operation	April 2005
Third Five Year Review Report Completed	September 21, 2006
Implementation of Enhanced Air Sparge System	April 2007
Fourth Five-Year Review Report completed	September 21, 2011
Installation of three additional deep air sparge points	November 2014

Appendix 2

Institutional Controls Documentation

Parcel Number - 026/0511-103-9500-0

Current

< Parcel Parents

Summary Report

Parcel Summary More +

Municipality Name	TOWN OF DUNKIRK
Parcel Description	SEC 10-5-11 PRT SE1/4SW1/4 NE OF HWY
Owner Name	WASTE MANAGEMENT OF WI INC
Primary Address	2298 COUNTY HIGHWAY A
Billing Address	PO BOX 1450 CHICAGO IL 60690-1450

Assessment Summary More +

Assessment Year	2016
Valuation Classification	G2 G5
Assessment Acres	16.500
Land Value	$10,800.00
Improved Value	$0.00
Total Value	$10,800.00

Show Valuation Breakout

Open Book

Open Book dates have passed for the year

Starts: ~~04/18/2016 - 01:00 PM~~
Ends: ~~04/18/2016 - 03:00 PM~~

About Open Book

Board Of Review

Board of Review dates have passed for the year

Starts: ~~05/09/2016 - 02:00 PM~~
Ends: ~~05/09/2016 - 04:00 PM~~

About Board Of Review

Parcel Maps

DCiMap Google Map Bing Map

Tax Summary (2015) More +

E-Statement E-Bill E-Receipt

Assessed Land Value	Assessed Improvement Value	Total Assessed Value
$10,800.00	$0.00	$10,800.00
Taxes:		$174.63
Lottery Credit(-):		$0.00
First Dollar Credit(-):		$0.00
Specials(+):		$8.67
Amount:		$183.30

Show Assessment Contact Information

Zoning Information

For the most current and complete zoning information, contact the Division of Zoning.

Zoning
A-1(EX)
A-2 4.94 Acres DCPREZ-0000-06446

Zoning District Fact Sheets

District Information

Type	State Code	Description
REGULAR SCHOOL	5621	STOUGHTON SCHOOL DIST
TECHNICAL COLLEGE	0400	MADISON TECH COLLEGE

Recorded Documents

Doc. Type	Date Recorded	Doc. Number	Volume	Page
WD	04/12/1994		9996	17

DocLink

DocLink is a feature that connects this property to recorded documents. If you'd like to use DocLink, all you need to do is select a link in this section. There is a fee that will require either a credit card or user account. Click here for instructions.

By Parcel Number: 0511-103-9500-0
By Owner Name: WASTE MANAGEMENT OF WI INC

Document Types and their Abbreviations
Document Types and their Definitions

Parcel Number - 026/0511-103-8000-7

Current

< Parcel Parents

Summary Report

Parcel Summary	More +
Municipality Name	TOWN OF DUNKIRK
Parcel Description	SEC 10-5-11 NE1/4SW1/4
Owner Name	WASTE MANAGEMENT OF WI INC
Primary Address	2298 COUNTY HIGHWAY A
Billing Address	PO BOX 1450 CHICAGO IL 60690-1450

Assessment Summary	More +
Assessment Year	**2016**
Valuation Classification	G5 G6
Assessment Acres	39.700
Land Value	$27,900.00
Improved Value	$0.00
Total Value	$27,900.00

Show Valuation Breakout

Open Book

Open Book dates have passed for the year

Starts: ~~04/18/2016 - 01:00 PM~~

Ends: ~~04/18/2016 - 03:00 PM~~

About Open Book

Board Of Review

Board of Review dates have passed for the year

Starts: ~~05/09/2016 - 02:00 PM~~

Ends: ~~05/09/2016 - 04:00 PM~~

About Board Of Review

Parcel Maps

DCiMap | Google Map | Bing Map

Tax Summary (2015) More +

E-Statement | E-Bill | E-Receipt

Assessed Land Value	Assessed Improvement Value	Total Assessed Value
$27,900.00	$0.00	$27,900.00
Taxes:		$451.10
Lottery Credit(-):		$0.00
First Dollar Credit(-):		$0.00
Specials(+):		$0.00
Amount:		$451.10

Show Assessment Contact Information

Zoning Information

For the most current and complete zoning information, contact the Division of Zoning.

Zoning
A-1(EX)
A-2 13.37 Acres DCPREZ-0000-06446

Zoning District Fact Sheets

District Information

Type	State Code	Description
REGULAR SCHOOL	5621	STOUGHTON SCHOOL DIST
TECHNICAL COLLEGE	0400	MADISON TECH COLLEGE

Recorded Documents

Doc. Type	Date Recorded	Doc. Number	Volume	Page
WD	04/12/1994		9996	17

DocLink

DocLink is a feature that connects this property to recorded documents. If you'd like to use DocLink, all you need to do is select a link in this section. There is a fee that will require either a credit card or user account. Click here for instructions.

By Parcel Number: 0511-103-8000-7
By Owner Name: WASTE MANAGEMENT OF WI INC

Document Types and their Abbreviations
Document Types and their Definitions

Parcel Number - 026/0511-103-8905-0

Current

< Parcel Parents

Summary Report

Parcel Summary More +

Municipality Name	TOWN OF DUNKIRK
Parcel Description	LOT 1 CSM 10610 CS63/33&35-12/4/2002 F/K...
Owner Name	WASTE MANAGEMENT OF WI INC
Primary Address	**No parcel address available.**
Billing Address	PO BOX 1450 CHICAGO IL 60690-1450

Assessment Summary More +

Assessment Year	**2016**
Valuation Classification	G5
Assessment Acres	3.732
Land Value	$1,300.00
Improved Value	$0.00
Total Value	$1,300.00

Show Valuation Breakout

Open Book

Open Book dates have passed for the year

Starts: ~~04/18/2016 - 01:00 PM~~

Ends: ~~04/18/2016 - 03:00 PM~~

About Open Book

Board Of Review

Board of Review dates have passed for the year

Starts: ~~05/09/2016 - 02:00 PM~~

Ends: ~~05/09/2016 - 04:00 PM~~

About Board Of Review

Parcel Maps

DCiMap

Tax Summary (2015) More +

E-Statement E-Bill E-Receipt

Assessed Land Value	**Assessed Improvement Value**	**Total Assessed Value**
$1,300.00	$0.00	$1,300.00
Taxes:		$21.02
Lottery Credit(-):		$0.00
First Dollar Credit(-):		$0.00
Specials(+):		$0.00
Amount:		$21.02

Show Assessment Contact Information

Zoning Information

For the most current and complete zoning information, contact the Division of Zoning.

Zoning
A-2 3.6 Acres DCPREZ-0000-06446

Zoning District Fact Sheets

District Information

Type	State Code	Description
REGULAR SCHOOL	5621	STOUGHTON SCHOOL DIST
TECHNICAL COLLEGE	0400	MADISON TECH COLLEGE

Recorded Documents

Doc. Type	Date Recorded	Doc. Number	Volume	Page
QCD	01/28/2003	3641788		

Show More

DocLink

DocLink is a feature that connects this property to recorded documents. If you'd like to use DocLink, all you need to do is select a link in this section. There is a fee that will require either a credit card or user account. Click here for instructions.

By Parcel Number: 0511-103-8905-0
By Owner Name: WASTE MANAGEMENT OF WI INC

Document Types and their Abbreviations
Document Types and their Definitions

WASTE MANAGEMENT

Closed Sites Management Group
W124N9355 Boundary Road
Menomonee Falls, WI 53051
(262) 253-8626
(262) 255-3798 Fax

May 16, 2011

Ms. Sheila A. Sullivan
Remedial Project Manager
U.S. EPA Region 5
Waste Management Division
77 West Jackson Boulevard, HSRL-6J
Chicago, Illinois 60604

Re: Institutional Controls
Hagen Farm Superfund Site

Dear Ms. Sullivan:

This is to follow up on our phone conversation on Friday, May 13, 2011 regarding the Institutional Controls in place for the Hagen Farm Superfund site. To my knowledge there have been no changes in the Institutional Controls that were established for the site sine the last five-year review.

Please call me at 262-532-4024 if you have any questions.

Sincerely,
Waste Management of Wisconsin, Inc.

Michael L. Peterson

Michael L. Peterson, P.E.
District Manager – Closed Sites

cc: Mr. Gary Edelstein – WDNR
Mike Prattke – BT Squared, Inc.
Lisa Zebovitz – NGE

WASTE MANAGEMENT
Closed Sites Management Group
N96 W13600 County Line Road
Germantown, Wisconsin 53022
(262) 253-8626
(262) 255-3798 Fax

June 9, 2006

Mr. Ross del Rosario
Remedial Project Manager
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: Hagen Farm Institutional Control Study

Dear Mr. del Rosario:

Enclosed is a report titled "Institutional Control Study" for the Hagen Farm Superfund site as requested in your April 19, 2006 letter. We have answered your inquiries to the best of our ability based on the information in our files.

If you require additional information or have any questions, please do not hesitate to call me at 262-532-4024.

Sincerely,
Waste Management of Wisconsin, Inc.

Michael L. Peterson

Michael L. Peterson, P.E.
Project Manager – Closed Sites

Enclosures

cc: Gary Edelstein - WDNR
Jeffrey Cahn – USEPA – w/o enclosures
Lisa Zebovitz

INSTITUTIONAL CONTROL STUDY

1. Current Map of Restricted Areas (areas that do not support unlimited use and unrestricted exposure):

Provide map(s) that identify the current boundaries of the restricted areas (areas that do not support unlimited use and unrestricted exposure), boundaries of areas covered by exiting ICs, boundaries of the Site, streets, easements, encumbrances, property ownership, assessor's parcel number or other recorded plat or survey information.

Waste Management of Wisconsin, Inc. (WMWI) has completed an updated survey of the site. An updated site map is enclosed. Deed restrictions have been placed on all the property owned by WMWI at the Hagen Farm site. The fenced-in area represents the area where remedial activities were conducted pursuant to the Record of Decision.

The following is a list of parcels owned by WMWI:

0511-103-8905-0
0511-103-8000-7
0511-103-9500-0

Note that parcel 0511-103-8905-0 is within the fenced area of the site but is not impacted or part of the remediated area.

2, GIS Information:

Provide Geographic Information System (GIS) coordinates that shows the current boundaries of restricted areas (areas that do not support UU/UE), areas covered by existing institutional controls, boundaries of the Site, easements and other encumbrances. Identify the accuracy of the coordinates (i.e. within 0.01 feet). Please format the coordinates of the restricted areas, areas covered by existing ICs and Site boundaries into an ESRI polygon-shape file. The shape file shall be projected into the UTM, NAD 83 projection system. Please identify the UTM zone. Provide an attribute name in the shape file for each polygon submitted. For example: "site boundary", "no restrictions", "recreational only", "industrial only."

Attached is a copy of the coordinate data for the wells, fencing and building at the site, in NAD 83 format. A revised site map is also enclosed as indicated above. The restricted area is within the fenced area.

3. Documentation on Existing Proprietary Controls:

Provide copies by the Recorder of Deeds (or other appropriate land records office) showing clerk's recording stamps of existing proprietary controls (environmental restrictive covenants/easements etc.) for the restricted areas. Provide map and GIS information that depicts the boundaries of the restricted area covered by the existing proprietary control, streets, easements, property ownership and parcel numbers.

Copies of deed restrictions are attached in the ALTA Commitment. All of the property owned by WMWI at the Hagen Farm site is subject to these deed restrictions.

The electrical easements to the homes are probably no longer applicable as the homes have been removed.

4. Legal Assessment of Existing Proprietary Controls

a. Title Evaluation

i) Obtain from a title company a title insurance commitment using ALTA Commitment form 1982 as amended "for information only purposes" for the restricted areas. Include copies of documents referenced in the title commitment. Include copies of encumbrances, utility right of ways, leases and subleases impacting restricted areas.

ALTA Commitment is attached.

ii) Does the title commitment identify/exempt existing proprietary controls for restricted areas?

Yes.

iii) Provide map and GIS information that identifies parcel numbers and boundaries of current encumbrances (such as utility easements) that impact restricted areas. Discuss efforts to obtain subrogation agreements for such encumbrances. Include copies of subrogation agreements that have or will be obtained for such encumbrances.

The ALTA Commitment identifies the easements which affect the property owned by WMWI. The restricted area does not appear to be impacted by any of the easements other than those installed as part of the remedial action (private water and sewer systems).

b. Other Assessment:

Assess whether existing proprietary controls have been executed in a legally enforceable manner. Discuss whether a grantee or prior owner "holds" the proprietary controls. Discuss whether the current owner is under an obligation for compliance with the land and groundwater restrictions described above. Discuss whether existing proprietary controls "run with the land" (i.e. restrictions are binding on subsequent property owners). Discuss whether existing proprietary controls implement the IC objectives/performance standards described above. Assess whether the boundaries of the area covered by existing proprietary controls match the boundaries of restricted areas based on current information.

WMWI is the current owner of the property and is responsible for operation and maintenance of the remedial actions completed at the site. A review of the deed restriction indicates that they run with the land. The deed restrictions apply to all the property owned by WMWI at the site. The restricted area is a smaller area than the property boundary.

5. Documentation on Government Controls:

Identify and provide a current, dated and official copy of existing governmental controls [ordinance, statutes etc.] that implement the IC objectives/performance standards for the restricted areas described above. Discuss whether the governmental control restricts all areas of unlimited use and unrestricted exposure at the Site. Does the governmental control contain a figure showing the current boundaries of the restricted areas based on the most recent information?

Wisconsin Department of Natural Resources (WDNR) regulations prohibit installing a water supply well in a known contaminated aquifer or within 1,200 ft. of a landfill, unless WDNR grants a variance. Enforcement of the water supply well prohibition is dependant on the property owner or well driller contacting WDNR prior to well installation.

To our knowledge no new wells have been installed except for a replacement well on the Sundby property. The Hagen Farm site is listed as a Superfund Site on the WDNR database which is reviewed in conjunction with the permitting of new water supply wells.

6. Discuss compliance with Institutional Controls:

Discuss whether the property is being used in a manner consistent with the restrictions. Summarize results of site inspection and interviews with owners,

lessees and other holders of property interests. Are owners, lessees and other holders of property interests aware of and complying with the restrictions? Has land use or expected land use on or near the site changed? Are there any new developments, either constructed or planned, in the area? Are there any new construction permits pending? Does the property owner have any plans to sell or transfer the property?

The Institutional Controls are functioning as anticipated.

There are no signs of trespass onto the facility.

Only one new house has been built and is approximately ¼ mile east of the site. It is unknown if a water well permit for the house was requested.

WMWI sold a portion of the property on the west side of the site to a developer. The sales agreement required city sewer and water be provided for any future development.

7. Assess Monitoring:

Discuss how, when and by whom compliance with the institutional controls is monitored. Discuss whether the results of the IC monitoring are routinely and promptly shared with EPA and the State. Discuss whether there are measures in place to ensure that modifications to the restriction require EPA and the State approval.

RMT, WMWI's Consultant, is onsite at least once a month to conduct maintenance on the GCOU and SCOU treatment systems. The site is checked for any signs of trespass. WMWI also conducts periodic inspections of the site. This inspection includes checking the fencing and surrounding areas for unusual condition or activities.

8. Discuss effectiveness of Institutional Controls:

Discuss whether existing ICs are preventing exposure. Discuss whether there is potential human or ecological exposure. Discuss whether land and/or resource use has changed since execution of the ROD. If so, what are the plans regarding property's ICs. Discuss how the current land and resource uses relate to exposure assumptions and risk calculations. Discuss whether there are any unintended consequences resulting from the use of a particular restriction. Assess whether the controls are effective in the short term in maintaining land/groundwater restrictions above, maintaining performance standards and preventing exposure. Assess whether the controls will be effective in the long term in maintaining the land and groundwater restrictions above, maintaining remedy performance standards and preventing exposure.

The institutional controls are functioning as intended. There have been no signs of trespass or use of the site that would impact human health or the environment. There have been no changes to land use since execution of the ROD, except for a portion of buffer land being sold to developers. As discussed above, the sales agreement requires city sewer and water be provided for future development. The controls prohibit any groundwater use that could cause exposure to humans or animals. They also restrict any activity which might interfere with the remedial work as well as other intrusive activities. These controls are effective and should continue to be effective in maintaining land and groundwater restrictions, maintaining remedies, performance standards and preventing exposure.

9. Recommendations:

Propose any corrections to existing institutional controls that are necessary to ensure that the land and groundwater use restrictions described above are implemented correctly, are maintained and will be protective in the short term and the long term. Propose controls for remaining areas that do not support unlimited use and unrestricted exposure but are not covered by existing controls. Include a title commitment for any proposed proprietary control. Propose subrogation agreements for any encumbrance that negatively impacts restricted areas. Propose monitoring requirements and modifications to the Operation and Maintenance. Plan to ensure that ICs are maintained and complied with in the short term and in the long term. The monitoring plan must include a schedule and an annual certification to EPA that ICs are in place and remain effective.

No changes necessary.

Hagen Farm Site
Well Data
5/25/06

WELL ID	Northing	Easting	Ground	Top of Casing	Top of PVC
AS 01	331844.7	2186876.6	870.25	874.24	873.80
AS 02	331865.4	2186920.5	869.29	872.98	872.61
AS 03	331883.9	2186977.0	866.91	870.30	869.92
AS 04	331914.8	2187028.5	867.49	869.29	868.89
AS 05	331943.2	2187081.5	867.95	871.43	871.24
AS 06	331973.6	2187137.8	865.95	869.24	869.19
AS 07	331850.5	2186906.8	869.16	872.87	872.86
AS 08	331860.8	2186954.6	867.24	870.61	870.63
AS 09	331911.0	2187003.2	867.57	870.12	870.18
AS 10	331922.3	2187059.8	867.66	870.01	867.64
GP 1	332130.3	2186923.8	884.94	887.83	
GP 2	332096.2	2186913.0	885.19	887.91	
GP 3	332052.7	2186903.6	884.72	887.53	
GP 4	332023.8	2186895.4	884.40	887.29	
GP 5D	332145.0	2186916.5	885.36	888.32	888.05
GP 5M					887.91
GP 5S					887.51
GP 6	332167.5	2186882.8	886.64	889.21	
GP 7	332194.5	2186841.4	888.12	890.81	
GP 8	332221.1	2186799.8	888.59	891.39	
GP 9	332294.5	2186756.3	888.38	892.28	
GP 10	332295.2	2186918.4	885.69	889.31	
GP 11	332275.8	2187071.2	879.19	883.19	
GP 12	332267.3	2187063.6	879.27	883.49	
GP 13	332242.4	2187037.6	880.36	884.11	
GP 14	332219.5	2187016.6	880.21	883.88	
GP 15	332212.4	2187008.0	880.59	884.27	
GP 16	332288.1	2187129.7	871.30	874.40	
GP 17	332169.5	2186755.0	887.98	891.90	
GP 18	332163.6	2186972.1	883.41	886.98	
GP 19	332021.9	2186792.6	887.04	890.80	
GP 20	332009.7	2187042.3	870.59	874.53	
GP 21	332147.9	2187113.8	869.63	872.77	
GP 22	331894.4	2186938.7	869.97	874.09	
GP 23	331847.7	2186801.7	874.53	878.54	
GP 24	331979.5	2186669.5	882.23	885.85	
GP 25	332168.6	2186664.7	883.10	886.79	
GP 26	332333.2	2186670.0	885.42	889.24	
GP 27	332553.7	2186748.2	881.90	885.70	
GP 28	332640.1	2186942.6	876.76	880.44	
GP 29	332482.9	2187089.0	875.54	879.62	
IG 04	332662.8	2187160.3	872.41	875.43	874.86

Horizontal datum is NAD 83
Vertical datum is NAVD 88

Hagen Farm Site
Well Data
5/25/06

WELL ID	Northing	Easting	Ground	Top of Casing	Top of PVC
IG 01	332743.0	2187224.9	874.31	877.49	876.79
IG 02	332822.4	2187176.0	876.03	878.92	878.45
IG 03	332742.1	2187124.7	876.61	879.81	879.07
MH north	331863.0	2187127.7		866.22	
MH south	331858.6	2187126.8		866.14	
MW 7	332269.4	2187157.5	875.66	877.96	877.32
MW 22	332036.0	2187006.2	880.00	883.62	882.95
MW 23	332184.3	2186650.2	885.00	889.50	889.25
MW 26	331823.2	2186581.3	881.79	883.96	883.76
MW 27	331330.4	2186837.4	870.18	872.84	872.38
MW 28	331998.7	2186601.8	862.03	865.21	
MW 30	331453.5	2187067.8	866.50	869.50	869.35
MW 32	330421.4	2186594.3	858.02	861.36	860.93
MW 33	331819.8	2187253.6	864.30	866.97	866.71
MW 35	329815.4	2186671.0	861.89	865.30	865.04
OB 11M	331076.8	2186686.5	867.53	869.84	869.48
OB 8M	330012.0	2186198.6	860.71	863.78	863.54
OBS 1A	331815.5	2186976.8	866.69	869.82	869.23
OBS 1B	331821.4	2186977.1	866.61	869.85	869.25
OBS 1C	331819.4	2186971.3	866.23	869.68	869.38
OBS 2C	331534.8	2186872.9	863.65	865.93	865.81
P 7B	332267.3	2187157.0	875.78	877.89	877.63
P8 north	332031.8	2187108.9	869.19	871.10	
P8 south	332026.7	2187107.6	869.13	871.26	
P 17B	331629.9	2186978.6	863.22	865.79	865.27
P 17C	331633.4	2186969.5	863.63	867.34	866.98
P 17DR	331693.3	2187012.5	863.31	865.81	865.46
P 22B	332048.8	2186996.8	880.91	884.09	883.93
P 22C	332057.3	2187002.8	881.14	884.26	883.84
P 26B	331826.8	2186587.5	883.96	883.74	883.29
P 26C	331832.8	2186585.4	881.75	883.95	883.80
P 27B	331336.0	2186826.1	870.13	872.64	872.19
P 28B	330995.2	2186621.6	861.90	864.28	864.01
P 28C	331002.9	2186615.9	861.38	863.43	863.24
P 30B	331449.0	2187073.6	866.68	868.85	868.26
P 30C	331453.9	2187078.9	866.44	867.89	867.23
P 32B	330424.7	2186585.8	857.55	860.68	860.41
P 33B	331822.5	2187244.0	864.14	866.90	866.44
P 35B	329809.8	2186669.3	861.73	865.16	864.78
P 40D	331763.5	2186756.1	875.73	878.77	

Horizontal datum is NAD 83
Vertical datum is NAVD 88

NAD 83 Coordinate Values of Fence

Point Nos.	Northings	Eastings	Elevations	Code
2017	332863.61100	2187293.50900	874.72000	fence
2018	332863.55300	2186656.68200	884.93000	fence
2019	332572.65800	2186657.13200	895.77000	fence
2022	331444.24600	2187292.54700	866.52000	fence
2023	331530.28300	2187126.18800	865.71000	fence gate
2024	331541.19200	2187105.38800	865.52000	fence gate
2026	331885.61800	2186426.61200	879.37000	fence
2028	332570.68600	2186444.68200	899.59000	fence

A.L.T.A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE A

Prepared for: CHICAGO TITLE INSURANCE COMPANY cc: NBU#0202601164
171 N. CLARK ST., #04ND
CHICAGO, IL 60601

Attention: KATIE MORAN

Commitment No.:	Office File No.:	Effective Date:
C-165017-A		May 15, 2006 at 5:59 A.M.

1. Policy or Policies to be issued:

ALTA OWNER'S POLICY - 1992 Amount $ 1.00

Proposed Insured:
- - - - - - - -

ALTA LOAN POLICY - 1992 Amount $ - - - - - - - -
Proposed Insured:

- - - - - - - -

2. Title to the fee simple estate or interest in the land described or referred to in this Commitment is at the effective date hereof of record in

WASTE MANAGEMENT OF WISCONSIN, INC.

3. The land referred to in this Commitment is described as follows:

(See "EXHIBIT A" attached hereto and made a part hereof)

"EXHIBIT A"

Chicago Title Insurance Company

Office File Number:

Commitment Number: C-165017-A

PARCEL I:

Lot One (1) of Certified Survey Map No. 10610 recorded in the DANE COUNTY, Wisconsin Register of Deeds Office in Volume 63 of Certified Survey Maps, page 34, as Document No. 3604254, in the Town of Dunkirk, Dane County, Wisconsin.

TAX ROLL PARCEL NUMBER: 026-0511-103-8905-0

PARCEL II:

The East 1/2 of the Southwest 1/4 of Section 10, Township 5 North, Range 11 East, in the Town of Dunkirk, Dane County, Wisconsin, except that part lying South of County Trunk Highway "A".

TAX ROLL PARCEL NUMBERS: 026-0511-103-8000-7
026-0511-103-9500-0

A.L.T.A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE B - SECTION 1

Office File Number:

Commitment Number: C-165017-A

Requirements

The following are the requirements to be complied with:

a. Payment to or for the account of the grantors or mortgagors of the full consideration for the estate or interest to be insured.

b. Payment to the Company of the premiums, fees and charges for the policy.

c. Proper instrument(s) creating the estate or interest to be insured must be executed and duly filed for record, to wit:

NONE

****

PARCEL I:
2005 net real estate taxes: $ 9.96 (paid in full)

PARCEL II:
2005 net real estate taxes: $ 200.93 (paid in full)
2005 net real estate taxes: $ 84.69 (paid in full)

A. L. T. A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE B - SECTION 2

Office File Number:

Commitment Number: C-165017-A

Exceptions

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company.

1. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.

   NOTE: Exception 1. will be removed only if no intervening matters appear of record between the effective date of this commitment and the recording of the instruments called for at item (c) of Schedule B-I, or if a gap endorsement is issued in conjunction with this commitment and the requirements for the issuance of "gap" coverage as described in the endorsement are met, including the payment of the premium.

2. Special taxes or assessments, if any.

   NOTE: Exception 2. will be removed only if the Company receives written evidence from the municipality that there are no special assessments against the land, or that all such items have been paid in full.

3. Liens, hook-up charges or fees, deferred charges, reserve capacity assessments, impact fees, or other charges or fees due and on the development or improvement of the land, whether assessed or charged before or after the Date of the Policy.

   The Company assures the priority of the lien of the insured mortgage over any such lien, charges or fee.

   NOTE: Exception 3. will be removed only if the Company receives (1) written evidence from the municipality that there are no deferred charges, hookup fees, or other fees or charges attaching to the property; (2) evidence that the land contains a completed building; and (3) a statement showing that the land has a water and sewer use account. If the land is vacant, this exception will not be removed.

4. Any lien, or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

   NOTE: Exception 4. will be removed only if the Company receives the Construction Work and Tenants Affidavit on the form furnished by the Company and the following is true:

   NO WORK DONE: The Affidavit must establish that there has been no lienable construction work in the previous six months.

   REPAIR WORK DONE: If repair work has been done on an existing structure in the last six months, the affidavit must accurately disclose all parties who have done lienable work in the last six months, and have attached to it original full waivers of lien from each person or company

   NEW CONSTRUCTION: If the property contains a newly-built structure, the Affidavit must incorporate a complete list of all parties who have done lienable work in the last six months, and have attached to it original full waivers of lien from each person or company. If Exception 4. is removed, it will be replaced by the following exception: "Any construction lien claim by a party not shown on the Construction Work and Tenants Affidavit supplied to the Company."

5. Rights or claims of parties in possession not shown by the public records.

   NOTE: Exception 5. will be removed only if the Company receives the Construction Work and Tenants Affidavit on the form furnished by the Company. If the affidavit shows that there are tenants, Exception e. will be replaced by an exception for the rights of the tenants disclosed by the Affidavit.

6. Encroachments, overlaps, boundary line disputes, and any other matters which would be disclosed by an accurate survey and inspection of the premises.

A.L.T.A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE B - SECTION 2

Office File Number:

Commitment Number: C-165017-A

Exceptions (continued)

7. Easements or claims of easements not shown by public records.

8. Any claim of adverse possession or prescriptive easement.

NOTE: Exception 6. 7. & 8. will be removed only if the Company receives an original survey which (1) has a current date, (2) is satisfactory to the Company, and (3) complies with current ALTA/ACSM Minimum Survey Standards or Wisconsin Administrative Code AE-7. If the survey shows matters which affect the title to the property, Exceptions f. g. & h. will be replaced by exceptions describing those matters.

9. General and special taxes for the year 2006 and subsequent years.

10. Public or private rights, if any, in such portion of the subject premises as may be presently used, laid out or dedicated in any manner whatsoever, for street, highway or alley purposes.

11. Easement, Restrictions and conditions contained in instrument recorded on March 18, 1954, as Document No. 869614.

12. Right of Way contained in instrument recorded September 13, 1949, as Document No. 785973.

13. Easement contained in instrument recorded on October 21, 1965, as Document No. 1145371.

14. Easement contained in instrument recorded on June 20, 1974, as Document No. 1401538.

15. Easement contained in instrument recorded on August 30, 1977, as Document No. 1535850.

16. Conditions contained in Affidavit recorded on August 18, 1981, as Document No. 1716619.

17. Deed restriction and conditions recorded on May 15, 1991, in Volume 15889 of Records, page 36, as Document No. 2262327.

18. Deed restriction and conditions recorded on August 26, 1991, in Volume 16585 of Records, page 1, as Document No. 2284942.

19. Deed restriction and conditions recorded on January 4, 1993, in Volume 24133 of Records, page 13, as Document No. 2428937.

20. Approval Document recorded on August 8, 1995, in Volume 30508 of Records, page 65, as Document No. 2694911.

21. Covenants and Conditions contained in Private Sewage System Maintenance Agreement recorded on October 5, 1995, in Volume 31005 of Records, page 15, as

(See continuation attached hereto.)

A.L.T.A. COMMITMENT

Chicago Title Insurance Company

Continuation of Schedule B-2

Office File Number:

Commitment Number: C-165017-A

Document No. 2709319.

22. Any law, ordinance or governmental regulation relating to environmental protection and the effect of any violation thereof unless notice of a lien, defect or encumbrance resulting from a violation has been recorded in the office of the Register of Deeds prior to the date of this commitment.

23. Rights of tenants under unrecorded leases, if any.

Schedule B-2 of this Policy consists of 3 pages.

A. L. T. A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE A

Prepared for: CHICAGO TITLE INSURANCE COMPANY cc: NBU#0202601164
171 N. CLARK ST., #04ND
CHICAGO, IL 60601

Attention: KATIE MORAN

Commitment No.:	Office File No.:	Effective Date:
C-165017		March 31, 2006 at 5:59 A.M.

1. Policy or Policies to be Issued:

ALTA OWNER'S POLICY - 1992 Amount $ 1.00

Proposed Insured:
- - - - - - - -

ALTA LOAN POLICY - 1992 Amount $ - - - - - - - -
Proposed Insured:

- - - - - - - -

2. Title to the fee simple estate or interest in the land described or referred to in this Commitment is at the effective date hereof of record in

WASTE MANAGEMENT OF WISCONSIN, INC.

3. The land referred to in this Commitment is described as follows:

Lot One (1) of Certified Survey Map No. 10610 recorded in the DANE COUNTY, Wisconsin Register of Deeds Office in Volume 63 of Certified Survey Maps, page 34, as Document No. 3604254, in the Town of Dunkirk, DANE COUNTY, Wisconsin.

TAX ROLL PARCEL NUMBER: 026-0511-103-8905-0

A.L.T.A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE B - SECTION 1

Office File Number:

Commitment Number: C-165017

Requirements

The following are the requirements to be complied with:

a. Payment to or for the account of the grantors or mortgagors of the full consideration for the estate or interest to be insured.

b. Payment to the Company of the premiums, fees and charges for the policy.

c. Proper instrument(s) creating the estate or interest to be insured must be executed and duly filed for record, to wit:

NONE

****

2005 net real estate taxes: $ 9.96 (paid in full)

A. L. T. A. COMMITMENT

Chicago Title Insurance Company

SCHEDULE B - SECTION 2

Office File Number:

Commitment Number: C-165017

Exceptions

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company.

1. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.

   NOTE: Exception 1. will be removed only if no intervening matters appear of record between the effective date of this commitment and the recording of the instruments called for at Item (c) of Schedule B-I, or if a gap endorsement is issued in conjunction with this commitment and the requirements for the issuance of "gap" coverage as described in the endorsement are met, including the payment of the premium.

2. Special taxes or assessments, if any.

   NOTE: Exception 2. will be removed only if the Company receives written evidence from the municipality that there are no special assessments against the land, or that all such items have been paid in full.

3. Liens, hook-up charges or fees, deferred charges, reserve capacity assessments, impact fees, or other charges or fees due and on the development or improvement of the land, whether assessed or charged before or after the Date of the Policy.

   The Company assures the priority of the lien of the insured mortgage over any such lien, charges or fee.

   NOTE: Exception 3. will be removed only if the Company receives (1) written evidence from the municipality that there are no deferred charges, hookup fees, or other fees or charges attaching to the property; (2) evidence that the land contains a completed building; and (3) a statement showing that the land has a water and sewer use account. If the land is vacant, this exception will not be removed.

4. Any lien, or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

   NOTE: Exception 4. will be removed only if the Company receives the Construction Work and Tenants Affidavit on the form furnished by the Company and the following is true:

   NO WORK DONE: The Affidavit must establish that there has been no lienable construction work in the previous six months.

   REPAIR WORK DONE: If repair work has been done on an existing structure in the last six months, the affidavit must accurately disclose all parties who have done lienable work in the last six months, and have attached to it original full waivers of lien from each person or company

   NEW CONSTRUCTION: If the property contains a newly-built structure, the Affidavit must incorporate a complete list of all parties who have done lienable work in the last six months, and have attached to it original full waivers of lien from each person or company. If Exception 4. is removed, it will be replaced by the following exception: "Any construction lien claim by a party not shown on the Construction Work and Tenants Affidavit supplied to the Company."

5. Rights or claims of parties in possession not shown by the public records.

   NOTE: Exception 5. will be removed only if the Company receives the Construction Work and Tenants Affidavit on the form furnished by the Company. If the affidavit shows that there are tenants, Exception 5. will be replaced by an exception for the rights of the tenants disclosed by the Affidavit.

6. Encroachments, overlaps, boundary line disputes, and any other matters which would be disclosed by an accurate survey and inspection of the premises.

A.L.T.A. COMMITMENT

Chicago Title Insurance Company
SCHEDULE B - SECTION 2

Office File Number:

Commitment Number: C-165017

Exceptions (continued)

7. Easements or claims of easements not shown by public records.

8. Any claim of adverse possession or prescriptive easement.

NOTE: Exception 6. 7. & 8. will be removed only if the Company receives an original survey which (1) has a current date, (2) is satisfactory to the Company, and (3) complies with current ALTA/ACSM Minimum Survey Standards or Wisconsin Administrative Code AE-7. If the survey shows matters which affect the title to the property, Exceptions f. g. & h. will be replaced by exceptions describing those matters.

9. General and special taxes for the year 2006 and subsequent years.

10. Public or private rights, if any, in such portion of the subject premises as may be presently used, laid out or dedicated in any manner whatsoever, for street, highway or alley purposes.

11. Easement, Restrictions and conditions contained in instrument recorded on March 18, 1954, as Document No. 869614.

12. Right of Way contained in instrument recorded September 13, 1949, as Document No. 785973.

13. Easement contained in instrument recorded on October 21, 1965, as Document No. 1145371.

14. Easement contained in instrument recorded on June 20, 1974, as Document No. 1401538.

15. Easement contained in instrument recorded on August 30, 1977, as Document No. 1535850.

16. Conditions contained in Affidavit recorded on August 18, 1981, as Document No. 1716619.

17. Deed restriction and conditions recorded on May 15, 1991, in Volume 15889 of Records, page 36, as Document No. 2262327.

18. Deed restriction and conditions recorded on August 26, 1991, in Volume 16585 of Records, page 1, as Document No. 2284942.

19. Deed restriction and conditions recorded on January 4, 1993, in Volume 24133 of Records, page 13, as Document No. 2428937.

20. Approval Document recorded on August 8, 1995, in Volume 30508 of Records, page 65, as Document No. 2694911.

21. Covenants and Conditions contained in Private Sewage System Maintenance Agreement recorded on October 5, 1995, in Volume 31005 of Records, page 15, as

(See continuation attached hereto.)

A.L.T.A. COMMITMENT

Chicago Title Insurance Company

Continuation of Schedule B-2

Office File Number:

Commitment Number: C-165017

Document No. 2709319.

22. Any law, ordinance or governmental regulation relating to environmental protection and the effect of any violation thereof unless notice of a lien, defect or encumbrance resulting from a violation has been recorded in the office of the Register of Deeds prior to the date of this commitment.

23. Rights of tenants under unrecorded leases, if any.

Schedule B-2 of this Policy consists of 3 pages.

1401538

ELECTRIC LINE EASEMENT

Line Title ______ No. 518/421

Grantor(s): Orrin N. Hagen, et. al.

in consideration of Value received Dollars ($1.00), to him paid by WISCONSIN POWER AND LIGHT COMPANY, a Wisconsin corporation, grantee, receipt of which is hereby acknowledged, does hereby grant, convey, and warrant unto said WISCONSIN POWER AND LIGHT COMPANY, its successors and assigns, the perpetual right and easement to erect and maintain a line of eight [illegible] structures and wires, including other appurtenances for the transmission of electrical current, and to permit the attachment thereto of electric or telephone wires owned by others, upon, over and across land owned by the grantor in the Town of Dunkirk, County of Dane, State of Wisconsin, said easement to be 30 feet in width, lying 15 feet easterly of and 15 feet westerly of the reference line described as follows:

Commencing at an iron pipe at the south ¼ corner of section 10, Town 5 North, Range 11 East; thence North along centerline of said section 10 a distance of 400.8' to the centerline of County Trunk Highway "A"; thence N. 61° 57' W. along the said center line of County Trunk Highway "A" a distance of 944.3' to a point; thence N. 0° 28' W. a distance of 33.4' to the point of beginning; thence continuing N. 0° 28' W. a distance of 1326.5' to a point; thence N. 17° 41' E. a distance of 252' to a point; thence N. 57° 17' E. a distance of 349.6' to a point on the east-west centerline of said section 10, said point being 474' westerly along the said east-west centerline from the center ¼ corner of section 10.

511-10-3-7

PARCEL 16-7

511-10-3-10

JUN 20 1974

[illegible] with the right to enter upon said premises for the purpose of erecting such structures and stringing said wires, and repairing or renewing the same. [illegible] shall be placed within above described easement strips and that the grantee has the right to trim or remove such trees as may be located within above distances from reference line, and other trees which, in the judgment of the grantee, may interfere with or endanger said electric line, and chemically treat from time to time the area within the boundaries of said easement for the purpose of controlling the growth of trees and shrubs growing within said boundaries, without additional compensation. Said grantee, however, expressly agrees that it will pay a reasonable sum for damage to other property, including crops, that may be caused by its employees in building and repairing said structures and wires.

Said grantee shall not have the right to erect any fence or building on such land other than said line structures and wires, and the right is hereby expressly reserved to said grantor, his heirs and assigns, of every use and enjoyment of said land not inconsistent with the maintenance, operation, repair, and removal of such structures and wires, and the trimming and removal of such trees as aforesaid.

This agreement is binding upon heirs, successors, and assigns of the parties hereto.

WITNESS the hand(s) and seal(s) of the grantor(s) this 1st day of Nov. A.D. 19 72.

In presence of:

[signature]	[signature] (SEAL)
Signature	Signature Orrin N. Hagen
[signature]	[signature] (SEAL)
Signature	Signature Ida Mae Hagen
Signature	Signature (SEAL)

Signature ______________ Signature ______________ (SEAL)

Signature ______________ Signature ______________ (SEAL)

Signature ______________ Signature ______________ (SEAL)

This instrument was drafted by: Dennis A. Elmer

STATE OF WISCONSIN } ss
County of Dane

Personally appeared before me this 24 day of April A.D. 19 74

to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

(Print) ______________
Notary Public Dane County, Wis.
My Commission expires ______________

STATE OF ______________ } ss
County of ______________

Personally appeared before me this ______ day of ______________ A.D. 19____

to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

(Print) ______________
Notary Public ______________ County, Wis.
My Commission expires ______________

JUN 20 1974

1401538

Office of Register of Deeds } ss.
Dane County, Wisconsin

Received for Record June 20
19 74 at 11:40 o'clock A. M.
and recorded in vol. ...... of ...... on page ......
Harold K. Hill
Register

EASEMENT 1535850

THIS AGREEMENT, made and entered into this 31st day of August, 1977, by and between Orrin W. Hagen and Ida Mae Hagen, his wife, parties of the first part and Richard W. Sundby, personal representative of the estate of Nora Sundby, deceased, party of the second part,

W I T N E S S E T H

WHEREAS, the first parties are the owners of the following described real estate located in Dane County, Wisconsin, hereinafter referred to as Parcel A, by virtue of land contract Recorded in Volume 89 of Records, page 404, in which they appear as purchasers, and in which Nora Sundby appears as vendor, to-wit:

AUG 30 1977

PARCEL A

The East 1/2 of the Southwest 1/4 of Section 10, Township 5 North, Range 11 East, in the Town of Dunkirk, except that part lying South of County Trunk A.

and,

WHEREAS, the party of the second part is the holder of the legal title to the following described real estate situated in Dane County, Wisconsin, hereinafter referred to as Parcel B.

PARCEL B

852-203

Lot Two (2), Certified Survey Map No. 2472, Recorded July 7, 1977 in Volume 9 of Certified Survey Maps of Dane County on pages 398 and 399 as Document # 1526587.

511-10-3-10 ST. EASE

511-10-3-24 and, Parcel 22-20 ~~23-21~~

511-10-3-12 Parcel 23-21

Road Tw Ease

Hagen part ... to ... Sundby for ...

WHEREAS, part of the garage building of the second party that is situated on Parcel B encroaches on part of Parcel A, owned by the first parties , and the first parties desire to grant to the second party an easement to keep and maintain such encroaching garage in its present location on said Parcel A.

NOW, THEREFORE, the first parties do hereby grant, assign and set over unto the second party, his successors and assigns, an easement, which shall run with the land as a benefit attached to Parcel B, above described, consisting of the right to keep and maintain the above referred to garage encroachment in its present location on the real estate of the first parties, together with the right to enter upon a limited area abutting the encroachment for purposes of repairing and maintaining said garage building, all described as follows:

AUG 30 1977

Part of the Northeast 1/4 of the Southwest 1/4 of Section 10, Township 5 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin: Commencing at the Southeast corner of Lot 1, Certified Survey #2472 recorded in Volume 9, Page 398, said point being the intersection of the Northeasterly line of County Trunk Highway "A" and the Easterly line of said Lot 2; Thence N 0° 29' 33" E, 188.30 feet along the Easterly line of said Lot 2 to the point of beginning of this description, said point being 3 feet southerly of the southerly edge of a stone garage; Thence S 88° 54' 10" E, 5.29 feet; Thence N 1° 05' 50" E, 30.00 feet parallel to and 3.00 feet Easterly of said stone garage;
Thence N 88° 54' 10" W, 5.61 feet to the Easterly line of said Lot 2;
Thence S 0° 29' 33" W, 30.00 feet along said Easterly line to the point of beginning of this description.

Attached hereto is Map # 9884, prepared by Arden Sandanas, land surveyor, showing the area of the easement herein granted.

The easement granted herein shall continue so long as the garage remains in its present location, and shall terminate upon removal of the garage, for any reason.

It is further agreed that the first parties shall in no way be responsible for the expense of maintaining any part of the garage building.

Richard H. Sundby, joins in the execution of this instrument for the purpose of accepting the same and being bound by its terms, and for the further purpose of consenting to its terms as personal representative of the estate of Nora Sundby, deceased, land contract vendor in the land contract referred to above.

AUG 30 1977

In witness whereof the parties have hereunto set their hands and seals this 26 day of August, 1977.

Orrin W. Hagen (SEAL)

Ida Mae Hagen (SEAL)

Richard H. Sundby (SEAL)

: Richard H. Sundby, Personal Representative of the Estate of Nora Sundby, Deceased

Signatures of Orrin W. Hagen, Ida Mae Hagen and Richard H. Sundby, authenticated this 26 day of August, 1977.

William E. Chritton

Title: Member State Bar of Wisconsin

Authorized under Sec. 706.06

THIS INSTRUMENT DRAFTED BY ATTORNEY WILLIAM E. CHRITTON

004820

CERTIFIED SURVEY MAP

SURVEYORS CERTIFICATE
STATE of WISCONSIN)
COUNTY of DANE) ss.

I hereby certify that this survey is in compliance with Chapter 236.34 of Wisconsin Statutes.

I further certify that I have surveyed and mapped the lands described hereon; and that this map is a correct representation in accordance with the information furnished.

Richard L. Palmer, Professional Land Surveyor, S-2160

Royal Oak Engineering, Inc.
5610 Medical Circle, Suite 6
Madison, Wisconsin 53719
Phone (608) 274-0500
Fax (608) 274-4530

Description:
Lots 1 and 2, Certified Survey Map Number 2472, recorded in Volume 9, Page 398 and 399, as Document Number 1526587, lying in part of the Northwest 1/4 of the Southwest 1/4 and part of the Southwest 1/4 of the Southwest 1/4 of Section 10, Township 05 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin, more fully described as follows:

Commencing at the West 1/4 corner of said Section 10;

Thence S 00°20'52" E, 266.00 feet along the West line of said Section 10;

Thence S 85°21'13" E, 729.87 feet;

Thence S 74°45'55" E, 262.01 feet to a point on the North line of said Certified Survey Map Number 2472;

Thence N 89°53'55" E, 183.21 feet to the Northwest corner of Lot 1, said Certified Survey Map Number 2472 to the point of beginning of this description;

Thence continuing N 89°53'55" E, 210.91 feet to the Northeast corner of said Certified Survey Map Number 2472;

Thence S 00°35'17" E, 861.65 feet to the Southeast corner of said Certified Survey Map Number 2472 and the centerline of County Trunk Highway "A";

Thence N 63°29'18" W, 291.00 feet along said centerline to the Southwest corner of Lot 2 of said Certified Survey Map Number 2472;

Thence N 26°38'41" E, 33.00 feet along the Westerly line of said Lot 2 to the North right-of-way of County Trunk Highway "A";

Thence continuing along said Westerly line being the arc of a curve to the left having a radius of 300.00 feet and a chord bearing N 12°59'54" E, 141.00 feet;

Thence N 00°35'35" W, 277.75 feet to the Southwest corner of Lot 1 of said Certified Survey Map Number 2472;

Thence along the West line of said Lot 1 being the arc of a curve to the left having a radius of 60.00 feet and chord bearing N 00°35'35" W, 100.22 feet;

Thence N 00°35'35" W, 186.50 along said West line to the point of beginning of this description.

Said parcel contains 171,865 square feet or 3.945 acres including right-of-way.

WISCONSIN RICHARD L. PALMER S-2160 LAND SURVEYOR

August 31, 2002

SURVEYED FOR: Mr. Thomas Watson
ADDRESS: 1601 East Main Street
Stoughton, Wisconsin 53589

DESCRIPTION-LOCATION: Lots 1 and 2, Certified Survey Number 2472, Recorded in Volume 9, Page 398-399, lying in part of the NW 1/4 of the SW 1/4 and part of the SW 1/4 of SW 1/4 of Section 10, T 05 N, R 11 E, Town of Dunkirk, Dane County, Wisconsin

SURVEYED by RP, JRH
DRAWN by RP
CHECKED by CD
APPROVED by RP
Field Book 834 Pages 45
Date of Survey March 12, 2002
Dir /data/dane/dunkirk
Dir cont. /section10
Data Level(s) PLAT
File 14370

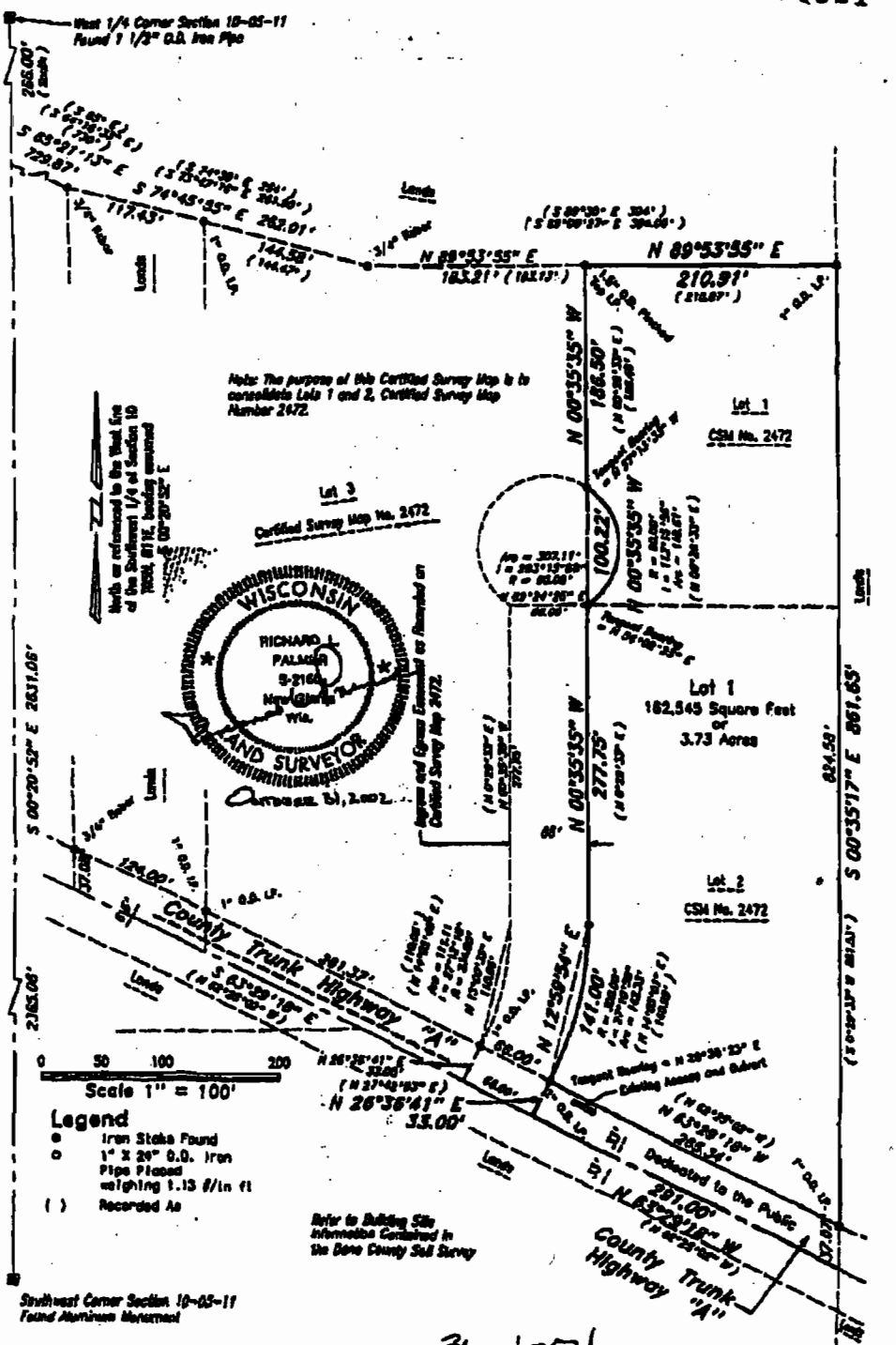
Office Map No. 14360
Sheet 1 of 3 Sheet(s)

REGISTER of DEEDS CERTIFICATE
Received for record this 4 day of December 2002, at 4:50 o'clock, P .M. and recorded in Volume 63 of Certified Survey Maps of Dane County, on Page(s) 33, 34-35

Register of Deeds Jane Licht by Kurt Chlebowski Deputy

DOCUMENT NO. 3604254
CSM. No. 10010, VOLUME 103 Pages 33

V04821



Office Map No. 14560-A DOCUMENT NO. 3004254
Sheet 2 of 3 Sheets. Certified Survey Map No. 10611 Volume 63 Page 34

004822

CORPORATE OWNERS CERTIFICATE
Waste Management of Wisconsin, Inc., a corporation duly organized and existing by the virtue of the laws of the State of Wisconsin, as tenants in common does hereby certify that said corporation caused the lands described on this Certified Survey Map to be surveyed, divided, mapped and dedicated as represented on this Certified Survey Map.

Waste Management of Wisconsin, Inc., does further certify that this Certified Survey Map is required by S. 75.17(1)(d), Dane County Code of Ordinances to be submitted to the Dane County Zoning and Natural Resources Committee approval.

IN WITNESS WHEREOF, the said Waste Management of Wisconsin, Inc., has caused these presents to be executed, signed (name) Jack Dowdan, (title) Area Director, and countersigned by (name) _____, (title) _____, at Stoughton, Wisconsin, and its corporate seal to be hereto affixed this 18th day of November, 2002.
Memorandum Title

by: _____ Attest: _____
(name) Jack Dowdan (name)
(title) Area Director (title)

STATE OF WISCONSIN)
COUNTY OF ~~DANE~~) ss. Washington
Personally came before me this 18th day of November, 2002,
(name) Jack Dowdan, (name) _____ to me
known to be the (title) Area Director, (title) _____
of the Waste Management of Wisconsin and acknowledge that they executed the foregoing instrument as such officers as the deed of said corporation, by its authority, for the purposes therein contained.

_____
Washington
Notary Public, Dane County, Wisconsin
My Commission October 29, 2006

LINDA GREAT NOTARY PUBLIC STATE OF WISCONSIN

DANE COUNTY ZONING AND NATURAL RESOURCES COMMITTEE CERTIFICATE
Approved for recording per Dane County Zoning and Natural Resources Committee action dated this 2 day of December, 2002

_____ #7657
Norbert Steinhoff, Agent

COMMON COUNCIL RESOLUTION, CITY OF STOUGHTON, WISCONSIN
"Resolved that this certified survey map, being a part of the Southwest 1/4 of Section 10, Township 05 North, Range 11 East, Town Dunkirk, Dane County, Wisconsin, having been reviewed as an extraterritorial jurisdiction land division by the City Planning Commission, is hereby approved."

January 31, 2002

WISCONSIN RICHARD L. PALMER S-2156 New Glarus LAND SURVEYOR

I, Judy A. Kinning, do hereby certify that I am the duly appointed, qualified and acting City Clerk of the City of Stoughton, and that this certified survey map was approved by the City Council of the City of Stoughton, Dane County, Wisconsin and further certify that the conditions of said approval were fulfilled on the 9th day of April, 2002.

_____
Judy A. Kinning, City of Stoughton Clerk

TOWN BOARD RESOLUTION, TOWN OF DUNKIRK, DANE COUNTY, WISCONSIN
"Resolved that this certified survey map, being a part of the Southwest 1/4, of Section 10, Township 05 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin, having been approved by the Town Board, be and the same is hereby approved and the public highway right-of-way dedication designated herein is hereby acknowledged and accepted by the Town of Dunkirk."

I, Dawn Zweep, do hereby certify that I am the duly appointed, qualified and acting Town Clerk of the Town of Dunkirk, and that this Certified Survey Map was approved by the Town Board of the Town of Dunkirk, Dane County, Wisconsin and furthermore certify that the conditions of said approval were fulfilled on the 1st day of April, 2002.

_____
Dawn Zweep, Town Clerk

Office Map No. 14580-B DOCUMENT NO. 3004254
Sheet 3 of 3 Sheets. Certified Survey Map No. 10811, Volume 63 Page 35

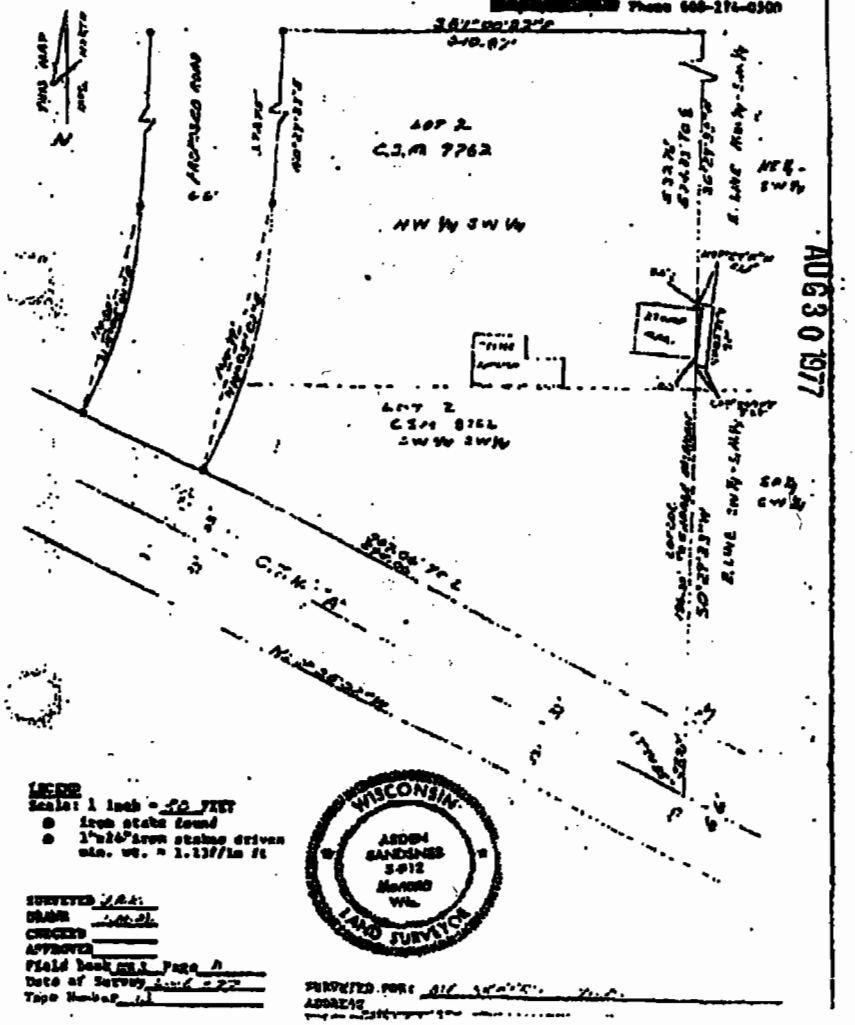
SURVEYORS CERTIFICATE
STATE OF WISCONSIN)
COUNTY OF DANE) ss.

I hereby certify that I have mapped the lands described hereon and that the map is a correct representation in accordance with the information furnished.

George A. Weir, Professional Land Surveyor, #1043

SURVEY PLAT

GEORGE A. WEIR
DANE COUNTY SURVEYOR
City-County Building
Madison, Wisconsin
53709
Phone 608-266-4751
WEST OFFICE
5618 Medical Circle
Madison, WI. 53711
Phone 608-274-6300



AUG 30 1977

LEGEND
Scale: 1 inch = 50 FEET
● Iron stake found
● 1"x24" iron stakes driven min. wt. = 1.13#/lin ft

WISCONSIN
ARDEN SANDNESS
S-912
Madison
Wis.
LAND SURVEYOR

SURVEYED [illegible]
DRAWN [illegible]
CHECKED
APPROVED
Field Book [illegible] Page [illegible]
Date of Survey [illegible]
Tape Number [illegible]

PREPARED FOR: [illegible]
ADDRESS

PRIVATE SEWAGE SYSTEM MAINTENANCE AGREEMENT COVENANT

DANE COUNTY
REGISTER OF DEEDS
Doc No 2709819

1995-10-05 02:30 PM
Trans. Fee 0.00
Rec. Fee 10.00
Pages 1

V31005P 15

Agreement is between Mark Weinmann of Wisconsin, Inc.

in Dane County in the town of Dunkirk

2318 C.S.M. "A" Part of the Northeast ¼ of the Southwest ¼ of Section 18, Township 5 North, Range 11 East, Dunkirk Township, Dane County, Wisconsin

13-0511-103-8000-7
DD

Record this document with the Register of Deeds

Your name and return address:
Dave Jones Bldg. & Hly Co.
2309 Industrial Dr.
Madison, WI 53713

LEGIBILITY IMPAIRED

a. Said private sewage system is in proper operating condition

Dated this 4th day of October, 19 95

Mark J. Leibrock

NOTARY PUBLIC

The above named personally came before me this 4th day of October, 19 95

Bonnie K. Bouthillier

Notary Public, Dane County, Wisconsin

My Commission Expires 8-20-98

OCT 4 '95 07:29 608 222 0568 PAGE.002

Rec'v Sewage Agt for WMI

✓ p

CH. NR 812
APPROVAL DOCUMENT

DANE COUNTY
REGISTER OF DEEDS
Doc No 2894911
1999-06-04 02:45 PM
Trans. Fee 0.00
Exempt Fee 13.00
Pages 3

Document No.

TO:

V30508P 65

RETURN TO: Wisconsin DNR
Bureau of Water Supply
P.O. Box 7921
Madison, WI 53707

Tax Key # 13-0511-103-8000-7

13-0511-103-9500-0

The Wisconsin Department of Natural Resources grants an approval based on the provision of ch. NR 812, Wis. Adm. Code, for a private water system owned by Waste Management of Wisconsin, Inc. on the property described as East ½ of the SW¼ of Section 10, T9N, R11E, Town of Dunkirk, Dane County, Wisconsin, except that part lying south of County Trunk Highway A. Recorded as Document Number 2017177 endumbered with the Dane County Register of Deeds Office in Volume 9095 Pages 17 and 18.

Chapter NR 812, Wis. Adm. Code, requires a minimum separation of 1,200 feet be provided between a well or reservoir and the nearest edge of an existing, proposed or abandoned landfill site.

The Department of Natural Resources hereby grants an approval for the construction of such a private water system upon the following conditions:

1. That the location of the proposed well site is within a county that is participating in the County Well Delegation program and that it will be necessary for you to obtain a well permit from the county in addition to this variance.

2. That the well shall be located at the proposed location at least 700 feet from the nearest edge of the landfill.

3. That the well shall be constructed with a minimum of 75 feet of well casing.

4. That it shall be the responsibility of the property owner at the time the well is constructed to provide any well driller contracted to construct a well on the above-described property with a copy of this approval so that the well driller is aware of the conditions of this approval.

5. That in the event that the actual construction of the well on the above-described property has not commenced within 5 years of the date of this approval, the approval shall become void.

6. That the property owner shall provide to the well driller contracted to construct the well with the enclosed well construction report assigning

Wisconsin unique well number IL636 to the well and that the well driller shall report the construction of the well on the enclosed form.

7. That this variance approval is conditioned upon the property owner having the enclosed, separate, original, notarized variance approval document recorded with the property title by the Dane County Register of Deeds within 60 days of receipt of the approval letter. You are also responsible for any fees associated with the recording.

Failure to comply with any term of this approval renders the approval void.

Dated this 19th day of June, 1995

William T. Roth

William T. Roth, Chief
Private Water Supply Section

This instrument was drafted by the Department of Natural Resources.

STATE OF WISCONSIN)
COUNTY OF DANE)
ss.

Signed before me this 19th day of June, 1995.

Dana M. Iverson

Notary Public State of Wisconsin
My commission expires 7/5/98.

[illegible]

DEED RESTRICTION VOL 15889 PAGE 36

RE: All property owned by Waste Management of Wisconsin, Inc., lying in Section 10, Township 5 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin.

Waste Management of Wisconsin, Inc., the fee owner of certain lands lying in Section 10, Township 5 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin, being subject to an Administrative Order from the U.S. Environmental Protection Agency requiring the recording of a deed restriction with the Register of Deeds for Dane County regarding all lands it owns situated in proximity to the former landfill known as the Hagen Farm site, hereby makes the following declarations as to limitations, restrictions and uses to which said lands that it currently owns may be put to and further hereby specifies that such declarations shall run with the land as provided by law and shall be binding on all parties and all persons claiming under Waste Management of Wisconsin, Inc.

The following are prohibited on the above-referenced property:

1. any consumptive or other use of the groundwater that could cause exposure to humans or animals;
2. any use of, or activity, that may interfere with the work to be performed at the Hagen Farm site as required by the above-referenced Administrative Order; and
3. any residential or commercial use, including but not limited to any filling, grading, excavating, building, drilling, mining, farming, or other development, or placing waste material, except with the approval of U.S. EPA, in consultation with the State, as consistent with the requirements of the above-referenced Administrative Order.

Dated at Westchester, Illinois this 14th day of May, 1991.

WASTE MANAGEMENT OF WISCONSIN, INC.

By: [signature]
Donald R. Price, President

Attest: [signature]
Carl J. Frank, Secretary

MAY 15 10 04 AM '91

10

County of Cook)
) ss.
State of Illinois)

Personally came before me this 14th day of May, 1991, Donald R. Price, President and Carl J. Frank, Secretary of the above named corporation, Waste Management of Wisconsin, Inc., a Wisconsin Corporation, known to me to be the persons who executed the foregoing instrument and to me known to be such President and Secretary of said corporation, and acknowledged that they executed the foregoing instrument as such officers, as the deed of said corporation, by its authority.

" OFFICIAL SEAL "
CATHERINE B PINSON
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 7/15/93

Notary Public, Cook County, Illinois

My commission expires 7/15/93

This instrument drafted by and to be returned to:

David E. Stewart
Associate General Counsel
Waste Management of Wisconsin, Inc.
W124 N8925 Boundary Road
Menomonee Falls, WI 53051
414/251-4000

DEED RESTRICTION VOL 21433 PAGE 13

RE: The East 1/2 of the Southwest 1/4 of Section 10, Township 5 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin, except that part lying South of County Trunk Highway A.

2428937

Waste Management of Wisconsin, Inc., the fee owner of the above-described land, a/k/a the "Hagen Farm", being subject to Administrative Order V-W-92-C-172 dated November 25, 1992 and issued by the U.S. Environmental Protection Agency requiring the recording of notice of this Administrative Order and a deed restriction with the Register of Deeds for Dane County regarding the former landfill known as the Hagen Farm site, hereby makes the following declarations as to limitations, restrictions and uses to which the above-described land may be put to and further hereby specifies that such declarations shall run with the land as provided by law and shall be binding on all parties and all persons claiming under Waste Management of Wisconsin, Inc.

The following is prohibited on the above-described land:

The installation of any drinking water wells.

Dated at Menomonee Falls, Wisconsin this 31st day of December, 1992.

WASTE MANAGEMENT OF WISCONSIN, INC.

By: _____
Richard L. Ancelet, President

County of Waukesha)
) ss.
State of Wisconsin)

Personally came before me this 31st day of December, 1992, Richard L. Ancelet, President of the above-named corporation, Waste Management of Wisconsin, Inc., a Wisconsin Corporation, known to me to be the person who executed the foregoing instrument and to me known to be such President of said corporation, and acknowledged that he executed the foregoing instrument as such officer, as the deed of said corporation, by its authority.

_____
Notary Public, Waukesha County, Wisconsin
My commission expires 1 permanent

12-

Attest: [signature]
Howard L. Kruse, Assistant Secretary

County of DuPage)
) ss.
State of Illinois)

VOL 21433 PAGE 14

Personally came before me this 30th day of December, 1992, Howard L. Kruse, Assistant Secretary of the above-named corporation, Waste Management of Wisconsin, Inc., a Wisconsin Corporation, known to me to be the person who executed the foregoing instrument and to me known to be such Assistant Secretary of said corporation, and acknowledged that he executed the foregoing instrument as such officer, as the deed of said corporation, by its authority.

Carrie L. Abatangelo
Notary Public, DuPage County, Illinois
My commission expires 9/25/96

This instrument drafted by and to be returned to:

David E. Stewart, Esq.
250 North Sunnyslope Road - Suite 330
Brookfield, WI 53005
(414) 785-8168

"OFFICIAL SEAL"
CARRIE L. ABATANGELO
Notary Public, State of Illinois
My Commission Expires Sept. 25, 1996

JAN 4 3 47 PM '93

RECORDER'S OFFICE
DANE COUNTY, WI.
JANE LICHT
REGISTER OF DEEDS

2284?" 17

DEED R[illegible]CTION

1558?? 1

RE: The East ½ of the Southwest ¼ of Section 10, Town 5 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin, except that part lying south of County Trunk Highway "A", Lots One (1), Two (2) and Three (3) and all of the land within the area designated as Proposed Road of Certified Survey Map No. 2472 recorded as Document Number 1526587 of Volume 9, Pages 398 and 399 of Dane County Certified Survey Maps and the land lying between the west line of said Lot 1 of said Certified Survey Map No. 2472, and the northwesterly right-of-way line of County Trunk Highway "A" at a point about 122 feet northwesterly from the southwest corner of said Lot 3. Except municipal and zoning ordinances and recorded easements for public utilities and recorded building restrictions. Said parcel is subject to a public roadway over the southwesterly 33.00 feet thereof. Said parcel containing 2,919,861 square feet or 67,031 acres to the centerline of C.T.H. "A".

Waste Management of Wisconsin, Inc., the fee owner of the above described lands lying in Section 10, Township 5 North, Range 11 East, Town of Dunkirk, Dane County, Wisconsin, being subject to an Administrative Order from the U.S. Environmental Protection Agency requiring the recording of a deed restriction with the Register of Deeds for Dane County regarding all lands it owns situated in proximity to the former landfill known as the Hagen Farm site, hereby makes the following declarations as to limitations, restrictions and uses to which said lands that it currently owns may be put to and further hereby specifies that such declarations shall run with the land as provided by law and shall be binding on all parties and all persons claiming under Waste Management of Wisconsin, Inc.

The following are prohibited on the above-referenced property.

1. any consumptive or other use of the groundwater that could cause exposure to humans or animals;

2. any use of, or activity, that may interfere with the work to be performed at the Hagen Farm site as required by the above-referenced Administrative Order; and

3. any residential or commercial use, including but not limited to any filling, grading, excavating, building, drilling, mining, farming, or other development, or placing waste material, except with the approval of U.S. EPA, in consultation with the State, as consistent with the requirements of the above-referenced Administrative Order.

Dated at Westchester, Illinois this 14th day of August, 1991

WASTE MANAGEMENT OF WISCONSIN, INC.

By: [signature]
Donald R. Price, President

Attest: [signature]
Carl J. Frank, Secretary

12

County of Cook)
) ss. VOL 16585 PAGE 2
State of Illinois)

Personally came before me this 14th day of August, 1991, Donald R. Price, President and Carl J. Frank, Secretary of the above named corporation, Waste Management of Wisconsin, Inc., a Wisconsin corporation, known to me to be the persons who executed the foregoing instrument and to me known to be such *President* and *Secretary* of said corporation, and acknowledged that they executed the foregoing instrument as such *officers*, as the deed of said corporation, by its authority.

"OFFICIAL SEAL" JAMES [illegible]

[signature]
Notary Public, Cook County, Illinois

My commission expires 3-26-95

This instrument drafted by and to be returned to:

David E. Stewart
Associate General Counsel
Waste Management of Wisconsin, Inc.
W124 N8925 Boundary Road
Menomonee Falls, WI 53051
414/251-4000

DR86991 - 8/09/91

VOL. 224 PAGE 204 785978

No. [illegible]

RIGHT OF WAY CONTRACT

For and in consideration of the sum of *Five* [illegible] Dollars ($5.00) the receipt of which is hereby acknowledged,

Henry Sundby and Nora Sundby his wife

do ______ hereby grant to Michigan-Wisconsin Pipe Line Company, a Corporation, a right-of-way to construct, reconstruct, renew, operate, maintain, inspect, alter, repair, remove and re-lay a gas or oil pipe line or pipe lines and appurtenances [illegible] as may be necessary or convenient for such operations, on, over, and through certain lands situated in Dane County, State of Wisconsin, to-wit:

The Northeast Quarter (NE¼) of the Southwest Quarter (SW¼) of Section Ten (10) Township Five (5) North of Range Eleven (11) East, in Dane County, Wisconsin.

with entrance and exit to and from the same. The said grantor___ to fully use and enjoy the said premises, except for the purposes hereinbefore granted to the said grantee, who hereby agrees to pay any damages which may arise to crops and fences from the laying, maintaining, and operating said lines; said damages, if not mutually agreed upon, to be ascertained and determined by three disinterested persons, one thereof to be appointed by the said grantor_s_, one by the said grantee, and the third by the two so appointed as aforesaid, and the award of any two such persons shall be final and conclusive and no action shall be brought or maintained for damages until the amount thereof shall have been determined as above provided.

Should more than one pipe line be laid under this grant at any time, by grantee, an additional consideration equal to the consideration hereinbefore recited, shall be paid for each line so laid after the first line.

The rights herein granted may be assigned in whole or in part.

It is agreed that the terms, conditions and provisions hereof shall be extended to and be binding upon the heirs, executors, administrators, personal representatives, successors and assigns of the parties hereto.

It is understood that the person securing this contract is without authority to make any agreement in respect of the subject matter hereof not herein expressed.

Signed this *17th* day of *August* 19[illegible]

Signed, sealed and delivered in the presence of:

R. H. Johnson	*Henry Sundby* (Seal) Henry Sundby
Harley D. Moe	*Nora Sundby* (Seal) Nora Sundby
	(Seal)
	(Seal)
	(Seal)
	(Seal)

In consideration of $1.00 and other valuable consideration, I, the undersigned, hereby adopt and join in the execution of the above and foregoing grant and consent to the enjoyment by the grantee therein of the rights granted by said grant.

Dated this *17th* day of *August* 19[illegible]

In the presence of: R. H. Johnson

Samon Olsen (Seal) Tenant
Samon Olsen

ACKNOWLEDGMENT

VOL. 224 PAGE 205

STATE OF WISCONSIN }
COUNTY OF Dane } ss.

On this 17th day of August 1949, before me Harley B. Moe, the undersigned officer, personally appeared Henry Lindley & Nora Lindley, to me known to be (or satisfactorily proven) to be the persons whose names are subscribed to the within instrument and acknowledged that they executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

My Commission Expires:
August 31, 1952

Harley B. Moe
Harley B. Moe
Notary Public — Dane County
Wisconsin

ACKNOWLEDGMENT

STATE OF WISCONSIN }
COUNTY OF________ } ss.

On this______day of________, 19__, before me________________

__________, the undersigned officer, personally appeared________________

________, to me known to be (or satisfactorily proven) to be the person___ whose name___ ____ subscribed to the within instrument and acknowledged that___he___ executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

My Commission Expires:

________________ Notary Public________________County
Wisconsin

CORPORATE ACKNOWLEDGMENT

STATE OF WISCONSIN }
COUNTY OF________ } ss.

On this______day of________, 19__, before me________________

__________, the undersigned officer, personally appeared________________

________, who acknowledged himself to be the________________ of________________

________________, a Corporation, and that he, as such________________ being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the Corporation by himself as________________

In witness whereof I hereunto set my hand and official seal.

My Commission Expires:

________________ Notary Public________________County
Wisconsin

Office of Register of Deeds
Dane County, Wisconsin
Received for Record [illegible]
1:45 [illegible] M.
Recorded in Vol. [illegible] page [illegible]
[illegible]
Register

Received [illegible]

765973

Doc. 518-34 D-ILL [illegible]

868614

6-203-3

RIGHT OF WAY

VOL 267 PAGE 33

For and in consideration of the sum of One Hundred Sixty & No/100 Dollars ($160.00) to us in hand paid, receipt of which is hereby acknowledged

Nora Sunday and Henry Sunday, her husband, tenants in common

do hereby grant, convey and warrant to BADGER PIPE LINE COMPANY, its successors and assigns, a Right-of-Way to construct, operate and maintain a pipe line, and (subject to the payment hereinafter provided) additional pipe lines, for the transportation of gas, oil, petroleum, or any of its products, water and other substances, and such drips, valves, fittings, meters and other equipment and appurtenances as may be necessary or convenient for such operations, over and through the following real estate in Dane County, State of Wisconsin, to-wit:

The East One Half (E½) of the Southwest One Quarter (SW¼) of Section 10, Township 5 North, Range 11 East (Dunkirk Township).

Pipe line to parallel East boundary line of property and be buried not more than 10 feet from said boundary line.

GRANTEE shall pay all reasonable damages to growing crops and improvements occasioned in laying, repairing or removing all lines, drips, and valves, and will restore all tile drains and fences affected by its operations. If the amount of damages be not agreed upon, it shall be determined by three (3) disinterested persons, one appointed by the Grantee, one by the Grantor, and the third by the two so appointed, and their written determination of amount shall be final and conclusive. Grantee shall bury its pipe lines below plow depth.

Grantee shall pay the same consideration as above expressed for each additional pipe line and its appurtenances installed under and by virtue of this Right-of-Way Grant.

This Right-of-Way shall include the right of ingress and egress at points convenient to the Grantor for the purpose of repairing, inspecting, reconstructing, altering and removing any and all pipe lines authorized hereby.

TO HAVE AND TO HOLD the same unto said Grantee, its successors and assigns, until this Right-of-Way is exercised, and so long thereafter as any structure installed hereunder is used or remains upon said premises.

It is understood that the person securing this grant is without authority from the Grantee to make any agreement in respect of the subject matter hereof not herein expressed.

Grantors hereby waive and release all homestead exemption rights with respect to this Right-of-Way.

The grantor represents that the above described land is rented for the period beginning [illegible]

19___ to ___ 19___ on ___ Basis.

Executed this 2nd day of March, 19 54.

Signed, sealed and delivered in the presence of:

Alice Watson
Alice Watson

Fay Melvin
Fay Melvin

Nora Sunday
Nora Sunday

Henry Sunday
Henry Sunday

6-203-3

VOL. 267 PAGE 84

INDIVIDUAL ILLINOIS & WISCONSIN

STATE OF .... } ss
COUNTY OF ....

I, ... a Notary Public in and for said County and State, do hereby certify that on this ...... day of .... 19..., before me personally appeared ....

[illegible] to me personally known to be the same person ... described in and who executed the foregoing instrument, and acknowledged that ... executed, signed, sealed and delivered the same as ... free and voluntary act and deed, for the uses and purposes therein set forth.

Given under my hand and seal the day and year first above written.

My Commission Expires .... Notary Public

HUSBAND AND WIFE ILLINOIS & WISCONSIN

STATE OF Wisconsin .... } ss
COUNTY OF Dane ....

I, Alice Watson, a Notary Public in and for said County and State, do hereby certify that on this 2nd day of March, 195 4, before me personally appeared Ezra Sandler and Nancy Sandler, husband and wife, to me personally known to be the same persons described in and who executed the foregoing instrument, and acknowledged that they executed, signed, sealed and delivered the same as their free and voluntary act and deed for the uses and purposes therein set forth, including the release and waiving of the right of homestead, the said wife having been by me fully apprised of her rights and the effect of signing and acknowledging the said instrument.

Given under my hand and seal the day and year first above written.

My Commission Expires May 2, 1954 Alice Watson
Alice Watson, Notary Public

CORPORATION ILLINOIS & WISCONSIN

STATE OF .... } ss
COUNTY OF ....

I, ... a Notary Public in and for said County and State, do hereby certify that on this ...... day of .... 195..., before me personally appeared .... President, and .... Secretary of the .... personally known to me to be the persons and officers whose names are subscribed to the foregoing instrument, and acknowledged to me that they ... [illegible] ... of the said corporation ... [illegible] ... for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, This ...... day of .... A.D. 19...

My Commission Expires .... Notary Public

869614

RIGHT OF WAY

FROM

TO

BADGER PIPE LINE COMPANY

STATE OF Wis.
COUNTY OF Dane

I hereby certify that the within instrument was filed for record on the 12 day of March A.D. 1954 at 9:20 o'clock A.M., and was duly recorded in Volume 267 of Misc. on Page 83 and 84.

Mike ... Register

RETURN TO
BADGER PIPE LINE COMPANY
[illegible]
BARTLESVILLE, OKLA.

U.S.T.C.
DANE COUNTY TITLE Co.

VOL 3030 PAGE 46 AFFIDAVIT 1716619

In re: That portion of the East half (E½) of the Southwest quarter (SW¼) of Section 10, Township 5 North, Range 11 East, Town of Bushkirk, Dane County, Wisconsin, located North of County Trunk Highway A

511-10-3-7
pd 16-7
511-10-3-10

STATE OF WISCONSIN)
) ss
DANE COUNTY)

Debra A. Neuman-Horn, being first duly sworn, on oath deposes and says:

1. That she is employed by the Wisconsin Department of Natural Resources as a hazardous waste specialist.

2. That she has been informed that wastes were disposed of on a portion of the above-described property approximately fifteen (15) years ago.

3. That water samples taken as follows from a well located on the property were determined to contain the following chemical parameters:

Date of Sample	Parameter	Amount
December 17, 1980	Acetone	150 mg/l
	n-Butyl Acetate	100 mg/l
	1,2-Dichloroethylene	10 ± 5 mg/l
March 4, 1981	1,2-Dichloroethylene	400 mg/l
May 6, 1981	Chemical Oxygen Demand	10 mg/l
	1,2-Dichloroethylene	14 mg/l
	Trace of Tetrachloroethylene	<1 mg/l
	Unidentified non-chlorinated cpd	10-30 mg/l

4. That, based upon those results, the Department recommends at this time that the water at the above-described property should not be used for human consumption or for consumption by animals that may be used for human consumption.

5. That further information may be obtained from the Department.

Debra A. Neuman-Horn
Debra A. Neuman-Horn

Subscribed and sworn to before me this 3rd day of August, 1981.

Lydia A. Baker
Notary Public
State of Wisconsin
My commission My Commission Expires Jan. 9, 1983

This document was drafted by the Wisconsin Department of Natural Resources.

Return:
Debra A. Neuman-Horn
3911 Fish Hatchery Rd
Madison 53711
Dept. Natural Resources

RECEIVED
81 AUG 18 P 3:19
REGISTER OF DEEDS
DANE COUNTY, WIS.

AUG 18 1981

2003

1145371

OCT 21 1965

EASEMENT FOR ELECTRIC LINE

THIS INDENTURE, Made this 21 day of September, 1965, by and between HERA B. Sundby, Grantor, and WISCONSIN POWER AND LIGHT COMPANY, Grantee.

WITNESSETH, That for and in consideration of the sum of One ($1.00) Dollar and other good and valuable consideration in hand paid, the receipt whereof is hereby acknowledged, the Grantor has this day bargained and sold, and by these presents does bargain, sell, convey, transfer, and deliver unto the Grantee and its assigns, an easement and right of way, to enter upon the real estate hereinafter described, at any time that they may see fit, to construct, maintain, and repair an electric line for the purpose of conveying electric power over, across and through the lands hereinafter described.

The land affected by the grant of this easement and right of way is located in the Town of Dunkirk, County of Dane, State of Wisconsin, and is more particularly described as:

That part of the SW 1/4 of Section Two (2), Town Five (5), Range Eleven (11) East, now lying to the North of County Trunk Highway A.

The easement and right of way hereby granted covers a strip of land five (5) feet in width over and across the above-described land, said strip being more particularly located as follows:

To the West of and
Immediately adjacent to the driveway leading to the Grantor's gravel pit located within the above-described land.

TO HAVE AND TO HOLD the same until expiration or revocation of the lease or renewals thereof of said premises to City Service Corporation or its assigns.

IN WITNESS WHEREOF, the Grantor has hereunto set her hand and seal this 21 day of September, 1965.

Signed and Sealed in Presence of

Robert D. Sundby

Patricia B. Anderson

Hera B. Sundby (SEAL)

STATE OF WISCONSIN }
} ss.
COUNTY OF DANE }

Personally came before me this 21st day of September, 1965, the

VOL 434 PAGE 190

above-named Nora E. Sunder, to me known to be the person who executed the foregoing instrument and acknowledged the same.

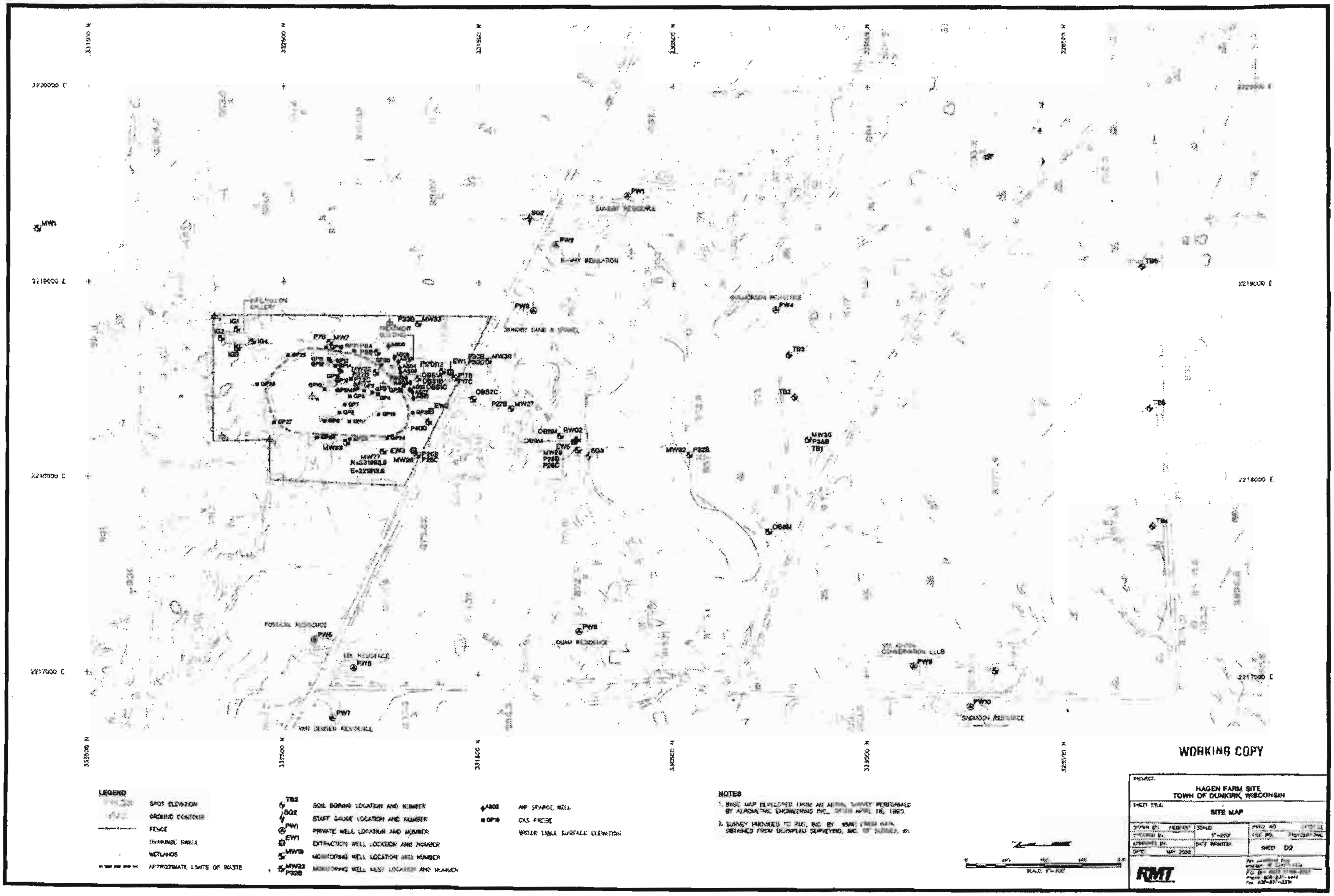
OCT 21 1965

Notary Public, Dane County, Wisconsin
My Commission (is) (expires) April 17, 1966

DRAFTED BY V.E. ROACH

RECORDED
OCT 21 1965
At 1:40 P.M.

- 2 -


WORKING COPY
HAGEN FARM SITE
TOWN OF DUNKIRK, WISCONSIN
SITE MAP
SHEET D2
RMT
LEGEND
SPOT ELEVATION
GROUND CONTOUR
FENCE
DRAINAGE SWALE
WETLANDS
APPROXIMATE LIMITS OF WASTE
SOIL BORING LOCATION AND NUMBER
STAFF GAUGE LOCATION AND NUMBER
PRIVATE WELL LOCATION AND NUMBER
EXTRACTION WELL LOCATION AND NUMBER
MONITORING WELL LOCATION AND NUMBER
AIR SPARGE WELL
GAS PROBE
WATER TABLE SURFACE ELEVATION
NOTES
MW1
PW1
PW2
PW3
PW4
PW5
PW6
PW7
PW8
PW9
PW10
TB1
TB2
TB3
TB5
TB6
MW35
MW32
MW27
MW28
MW26
MW30
MW33
EW1
EW2
EW3
RW02
OB6M
P23B
P22B
P27B
P28B
P28C
P25B
P25C
P34B
SG2
SG3

Appendix 3

Relevant U.S. EPA Correspondence

Re: FW: Hagen Farm Groundwater Monitoring Program - Annual Sampling Event

SHEILA SULLIVAN to: Peterson, Mike 08/10/2011 03:10 PM
Cc: Gary.Edelstein, ddougher

From: SHEILA SULLIVAN/R5/USEPA/US
To: "Peterson, Mike" <mpeterso2@wm.com>,
Cc: Gary.Edelstein@dnr.state.wi.us, ddougher@subterra.com

Hi Mike,

As per your e-mail below, the EPA and WDNR approve of your request to discontinue monitoring for certain semi-volatile parameters during the annual sampling event with the contingency that these parameters have not been routinely detected. Let me know if you have any other questions.

Best,,
Sheila A. Sullivan
Project Manager
Superfund Division
U.S. EPA, Region 5
Tel: (312) 886-5251

"Peterson, Mike" Sheila, August is the month that we conduct our... 08/02/2011 01:24:39 PM

From: "Peterson, Mike" <mpeterso2@wm.com>
To: SHEILA SULLIVAN/R5/USEPA/US@EPA
Cc: "Gary.Edelstein@dnr.state.wi.us" <Gary.Edelstein@dnr.state.wi.us>, "Prattke, Michael" <MPrattke@scsengineers.com>
Date: 08/02/2011 01:24 PM
Subject: FW: Hagen Farm Groundwater Monitoring Program - Annual Sampling Event

Sheila, August is the month that we conduct our annual sampling and analysis event. When we meet at the site earlier this year we discussed the potential to reduce the number of parameters that are analyzed, as indicated below. These parameters are not the parameters of concern at the site. Can these parameters be removed from the monitoring program for this annual event? MLP.

From: Prattke, Michael [mailto:MPrattke@scsengineers.com]
Sent: Monday, August 01, 2011 9:50 AM
To: Peterson, Mike
Subject: Hagen Farm Groundwater Monitoring Program - Annual Sampling Event

When we met with EPA (Sheila Sullivan) and WDNR (Gary Edelstein) at the Hagen Farm site in late April 2010, it sounded like there was concurrence that annual analysis for semi-volatile organic compounds (SVOCs), pesticides, herbicides and polychlorinated biphenyls (PCBs), could be dropped from the routine groundwater monitoring program for the site. This was one of the components proposed as modifications to the routine monitoring program for the site in the 2008 Annual Report. The proposed modifications were reviewed and resubmitted as part of the 2010 Annual Report for the site.

I understand that EPA has not yet formally responded to the proposed modifications. The annual sampling event is scheduled for this month (i.e. August). Since the collection and analysis of samples for these parameters involves a significant effort, I'd suggest that we contact Ms. Sullivan before

implementing the sampling event to confirm that analysis for these parameters is necessary.

Please let me know if you have any questions, or require any additional information.

Michael J. Prattke
Division Leader

SCS BT Squared
N84 W13540 Leon Road
Menomonee Falls, WI 53051
Office: 262-345-1220, Ext. 101

Cell: 630-399-1713

Please note the change of e-mail address as of July 1, 2011 when BT Squared joined SCS Engineers.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF: SR-6J

May 27, 2014

Michael L. Peterson, P.E.
Closed Sites Management Group
Waste Management
N96 W13600 County Line Road
Germantown, WI 53022

VIA ELECTRONIC MAIL

RE: Proposal for Enhancement of the Low-flow Air Sparge System at the Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin.

Dear Mr. Peterson:

This letter is to follow up on the June 20, 2013 U.S. Environmental Protection Agency (EPA) letter regarding the Waste Management of Wisconsin (WMWI) proposal to expand the low-flow air sparge (LFAS) system at the Hagen Farm Superfund Site ("Site"). Your proposal was submitted to EPA and the Wisconsin Department of Natural Resources (WDNR) on November 12, 2012 and proposed several modifications to the current LFAS system. In EPA's June 2013 letter, I clearly approved some of the requested changes, but would like to clarify EPA's position on some of the other specific requests.

To briefly review, the November 2012 WMWI proposals included the following:

1. Expand the LFAS system by converting P-7B, P-26C, and EW-1INF into LFAS wells and extend the piping and controls to facilitate their operation.
2. Conduct quarterly monitoring for a year at a set of monitoring wells near the converted LFAS wells.
3. Reduce the SVE sampling frequency from semiannual to annual.
4. Abandon damaged monitoring well P-22C.
5. Reduce the number of groundwater monitoring locations.
6. Decommission and remove several components of the pump-and-treat (P&T) facilities.

In EPA's June 20, 2013 letter, I responded with comments that included some tacit approvals and disapprovals. For the record, these are briefly clarified below:

1. EPA did not approve of retrofitting P-7B into a sparge well because there is no relevant monitoring well to determine its effectiveness. Instead, a new LFAS well should be installed.
2. EPA did not approve of the conversion of P-26C to a sparge well due to the lack of monitoring points to assess its efficacy as such. If WMWI can supply sufficient evidence, which should include slug test data demonstrating that air can migrate into the aquifer and there is a sufficient radius of influence, then EPA will approve the conversion.
3. EPA approved, but did not recommend converting EW-1INF to a sparge well.
4. EPA approved of abandoning P-22C, without needing to replace it.
5. EPA approved of a reduction in SVE sampling frequency from semi-annual to annual, provided the annual sample is taken in November to reflect a worst-case scenario.
6. EPA approved of quarterly monitoring for a year at the monitoring wells near the LFAS conversion wells.
7. EPA approved of removing P-22C, EW-1INF, EW-2, and EW-3 from the groundwater monitoring program.
8. EPA approved of not monitoring for groundwater contaminants at the proposed LFAS conversion wells.
9. EPA and WDNR approved of decommissioning and removing the major P&T components, with the caveat that a resumption of P&T may be required under certain conditions, thus requiring a replacement system.

In August 2013, SCS submitted, on behalf of WMWI, a work plan for the LFAS expansion project. The work plan proposed some changes to its November 12, 2012 proposal, after consideration of EPA's June 2013 comments. The August 2013 work plan included a modified approach for gaining three additional air sparge wells in the system, but still involved converting existing wells (one monitoring and two extraction) to air sparge wells.

Briefly, the work plan called for the following:

- Convert monitoring well P-7B to an air sparge point, as previously proposed;
- Convert EW-1INF to an air sparge point, as previously proposed;
- Convert EW-3 to an air sparge point instead of monitoring well P-26C;
- Run new piping to the converted LFAS wells, and add to the existing air supply and control system;
- Conduct quarterly monitoring for a year at a set of monitoring wells near the converted LFAS wells.

At the end of March 2014, WMWI submitted its 2013 Annual Report (AR) on monitoring and operations and maintenance (O&M) at the site. The report noted that the frequency reduction for SVE sampling and the removal of P-22C and the extraction wells (EW1, EW-2, and EW-3) from groundwater sampling had been implemented in 2013, as previously approved by EPA.

Since the August 2013 work plan, the remaining two items which EPA did not initially approve (see items # 1 and 2 above) have been resolved as follows:

- EPA approves of retrofitting P-7B to a sparge well and removing it from the groundwater monitoring system (as was approved for the other sparge wells).

- EPA approves of converting EW-3 to a sparge well, instead of P-26C.

During an April 30, 2014 conference call between EPA, WMWI and WDNR, the parties discussed several minor issues proposed in the August 2013 work plan that were of concern to EPA. The items were discussed and resolved as follows:

1. WMWI's construction methods for converting EW-1INF and EW-3 to sparge points proposed the use of solvent welds to connect PVC piping or fittings. The glue used for the welds contains tetrahydrofuran (THF), ketones, or other VOCs. EPA recommends that the process be modified to eliminate the use of PVC "solvent welding" (or glueing) in order to avoid introducing THF-- one of the primary site-related chemicals of concern to the groundwater. We recommend using threaded, spline, or thermally welded joints instead, although this may require using Schedule 80 PVC rather than Schedule 40.

   The parties agreed that the use of glues and solvent welding will be minimized, and under these conditions, EPA approves of this approach.

2. EPA indicated that centralizers are necessary in the EW-1INF and EW-3 conversions (the air supply drop tube is already in place inside P-7B). WMWI agreed to the use of centralizers.

3. Because of the length of the air supply piping (especially as proposed to EW-3) and the proposal to retain current air supply components, ports should be added to allow air supply pressures to be measured at the wellheads of the converted wells during LFAS operation. The monitoring plan should include periodic wellhead air pressure measurements at the LFAS conversion wells under shakedown and operating conditions. The data should be supplied to the agencies.

   WMWI agreed to add ports so that air supply pressures can be measured periodically.

4. EPA expressed concern about the potential for the air supply piping trench to act as a preferential pathway to the property boundary. The work plan did not adequately discuss trench construction, e.g., pipe elevation within the trench, bedding, and compaction.

   WMWI agreed to ensure that the native backfill would be sufficiently compacted, and will provide a description of this plan.

To reiterate, EPA approves of WMWI's LFAS Expansion work plan of August 5, 2013 as modified by the solutions to the above four items. Please provide the revisions to the work plan as per the above resolutions. These responses can be in the format of a letter-addendum to the August 2013 work plan or a revised work plan document. EPA will provide a response within two weeks of receiving your revisions.

WMWI should also develop an approach to estimate the radius of influence of LFAS conversion wells EW-1INF and EW-3. This will be considered to be a post-construction diagnostic and, therefore, will not impede approvals and construction of the LFAS system expansion.

Given the fact that the LFAS in now in its 14th year of operation and given the site data, we can start planning for a decision document. An Explanation of Significant Differences (ESD) is likely to be the most appropriate administrative vehicle with which to revise the remedy from the P&T system to the LFAS system, with a return to P&T as a contingency.

In addition, the persistent vinyl chloride concentrations at or above the Wisconsin Enforcement Standard indicate that the need for off-site institutional controls in the P-32B to OB-8M region should be assessed.

I hope this letter addresses any questions you may have regarding our approval of your LFAS expansion proposal. In addition, we are currently reviewing the 2013 AR on monitoring and O&M at the site. We plan to send comments to you by the end of June.

We look forward to receiving brief but informative revisions to the work plan so that the remaining field work can begin. Should you have any other questions or concerns regarding the content or detail of the deliverables or other items discussed in this letter, please do not hesitate to contact me.

Sincerely,

Sheila A. Sullivan

Sheila A. Sullivan
Remedial Project Manager
Superfund Division
U.S. EPA, Region 5
Tel: (312) 886-5251
E-mail: sullivan.sheila@epa.gov

cc: Gary Edelstein, WDNR
Michelle Gale, WM
Jeffrey Cahn, ORC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF: SR-6J

June 20, 2013

Michael L. Peterson, P.E.
Closed Sites Management Group
Waste Management
N96 W13600 County Line Road
Germantown, WI 53022

VIA U.S. MAIL AND ELECTRONIC MAIL

RE: Proposal for Enhancement of the Low-flow Air Sparge System at the Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin.

Dear Mr. Peterson:

This letter is in regard to the Waste Management of Wisconsin (WMWI) proposal to expand the low-flow air sparge (LFAS) system at the Hagen Farm Superfund Site ("site"). The proposal was submitted to the U.S. Environmental Protection Agency (EPA) and the Wisconsin Department of Natural Resources (WDNR) on November 12, 2012 in response to EPA's letter of September 27, 2012. In its letter, EPA, among other things, reviewed the progress of the remedy at the site and set forth a schedule of tasks for upgrading the remedy. As per that schedule, EPA was to provide a review of your proposed enhancements to the LFAS system by March 1, 2013. As such, this letter provides the following comments and/or concerns regarding the proposal and adjusts the schedule to accommodate a technical delay on our part. The order of our comments corresponds to that of your November 2012 proposal letter.

Installation of Air Sparge Points

WMWI proposes to provide additional sparging capability by reconfiguring two existing monitoring wells P7B and P26C and one groundwater extraction well (EW-1INF). As stated in your proposal, these points were selected due to their proximity to the remaining groundwater contamination in order to satisfy EPA's requirement to enhance groundwater remediation at the site. However, our requirement was not intended to imply that other critical functions of the remedial system, such as the groundwater monitoring network, should be sacrificed for these enhancements. It is possible for the existing groundwater monitoring network and the LFAS system enhancements to coexist, and EPA prefers that such an approach be followed. We have evaluated each of the proposed well conversions and have the following comments.

Well P7B:

WMWI's proposal states that well P7B was chosen to be retrofitted as an air sparge point due to its location near the waste boundary and elevated concentrations of groundwater contaminants—namely tetrahydrofuran (THF) with concentrations ranging from 150 to 2,300 ug/l. WMWI believes that this is appropriate because P7B has a short screen located in unconsolidated sediments below the water table surface. WMWI expects that sparging at this point will lower THF levels in nearby MW-7.

EPA's concern is that P7B does not have a nearby comparable monitoring well with which to verify its effectiveness as a converted air sparge point. Well P7B is screened at a depth of 50-55 feet below ground surface (bgs); however, MW7 is only screened at 20-24 feet bgs, which leaves a considerable gap at this sample point. Since well logs for MW33, P33B, or MW7 were unavailable during our review, we cannot evaluate how appropriate these wells would be for monitoring and assessing the efficacy of converting well P7B to a sparge point. Should P7B be converted, we know that MW33 is downgradient and in the migration path from MW7 but is screened in the shallow aquifer, likely similar to MW7.

Well P33B is also downgradient and next to MW33, but without information on the well construction, we do not know if it is comparable to P7B. Further, the MW33and P33B nest is beyond 500 feet from MW7 or P7B and therefore, assessing the air sparge radius of impact or effect would not be feasible. Hence, we would prefer to see WMWI add a new sparge well to this area instead of converting Well P7B—otherwise, that sampling point at that depth where considerable amounts of THF and vinyl chloride (VC) were detected would be lost. Perhaps the air sparging would mitigate the THF, but there would be no data point to confirm this.

Well P26C:

The proposal states that this well was chosen to be converted to a sparge point because of its proximity to well P26B, where recent groundwater samples showed VC levels in excess of the NR 140, WAC Preventive Action Limit (PAL) and Enforcement Standard (ES). Well P26C was selected because it is south of the western landfill boundary and is a piezometer with a short screen located in the bedrock. WMWI believes that sparging at this point will lower VC levels at the nearby shallower well P26B.

Well P26C is screened at 90 feet bgs and is considered a deep well. In converting P26C to a sparge point, a data point would be lost for the deep part of the aquifer. The well construction log for MW26 indicate that it has a 10-foot screen at 34 ft bgs, making it a shallow monitoring well. Well P26B has a three-foot screen at about 70 ft bgs and is considered an intermediate well. The next closest deep monitoring well (MW40D) is slightly downgradient and 250 feet away from P26C. According to the groundwater contours, there is a general "leveling off" at 856 feet for a considerable portion of the area, typically encompassing the existing air sparge wells, EW1 and surrounding wells. Well P28C is located further downgradient, and while it may be similarly screened into the deep aquifer like P26C, it is located almost 1,000 feet away.

In general, since at least two other deep wells (MW-40D and P28C) are located "relatively nearby" to monitor for contaminants in the deep aquifer, converting P26C to an air sparge well may enhance the effectiveness of the LFAS system, however this would be difficult to demonstrate without accurate groundwater monitoring points.

We note that P26C is screened in a 10-foot thick siltstone layer. Directly above the siltstone is the sand and gravel. We will require that a slug test be performed first, and/or other supportive information be supplied, to assess the permeability of the siltstone in order to determine whether the air will sufficiently migrate through the siltstone, sand, and gravel layers and ultimately, whether it is feasible to convert P26C into a sparge point.

Well EW-1INF:

WMWI maintains that extraction well EW-1INF is an appropriate sparge point because of its location near the property boundary and upgradient of residual contaminant concentrations. This well is located south of the existing treatment building, between the waste mass and the property line. The proposal states that by adding oxygen to the area upgradient of groundwater monitoring wells P17B and P17C in the unconsolidated sediment where residual concentrations of VC exceed the PAL and ES, VC concentrations at these wells and other downgradient wells will be reduced.

While EPA has always supported the installation of additional air sparging points west of the existing sparge well line and toward the southern property line to reduce the mass flux of contaminants from the property, we have never supported the installation of an air sparge well within 150 feet of P17C unless there is strong evidence of a singular preferential pathway through P17C. We believe that EW-1INF as a sparge point location would be too close to monitoring well P17C and would damage the integrity of the groundwater monitoring network.

That being said, after reviewing the well construction logs for P17C, P17B, MW30, P30B and P30C, there may be a sufficient number of groundwater monitoring surrounding wells near EW-1INF to determine its efficacy as an air sparging point, particularly since the groundwater levels are relatively flat in this area potentially facilitating the dissolution of oxygen throughout the aquifer, instead of just migrating off site. Therefore, EPA will approve, but does not recommend converting EW-1INF into an air sparge point.

In addition to losing some valuable groundwater monitoring points, particularly P7B, P26C, and P17C (from the conversion of EW-1INF), our other concern is that these three additional air sparge points will be added to the current system via extended piping. The distance and the additional sparge locations may require more energy from the compressor and other components than the system can supply. In particular, P7B is a considerable distance away from the existing compressor, dryer and oxygen concentrator. Will the system be able to accommodate the additional wells and will the radius of impact be affected or decreased by spreading the "energy" out to three separate and distant wells? Will the radius of impact meet the expected 50 ft at the new wells? These concerns must be addressed or satisfied in WMWI's work plan and design for these enhancements.

The agencies believe that undertaking the above-mentioned monitoring well conversions will potentially jeopardize the groundwater monitoring network. Further, EPA will still need to evaluate the efficacy of the enhanced LFAS over time. Therefore, if we find that our ability to evaluate the progress of groundwater remediation is compromised or that the data are unreliable due to spatial or temporal data gaps due to these conversions, we will require WMWI to propose modifications in order to cure any deficiencies. This may involve installing groundwater monitoring wells to replace the converted wells, installing additional monitoring wells in strategic locations, increasing the groundwater monitoring frequency for a specified period after the monitoring well network is modified, or any combination thereof in order to gather sufficient data to make the necessary determinations. This is consistent with Section XI, par. 35-40 of the August 2, 2007 Consent Decree.[1]

Abandonment of Monitoring Well P22C

The proposal states that WMWI will abandon groundwater monitoring well P22C because: 1) its PVC casing is potentially compromised; 2) semi-annual sampling has not identified the presence of contaminants of concern (COC) in this well that exceed their respective PALs or ESs; and, 3) two shallower wells are located nearby in the well nest which will provide sufficient data for this aquifer in this area of the site.

Given the above-mentioned reasons, there is no apparent need to replace this monitoring point. The abandonment of this sample point is not expected to materially affect the ongoing data review for the site; hence, we approve this request and anticipate that WMWI will provide a completed abandonment form in accordance with the requirements of Chapter NR 141 of the Wisconsin Administrative Code.

Revisions to the Existing Monitoring Programs

WMWI has indicated its concurrence with EPA's required monitoring plan revisions set forth in our September 27, 2012 letter, with certain requested exceptions outlined in its October 2012 letter. We have addressed these exceptions proposed by WMWI point-by-point below.

- **A reduction in frequency of analysis of vapor at the emission and collection points associated with the soil vapor extraction system (SVE) at the site from semi-annual to annual should be included in the approved revisions to the monitoring plan.**

  In reviewing recent data, we note that the higher vapor contaminant concentrations appear to be in November as compared to May. EPA approves a reduction in frequency of analysis from semiannual to annual; however, the annual analysis should be performed in November in order to reflect a worst-case scenario.

- **Groundwater sampling should be discontinued at the former extraction wells, including EW-2, due to its construction as an extraction well.**

[1] August 2, 2007 Consent Decree between EPA and WMWI (United States of America v. Waste Management of Wisconsin, Inc., Case No. 07-C-0424-C)

EPA approves this request.

- **The wells to be reconfigured as sparge points (EW-1INF, P7B and P26C) should be removed from the current monitoring program.**

  These wells can be removed from the current monitoring program, should WMWI proceed with converting them to air sparge points, however, EPA does not recommend or agree with the conversion of these wells to sparge points. As previously stated, EPA may require more frequent periodic monitoring of the altered monitoring well network to assess the effectiveness of the LFAS modifications.

- **Well P22C should be removed from the current monitoring program due to well integrity issues.**

  EPA approves this request.

We understand that after start-up of the converted LFAS points, WMWI will sample monitoring wells OBS1A, OBS1B, OBS1C, OBS2C, P17B, P17C, P26B and MW7 for VOCs, including SIM analysis for VC, on a quarterly basis for a period of one year to evaluate the anticipated changes in groundwater quality. The data will be assessed in the routine annual report for the site.

WMWI will submit a final groundwater monitoring plan, to summarize these revisions, in a subsequent document to respond to the comments in EPA's September 27, 2012 letter.

Decommissioning of Specific Components of the Former Groundwater Extraction and Treatment System

After about five years of operation, WMWI stopped running the groundwater extraction and treatment system in September 2001 in order to pilot test the LFAS system as a replacement. The original large biomass reactor treatment system required large quantities of nutrients and energy to sustain the organisms. The agencies agree that the technology and scale of the treatment system is no longer cost-effective for removing groundwater COCs, namely THF and VC.

WMWI proposes to maintain the existing treatment building, infiltration gallery, and influent piping system from the extraction wells, but to decommission the remaining extraction and treatment components, which include bioreactors, mixing tanks, clarifiers and associated pumps and piping. Should groundwater extraction and treatment need to be reinstituted, a more appropriately sized system and technology, such as air stripping, would be designed and installed.

The agencies concur with the above-stated approach, but would like to emphasize that we will not hesitate to require the reinstatement of a groundwater pump-and-treat system should the data indicate the need.

To summarize, the agencies are approving the submitted proposal, as indicated in my e-mail to you of May 30, 2013, under the conditions and caveats specified in this letter. As discussed on several occasions, our greatest concern is the adverse effects on the integrity of the groundwater monitoring network that may result from the conversion of P7B, P26C and EW-1INF to air sparge points.

Other Considerations

At this time, I would like to reiterate a few key concerns stated in our letter of September 2012. The LFAS pilot testing has shown that the current system is generally effective at reducing COC levels near the sparge wells, although the spatial extent of the aerobic zone created by the system is limited. Periodic monitoring has shown that THF concentrations are stable or decreasing over time and that the LFAS system is generally effective for treating THF, however, improvement of groundwater quality is not uniform across the affected groundwater. Persistent elevated concentrations of VC, some exceeding the ES, are found in the area in monitoring well P17C (at the southern edge of the property) and extending to monitoring well OB8M. The persistent VC concentration at P17C indicates that contamination continues to migrate off-property. The ES for VC is exceeded at both OB8M and P32B (both off-property wells), and there are additional PAL exceedances. VC data and gross redox conditions indicate that off-property impacts remain.

The LFAS pilot has been operating for approximately 12 years, yet contamination is still present at levels of concern onsite and offsite. WMWI may want to consider proposing additional measures to expedite groundwater remediation. Aside from pump-and-treat, other possibilities, such as strategically placed substrate injections, may be worth testing. In addition, we are requiring the following items:

1. To track the progress of the aerobic spread, WMWI needs to create a figure to show aerobic/not-aerobic wells, as was discussed in our letter to you of September 27, 2013 and its enclosed example. Over time, we would expect all wells downgradient of the air sparging system to become aerobic. A simple map each year that shows progress would be easy to execute, easy to interpret, and easy to reproduce.

2. The figures in the 2012 Annual Report are greatly improved from the previous years. The Annual Reports would benefit from adding a figure that shows the sampling points that are exceeding the PAL/ES (e.g. a map with red dots for the exceedances of VC and/or THF).

3. In addition, WMWI should continue to maintain and enforce the existing ICs, but should also implement additional enforceable ICs further downgradient of the site, where groundwater cleanup goals are being exceeded, until the cleanup goals have been achieved throughout the plume.

Two of the six bulleted steps set forth on page 8 of the September 27, 2012 letter have been completed (this letter constitutes completion of the second step—i.e., EPA's review and response of the proposal of specific enhancements to the groundwater remediation system by WMWI).

The following remaining steps should be completed by the indicated due dates, which have been adjusted since EPA's September 2012 letter due to internal delays. Should WMWI wish to accelerate the schedule, we will make every effort to coordinate our reviews with you.

- Following EPA approval of the remedy enhancement proposal, a work plan with specific enhancements, bid drawings, startup testing and monitoring plan, and any changes required to the QAPP or SAP—due August 23, 2013.
- A timely review and response by EPA and WDNR—due October 7, 2013.
- Construction and startup testing complete and system enhancements in production—due November 20, 2013.
- Submission of a report communicating as-builts, well installation reports and filings, etc.— due December 20, 2013 (excluding water quality analysis results from laboratories that have longer QA/QC schedules).

I hope this letter addresses any questions you may have regarding our assessment of your proposal. Should you have any other questions or concerns regarding the content or detail of the deliverables or other items discussed in this letter, please do not hesitate to contact me.

Sincerely,

Sheila A. Sullivan

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bcc: Jeffrey Cahn, ORC
Site files

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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REPLY TO THE ATTENTION OF: SR-6J

September 27, 2012

Michael L. Peterson, P.E.
Closed Sites Management Group
Waste Management
N96 W13600 County Line Road
Germantown, WI 53022

VIA CERTIFIED U.S. MAIL AND ELECTRONIC MAIL

RE: 2011 Annual Report for the Hagen Farm Superfund Site, Town of Dunkirk, Wisconsin.

Dear Mr. Peterson:

This letter is in regard to the 2011 Annual Report (AR) or ("the report") for the Hagen Farm Superfund Site ("site") that Waste Management of Wisconsin (WMWI) submitted to the U.S. Environmental Protection Agency (EPA) and the Wisconsin Department of Natural Resources (WDNR) on April 3, 2012. The document was prepared in March 2012 by SCS BT Squared for the WMWI Closed Sites Management Group.

The EPA and WDNR ("the agencies") have reviewed the subject report and are providing our comments and recommendations. The following section provides our assessment of the remedial progress achieved at the site so far, based on the information provided in the 2011 AR, site inspection data, and findings from the 2011 Five-Year Review. Under a separate section, we have provided specific comments on the subject report, which references and/or addresses issues that were raised by the agencies during the 2011 Five-Year Review process, such as monitoring frequencies, monitoring parameters, expansion of the low-flow air sparge system (LFAS), and institutional controls (ICs). Finally, we have addressed the remaining items under WMWI's original request for a reduction in the monitoring parameters and frequencies.

Remedial Progress Review

The groundwater control operable unit (GCOU) remedy is progressing, although improvement of groundwater quality is not uniform across the affected groundwater and is not showing steady recovery. The following is our assessment of the progress toward meeting groundwater clean-up goals:

- The expanded LFAS system is generally effective near the sparge wells, although the spatial extent of the aerobic zone created by the expanded air sparging system is limited. (Refer to the attached figure and comment 17 directly below.)

- Persistent elevated concentrations of vinyl chloride (VC), some exceeding the Wisconsin Enforcement Standard (ES), are found in the area from monitoring well P17C (at the southern edge of the property) extending to monitoring well OB8M. The monitoring well network does not identify a "classically shaped plume", thus reflecting the network density and the presence of a porous fractured medium. Nonetheless, the combination of VC data and gross redox conditions indicate that off-property impacts remain.

- There is no decreasing trend in VC concentrations at OB8M, so it is not possible to use first-order decay methods to estimate a time-to-cleanup.

- The recalcitrant VC concentration at P17C indicates that contamination continues to migrate off-property.

- The agencies support the installation of additional air sparging wells (points) west of the existing sparge well line and toward the southern property line (the southern edge of the Wisconsin DMZ) to reduce the mass flux of contaminants from the property; however, unless there is exceedingly powerful evidence that there is a singular preferential pathway through P17C, **no** air sparging well should be allowed near (within 150 feet of) P17C. Specifically, reconstructing groundwater extraction well EW1[1] as a sparge well is not acceptable.

2011 Annual Report Comments

In general, we found the subject report to be well-written and accessible. The following are some substantive comments:

1. **Section 2.2.2 (Institutional and Administrative Controls), page 4, paragraph 2:** Although "Wisconsin regulations prohibit the installation of a potable well within 1,200 feet of a landfill without WDNR review and approval", it is our understanding that WDNR can allow a property owner to install a well within that area under certain conditions. For example, they may require the well to extend below the contamination zone and have the well cased below that zone.

2. **Section 2.4 (Data Evaluation), page 5, top partial paragraph:** According to Table 3 of the 2011 AR, GP05S also had a methane concentration (12.5 percent) greater than five percent on sample date 3/1/2012. Please add this information to the sentence.

3. **Section 2.4 (Data Evaluation), page 5, first full paragraph:** According to Table 3, GP01S also had an oxygen concentration (21.0 percent) greater than 20.9 percent on

[1] Throughout this letter and referenced documents, the groundwater extraction well "EW1" is also referred to as "EW1INF."

sample date 8/23/2011. Please add this information to the sentence.

4. **Section 3.4 (Data Evaluation), page 9, next to last paragraph:** The dissolved oxygen (DO) at well P22C of 12.5 mg/L may be more indicative of the imprecision and variability of the field test results than of the actual *in situ* DO concentrations. This is because the concentration exceeds the solubility limit at that pressure and temperature, and the well is not located near a sparge well. To provide a balanced analysis, this information should be included in a footnote at least.

5. **Section 3.8 (Recommendations), page 11, third bullet:** We concur with an evaluation of additional sparge points, including the possible repurposing of existing wells. However, we **do not consider converting groundwater extraction well EW1 to a sparge point** to be an acceptable component of LFAS system expansion. Such a plan would merely treat a symptom (perennially high concentrations at P17) and not the cause. Further, it would negate the value of long-term monitoring if this well were no longer available.

6. **Section 4.3 (Groundwater Flow), page 13, first paragraph:** Please define the "water table and piezometric surface maps". All data come from screened wells below the water table. Presumably the difference is either the unit or the depth in which a particular well is screened. Please consider using clearer terminology, such as "shallow and deep groundwater head maps".

7. **Section 4.3 (Groundwater Flow), page 13, last paragraph of section, first sentence:** Four out of 12 head differences in the <u>on-site</u> water-table/unconsolidated pairs are downward (MW26 is on-site but probably would not be called "the vicinity of the waste mass"), one in May and three in November. The <u>off-site</u> pairs had downward flow only one of 12 times (at MW30 in spring with a head difference of 1.92 ft—an unusually large difference). A more balanced sentence would be: "Among the well-pairs examined, upward flows were found in all the off-site well-pairs (except for one data point) and were found in two-thirds of the data from on-site well-pairs, most often in November." Please see comment 8.

8. **Section 4.3 (Groundwater Flow), page 13, last paragraph of section, last sentence:** The AR text does not indicate that, according to Table 8, there are numerous other instances of downward flow between the deep unconsolidated sediment and bedrock wells. At wells P17B/C, there were three downward flows indicated and one upward; at wells P26B/C, there were four downward flows; and at wells P28B/C, there were also four downward flows. In addition, at the M32/P32B pair (which according to Table 8 is a water table and bedrock pair), there were two downward flows and one upward, and one event with equal heads. At a minimum, change the phrase: "... flow from the unconsolidated sediment ***to*** the bedrock" to "...flow between the unconsolidated sediment ***and*** the bedrock".

9. **Section 4.5.1.1, subsection (Vinyl Chloride), page 16, second paragraph of subsection:** The last sentence of this paragraph gives the impression of disparaging the lab methods—"data generated from analysis of the samples using two different methods is not always consistent"—but gives no supporting evidence. Here are some facts drawn from the laboratory reports where VC was detected and quantified by both the 8260B and SIM methods:

Date	Well	SIM Result	8260B Result
1/15/2011	P17C	3.6E	3.7
2/16/2011	P17C	1.9E	2.2J
2/16/2011 (Dup.)	P17C	2.8E	2.7J
5/12/2011	P7B	1.4E	1.6J
7/21/2011	P17C	2.0E	2.9J

(Qualifier "E" means exceeds range)

These results are quite consistent—SIM indicates above a certain amount and 8260B indicates a slightly higher amount, often valued between the LOD and LOQ. The statement in the AR is incorrect and misleading; it should be deleted.

10. **Section 4.5.1.1, subsection (Vinyl Chloride), page 16, second paragraph of subsection, next-to-last sentence:** There appears to be a copy-editing error as the sentence does not read correctly.

11. **Section 4.5.1.1, subsection (Vinyl Chloride), page 16, last paragraph on page:** The last sentence discusses VC at OB8M and states: "Thus, the vinyl chloride concentrations appear to be stable or decreasing over time at this sample point." Although there is some stability in VC concentrations, there is no evidence of decreasing concentration of VC at OB8M. The statement is incorrect and misleading; it should be deleted.

12. **Section 4.5.1.1, subsection (Vinyl Chloride), page 17, first paragraph:** The last sentence indicates "No results...exceed this value." Here "this value" is the MCL. The groundwater standard is not, however, the MCL. The agencies would like to emphasize here that the ES for VC is exceeded at both OB8M and P32B, both off-property wells, and there are additional PAL exceedances.

13. **Section 4.5.1.1, subsection (Vinyl Chloride), page 17, paragraph 3:** The Mann-Whitney test uses concentrations from two non-overlapping time intervals to determine whether there is a difference between the two groups—it can be considered to be a non-parametric version of the two-sample *t*-test. Since the data here are time dependent, each group should have consecutive data, but the entirety of the data does not need to be consecutive. The Wisconsin spreadsheet requires four data points in each group and is oriented to comparing concentrations from two different years (first year and second year), but the years do not need to be adjacent. In general, Mann-Whitney is not limited to four data points per group—in fact, that is a very low number and strains the utility of the test.

14. **Section 4.5.1.1, subsection (Vinyl Chloride), page 17, paragraph 3:** The discussion raises the possibility of seasonality, but does not actually analyze for it. The discussion casts doubt on the methods without producing evidence to support this uncertainty. If the scope of such work could not be addressed in the AR due to time or budget, then indicate when and how it will be addressed.

15. **Section 4.5.1.1, subsection (Vinyl Chloride), page 17, paragraph 3, last two sentences:** As with the previous comment, aspersions are cast on the quantification of VC, but no support is provided. The argument that "a number of factors could impact quantification of vinyl chloride and thus affect trends at these low concentrations (<2 ug/L)" may be pertinent for methods with high LODs, but not if the LOD is <0.1 ug/L. If the report's argument has any validity, then it is a condemnation of the years of sample analysis with LOD too high, and not a result of the trend test methods.

    The last sentence states: "variability could originate from changes over time in a number of natural factors such as precipitation or groundwater elevation, or as a result of variables that occur during sample collection and/or laboratory analysis"—this could be said about any sample for any analyte for any site and has nothing specifically to do with the statistical trend analysis that the authors have selected and employed; this sentence should be deleted (or moved to the general discussion of water quality results). We note that the WDNR spreadsheets that were used led to "no trend" conclusions. This is fairly predictable from the concentration vs. time graph. Please revise these sentences accordingly.

16. **Section 4.5.1.4 (Other Parameters), page 20, paragraph 2:** As noted, an oxidation-reduction potential (ORP) of about 200 mV may be a manganese-reducing environment—the key word being "reducing". To make claims that "samples from only well . . . were negative throughout the year" seems contradictory because it uses 0 mV as a threshold. An aerobic state is usually associated with ORP of around 500 mV (though the actual redox state requires a variety of lab tests). Referring to Tables 9 and 10 and excluding wells with only one sample per year, if one were to use 100 mV as a screening value between anaerobic and aerobic, then non-aerobic conditions are consistently found at P17C, MW7, P7B, P27B, P22B as expected. Conditions are not aerobic from 50 to 99 percent of the samples at semi-annual wells P22C, MW33, MW23, and IG-04; at quarterly wells MW27, OB11M, P17B, P28B, P32B; and monthly well OBS1C. Aerobic conditions are found most of the time at EW1NF, EW2, MW22, OBS1A, OBS1B, OBS-2C, MW26, OB8M, P17DR, P26B, P26C, and P40D.

17. **Section 4.5.1.4 (Other Parameters), page 20, paragraph 2:** Creating a simple figure showing aerobic/not-aerobic wells (see example below) would be worthwhile. Over time, we expect all wells downgradient of the air sparging system to become aerobic. A simple map each year that shows progress would be easy to execute, easy to interpret, and easy to reproduce.

18. **Table 5:** Please add a footnote that explains the "<10" entry in the flow rate column.

19. Additional plots of concentration versus time, similar to Figures 6 through 14, are needed. A review of data going back to 2006 indicates several wells at which exceedances have occurred, yet no plot is available to review and (in some cases) demonstrate progress. For example, ES exceedances of VC have been found at the unplotted locations P7B, P17B, P22B, P26B, P27B, P28B, and P32B. While some have ES exceedances within only one of those years (e.g., P28B), others have ES exceedances in multiple years (e.g., P32B). We have not reviewed data before 2006 for this memo, but suggest that a 10-year backward-looking review would be reasonable.

20. **Appendix C:** This appendix provides the monitoring schedule for 2012. We suggest that the "Well Type" codes of A, B, and C be changed to avoid confusion with the well naming scheme, which uses A, B, and C for depths (not necessarily unit).

The following are some desired changes regarding the presentation to improve future Annual Reports.

1. A number of minor clarifications would be useful in future ARs; among these are:

- Define "probes" in the discussion of the SCOU ISVE system and "points" in the discussion of the GCOU (i.e., a probe is a vadose zone monitoring well and a point is an air sparging well);

- Distinguish the vapor extraction wells from groundwater extraction wells. Even though groundwater extraction wells are currently not operating, they exist and have been discussed in historical documents; continuity of terminology is needed;

- Modify phrases such as "potential air emission limits" (see page 5 of the 2011 AR) to become more specific;

- Replace the often-used phrase "was not quantified" with more accurate phraseology. We recommend using: "was not detected at the Method Detection Limit or Limit of Detection reported by the laboratory";

- Indicate the disposition of pumped-out condensate.

2. Figures 1 through 5 of the AR are very dark and have such low contrast among various symbols that they are not very useable. To correct the problem, the underlying aerial photographic image should be manipulated by increasing the brightness and reducing the contrast of the entire image (which will wash it out), which may be proceeded by changing the color palette to grayscale. Once this is done, the overlying contours and posted data will have substantially increased visibility and clarity.

3. Provide an additional map that shows the entire infrastructure depicted on Figures 1 through 3 of the AR (i.e., soil vapor extraction wells, groundwater extraction wells, air sparging wells, groundwater monitoring and private wells) on one figure. Retain Figures 1 through 3. For clarity, we recommend using no aerial photograph as the bottom "layer"

of the figure.

4. The AR should provide a map that shows water quality monitoring results. A subset of analytes or species would be acceptable. As per the discussions of monitoring results in the report, these parameters might logically be tetrahydrofuran (THF), VC, Benzene, DO, and ORP. A graphical summary would greatly facilitate the reader's understanding.

5. The AR does not provide a table summarizing water quality monitoring results. Instead, one must slog through about 1,300 pages of laboratory reports to extract results. For example, the AR (page 5) indicates that DO concentrations at certain wells exceeded 20.9 percent, but there is no convenient way to review or contextualize this statement. One response may be that Appendix E of the AR presents a list of all NR 140 exceedances; this may satisfy certain reporting requirements of Wisconsin, but is not adequate because all other detections and non-detections are not provided. A subset of analytes or species would be acceptable, for example THF, VC, Benzene, DO, and ORP. The organics' concentrations would be reported to MDL/LOD (for example, if a laboratory result of 3.1 ug/L lies between the LOD and the LOQ it would be displayed as 3.1 J ug/L, and a non-detect for an LOD of 1.2 ug/L would be displayed as <1.2 ug/L). The reporting limit would not be used in these results. DO and ORP are field measurements, so these "left-censoring" issues do not apply.

Resolution of 2011 Five-Year Review Issues

The most recent Five Year Review Report (5YRR) was finalized and approved on July 27, 2011. It identified one major issue-- the lack of "a significant overall declining trend throughout the aquifer, especially for VC", and described two recommendations and follow-up actions. The first of these was that the "PRP should evaluate alternatives, propose specific enhancements to the system, and implement them according to a schedule. The groundwater pump-and-treat system should remain on-site and operational until the LFAS is optimized." This recommendation was given a milestone implementation date of September 2013.

Page 11 of the 2011 AR makes a recommendation to "evaluate the potential installation of two additional sparge points at the Site. The additional sparge points could include reconstructed wells (i.e., groundwater or ISVE extraction) at the Site." This appears to be a direct response to the 5YRR.

At the present time, more than half of the available time between when the 5YRR was issued and the stated milestone has passed. The 2011AR provides no schedule for the recommended evaluation, let alone for implementing its results and recommendations. Given the time required to prepare, review, revise, approve, and implement a work plan, even in a highly efficient manner, we are concerned about WMWI's ability to meet this milestone.

Therefore, we are requiring, unless we negotiate a different program within 30 days of the date of this letter, the following program in accordance with the schedule outlined to address the 5YRR issue in a timely manner:

- A report describing the evaluation identified by WMWI in the 2011 AR, which will specifically evaluate alternatives and propose specific enhancements to the system, as stated in the 2011 5YRR—due January 18, 2013.
- A timely review and response by the EPA and WDNR—due March 1, 2013.
- Assuming approval, a work plan with specific enhancements, bid drawings, startup testing and monitoring plan, and any changes required to the QAPP or SAP—due May 3, 2013.
- A timely review and response by EPA and WDNR—due June 14, 2013.
- Construction and startup testing complete and system enhancements in production—due July 29, 2013.
- Submission of a report communicating as-builts, well installation reports and filings, etc.— due August 26, 2013 (excluding water quality analysis results from laboratories that have longer QA/QC schedules).

Note: The 2011 AR indicates that one possible additional sparge point might be a reconstructed extraction well, EW1 or EW2. We strongly recommend against considering or using EW1 as a sparge point. EW1 is too close to monitoring well P17; introducing a sparge well at this location would irrecoverably damage the groundwater monitoring network and would, in effect, be a case of spot-cleaning the monitoring point and not of cleaning the aquifer.

WMWI Proposed Monitoring Plan Changes

The 2008 AR contained a substantial plan to reduce monitoring at the Hagen Farm site. In August 2011, EPA approved a significant reduction in the list of analytes via an e-mail correspondence. WMWI seeks further approval from EPA regarding its previous request to reduce the parameters and sampling frequencies for the current list of analytes. Table 1 (see attached) from the 2008 AR displays WMWI's proposed monitoring schedule, which should be taken *modulo* the 2011 EPA-approved reductions. Table 2 (see attached) is the proposed monitoring schedule for 2012 from Appendix C of the 2011 AR. The following discussion references all three documents (2008 AR, 2011 AR, and the EPA's August 2011 memo).

We are largely in agreement that frequencies can be reduced, but recommend some changes from the RP proposal. Table 2 below shows modifications of attached Table 1, with color coded changes for wells, frequencies, and water-level-only sampling.

- We agree with the elimination of the monthly water quality sampling. Note, however, that if new air sparging points are operated, then a short-term start-up supplemental monitoring plan would be necessary. Such a plan would include short-interval sampling and would not require changing the long-term monitoring schedule.

- While we generally agree to changes in the quarterly water quality sampling, we recommend a small number of changes. In addition to those locations identified in the 2008 AR, quarterly sampling should be maintained at P17B and P22B to provide nested

data. It should also be maintained at OB8M and P32B, where VC exceedances of the ES have been recorded.

- While we agree with a number of the changes in the semi-annual water quality sampling, we propose that semi-annual water quality sampling should be maintained at IG04 to provide a stable stream of up-gradient data, MW7 for paired data, P22C for more paired data.

- Compared to WMWI's proposal for revised monitoring, some additional groundwater head (water level) data should be collected. These additional measurements are indicated in Table 2 by ***"(n)"***, where *n* is the number of measurements per annum.

- Water quality sample samples from EW1INF and EW2 should be obtained semi-annually and water levels quarterly; this schedule may be modified if new air sparging points are operated.

- Private well PW2 should be sampled annually due to its proximity to PW3 and the estimated groundwater head contours in the eastern half of the Wingra Redi-Mix site.

Finally, with respect to the analyte lists (Appendix C, Page 3 from the 2011 AR), we recommend that the VOC annual and semi-annual lists be swapped. This will ensure that the most comprehensive spatial coverage (annual) is paired with the most comprehensive chemical coverage—exactly as has been laid out for indicator species, field parameters, and metals. Otherwise the list is acceptable.

In summary, the agencies have concluded that a more aggressive remediation schedule is needed for the GCOU. The LFAS, in its current state, cannot treat the remaining groundwater contamination at an acceptable rate, as evinced by the presence of contaminants exceeding the PALs downgradient of the SCOU and offsite. The agencies have discussed this concern with WMWI over the past years. As per the September 2007 consent decree[2], WMWI must improve its efforts to implement appropriate corrective measures to ensure the remedy is protective of human health and the environment.

The 2011 5YRR concluded that on a site-wide basis, the remedy is protective of human health and the environment in the short term. The agencies further determined that the remedy will be protective in the long term when the current LFAS system has been enhanced and is effectively operated and maintained. In addition, we have also discussed the need for WMWI to maintain and enforce the existing ICs; and to implement additional enforceable ICs further downgradient of the Site, where groundwater cleanup goals are being exceeded, until the cleanup goals have been achieved throughout the plume.

I hope this letter clarifies the agencies' position with respect to the remedial progress at the site, the necessary steps to insure that the groundwater cleanup will be achieved under the terms of

[2] (United States of America v. Waste Management of Wisconsin, Inc., Case No. 07-C-0424-C)

the consent decree, and the approvable monitoring changes under future operation and maintenance. Please contact me if you would like to discuss any of these items further.

Sincerely,

Sheila A. Sullivan

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Enclosures (3)

cc: Gary Edelstein, WDNR
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REPLY TO THE ATTENTION OF: SR-6J

June 20, 2014

Michael L. Peterson, P.E.
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VIA ELECTRONIC MAIL

RE: Revised Work Plan for the Expansion of the Low-flow Air Sparge System at the Hagen Farm Superfund Site, Town of Dunkirk, Dane County, Wisconsin.

Dear Mr. Peterson,

This letter regards the June 3, 2014 revised work plan for the expansion of the Low-flow Air Sparge (LFAS) System at Hagen Farm, submitted by SCS Engineers on behalf of Waste Management of Wisconsin (WMWI). The revisions were informed by our discussion of minor issues during the conference call held on April 30, 2014 between U.S. Environmental Protection Agency (EPA), WMWI and the Wisconsin Department of Natural Resources (WDNR). The four items of concern and the agreed solutions were documented in EPA's letter to you of May 27, 2014. In that letter, EPA approved of the August 5, 2013 work plan as modified by the solutions stated in the letter.

We reviewed the revised June 3rd work plan and found that our requested revisions have been satisfactorily incorporated into the document; therefore, we are approving the work plan. We also strongly recommend that WMWI develop an approach to estimate the radius of influence of LFAS conversion wells EW-1INF and EW-3, as a post-construction diagnostic.

Because you are receiving this approval letter two days beyond the scheduled date of June 18th, we understand that this delay may need to be factored into the estimated activity completion dates. We look forward to the installation and start-up of the enhanced LFAS system.

Please contact me if you have any questions regarding this letter.

Sincerely,

Sheila A. Sullivan

Sheila A. Sullivan
Remedial Project Manager
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cc: Mike Prattke, SCS Engineers
Dave Dougherty, Subterranean, Inc.
Gary Edelstein, WDNR
Michelle Gale, WM
Jeffrey Cahn, ORC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD (SR-6J)
CHICAGO, ILLINOIS 60604-3590

REPLY TO THE ATTENTION OF: SR-6J

March 3, 2016

Michael L. Peterson, P.E.
Waste Management
Closed Sites Management Group
Waste Management, Inc.
W124N9355 Boundary Road
Menomonee Falls, Wisconsin 53051

VIA ELECTRONIC MAIL

Dear Mr. Peterson,

This letter is in response to your letter of February 9, 2015 in which Waste Management of Wisconsin, Inc. (WMWI) requested permission from the U.S. Environmental Protection Agency (EPA) to reduce the monitoring of the vapor extraction wells associated with the In-situ Vapor Extraction (ISVE) system[1] and the onsite gas probes. I will first address the extraction well sampling.

EPA previously authorized a reduction in the sampling frequency for volatile organic compounds (VOCs) at the operating extraction wells from semi-annual to annual. The annual sampling must be performed in November to provide a worst-case scenario. EPA documented this approval in a letter dated May 22, 2014 to WWMI (see page 2 of that letter).

In a letter dated February 9, 2015, WWMI requested EPA's written approval to discontinue the annual VOC sampling at the individual ISVE extraction wells, but continue the annual VOC sampling at the blower inlet in November of each year. WMWI made this request because prior data confirmed that emissions from the ISVE system were well below applicable regulatory requirements and are expected to remain so into the future. EPA is providing approval for the requested changes in monitoring frequency by receipt of this letter. Under the existing monitoring scenario in February 2015, the latest annual VOC sampling conducted for the blower inlet occurred shortly after November of 2015. This VOC sampling would have also applied to the extraction wells. Because of the elapsed time between your request and EPA's written

[1] The ISVE system was installed as a component of the source control operable unit (SCOU) remedy for the site in 1994 as a pilot project. The pilot has been operating since that time and is being closely tracked by EPA and the Wisconsin Department of Natural Resources (WDNR).

approval, a misunderstanding apparently occurred and as a result, VOCs were not collected from the extraction wells. In this specific instance, the blower inlet data should suffice.

EPA believes it is reasonable to collect a round of confirmation samples once every five years in November at all of the ISVE extraction wells as the data will provide information to evaluate the effectiveness of the remedy as required by the Five Year Review (FYR). This frequency will apply retroactively from the time the last round of samples collected.

The second part of WWMI's request is to discontinue the quarterly field measurements at the gas probes because the data show that conditions within the waste mass have been stable for some time. The measurements have been used to evaluate periodic adjustments to the vacuum at the extraction wells in order to maximize removal of VOCs. We agree that quarterly gas probe measurements are not critical to assessing the effectiveness of the ISVE system at this time and approve of your request to discontinue the measurements. We strongly recommend that you continue to take annual measurements at the 11 probes located outside of the waste mass (i.e., GP16 and GP20 – GP29) to ensure that no offsite gas migration is occurring. In addition, EPA has determined that a round of confirmation measurements once every five years (corresponding to the required FYRs) at all of the gas probes should be taken as they will provide a "snapshot" of the remedy's effectiveness and will assist in identifying areas of potential optimization. These samples should also be collected five years from the last sampling event.

The five-year monitoring frequency at the individual extraction wells and the gas probes is practical, and will provide data to support the FYR as well as substantial monitoring relief to WMWI. If there is evidence to support more frequent monitoring or the need to collect an occasional round of data in the future, then EPA may require such activity.

EPA is currently reviewing your letter of January 4, 2016 in which WMWI proposes to conduct a rebound test to evaluate the role of monitored natural attenuation in groundwater remediation. We will keep you apprised of our progress on that front.

I hope this letter clarifies EPA's expectations of future monitoring at the Hagen Farm site. If you have any questions, please do not hesitate to contact me at 312-886-5251.

Sincerely,

Sheila A. Sullivan

Sheila A. Sullivan
Project Manager
Superfund Division
U.S. EPA

cc: Gary Edelstein, WDNR
Mike Prattke, SCS Engineers
David Dougherty, Subterranean, Inc.
Jeffrey Cahn, U.S. EPA, ORC