FIVE-YEAR REVIEW REPORT FOR HECHIMOVICH SANITARY LANDFILL SUPERFUND SITE DODGE COUNTY, WISCONSIN

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Prepared by

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LIST OF ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cis-1,2-DCE	cis-1,2-dichloroethene
EPA	U.S. Environmental Protection Agency
FYR	Five-Year Review
ICs	Institutional Controls
LGRL	Land and Gas Reclamation Landfill
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
ppb	Parts per Billion
PRP	Potentially Responsible Party
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
TCE	Trichloroethene
µg/L	Micrograms per Liter
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources

EXECUTIVE SUMMARY

This is the fourth five-year review (FYR) for the Hechimovich Sanitary Landfill Superfund site (also known as the Land and Gas Reclamation Landfill) located in the town of Williamstown, Dodge County, Wisconsin. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this statutory FYR was the signing of the previous FYR on June 17, 2009.

The site began as the City of Mayville dump in 1959. From 1959 to 1970, the City of Mayville operated the site as a licensed landfill that accepted wastes including battery cracking wastes, spent solvents, and waste paints. In the early 1970's, site operations were continued by George Hechimovich and the site became known as the Hechimovich Sanitary Landfill. During much of the 1970s, the site was licensed to accept toxic and hazardous wastes. In 1980, the site was no longer permitted to accept hazardous wastes. In July 1985, the landfill's name was changed to Land and Gas Reclamation Landfill (LGRL) and in October 1986, the site was closed to all waste disposals.

Following completion of the Remedial Investigation and Feasibility Study (RI/FS) the Wisconsin Department of Natural Resources (WDNR) wrote a Source Control Interim Record of Decision (ROD) which was signed on January 13, 1994. This ROD documented the installation of a new clay cap and an active landfill gas extraction system. The U.S. Environmental Protection Agency (EPA) concurred with the ROD. The final remedy for the site, documented in a ROD signed on September 6, 1995, included the existing clay cap and gas extraction system, operational changes to the gas system to emphasize gas removal from those areas of the waste fill believed to be major contributors of contaminants to the groundwater, and long-term groundwater monitoring. EPA concurred with the ROD. The Hechimovich site consists of two operable units (OUs). OU1 is the source control remedy, and OU2 is groundwater.

Long-term and recent groundwater monitoring downgradient of the site has shown some improvement in the shallow groundwater quality in impacted monitoring wells. Operation of the remedial action selected in the 1995 ROD appears to be improving the groundwater quality in the shallow unconsolidated aquifer directly north of the landfill. However, in the spring of 2009, the information concerning site conditions changed. As a result of contamination exceeding state and federal drinking water standards found in two private drinking water wells located 1,800 – 4,000 feet northeast of the waste boundary, it was determined that a deeper, previously unknown, groundwater contaminant plume may be leaving the landfill moving to the northeast through various bedrock units and possibly impacting private wells cased 180-190 feet below the ground surface. Since 2009, sampling has been conducted at various private wells in the area and investigations are currently being conducted by the potentially responsible parties (PRPs). These investigations are being conducted to determine the source(s) of the new contaminant groundwater plume, including the landfill; to define the degree and extent of the plume; to assess potential human and environmental risks; to identify remedial options; and to implement any necessary remedial actions.

As an interim public health protection measure, bottled drinking water is being provided to one home with contaminant levels exceeding drinking water standards. A filtration system was also installed at this home and the sampling indicates that it is working properly. The only other well that exceeded drinking water standards was converted to a monitoring well and is no longer useable as a drinking water supply well.

As a part of the expansion of the nearby Glacier Ridge Landfill, the Hechimovich Landfill is being dismantled and the waste relocated into Glacier Ridge. Upon completion of the waste relocation, the Glacier Ridge Landfill will then be expanded over the footprint of Hechimovich. The project includes a diversion of the piping for the gas extraction system. Best management practices will be utilized to minimize the time waste is exposed.

The source control OU1 remedy currently protects human health and the environment in the short term because human and ecological exposures are currently under control, since the waste relocation project is being carried out in such a way as to maintain protectiveness. The workers are following a Health and Safety Plan to prevent exposure to the waste and the site is completely fenced with controlled access at the gate. However, in order for the remedy to be protective in the long term, the source control remedy will need to be evaluated after the waste relocation project is completed and a determination made whether any further actions are necessary to ensure protectiveness.

The groundwater OU2 remedy currently protects human health and the environment in the short term because human health and ecological exposures are currently under control. There are no known uses of the shallow aquifer and the monitoring data shows it to be stable with reducing concentrations within the plume. For the deep groundwater aquifer, the human exposure pathway was eliminated via provision of bottled water and installation of a filter to one resident, and the other impacted drinking water well is not being used, having been converted to a monitoring well. There are no other known users of the deep aquifer where drinking water standards are exceeded. However, in order for the remedy to be protective in the long-term the following actions need to be taken: completion of the investigation of the deep aquifer contamination to determine the source and extent of the contaminant plume, implementation of possible further remedial measures, and compliance with effective institutional controls (ICs). Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.

The site-wide remedy currently protects human health and the environment in the short term because human health and ecological exposures are currently under control. However, in order for the remedy to be protective in the long term the following actions need to be taken: completion of the investigation of the deep aquifer to define degree, extent, and source of the groundwater contaminant plume, evaluation of the source area OU1 remedy once the waste relocation project is completed, determination if further remedial measures are necessary, and compliance with effective ICs.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Hechimovich Sanitary Landfill Superfund Site		
EPA ID: WID052906088		
Region: 5	**State:** WI	**City/County:** Town of Williamstown/Dodge County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: State
Author name State Project Manager: Will (Woody) Myers
Author affiliation: Wisconsin Department of Natural Resources
Review period: 9/12/2013 - 6/17/2014
Date of site inspection: 10/14/2013
Type of review: Statutory
Review number: 4
Triggering action date: 6/17/2009
Due date ***(five years after triggering action date)***: 6/17/2014

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): 1	**Issue Category: Changed Site Conditions**			
	Issue: Site being deconstructed with waste relocated to adjacent Glacier Ridge landfill, then remaining site footprint to become an expansion to Glacier Ridge landfill.			
	Recommendation: Utilize best management practices to limit waste exposure and groundwater infiltration, operate gas extraction system as long as practicable, and expand State oversight of project.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State	6/30/2017

OU(s): 2	Issue Category: Monitoring			
	Issue: Site waste relocation/expansion project impacts current groundwater monitoring program.			
	Recommendation: Revise groundwater monitoring program to add new monitoring wells, and other changes as appropriate.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State/EPA	6/30/2017

OU(s): 2	Issue Category: Remedy Performance			
	Issue: New contaminant plume in deeper bedrock aquifer.			
	Recommendation: Complete groundwater investigation.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State/EPA	6/17/2019

OU(s): 1 and 2	Issue Category: Institutional Controls			
	Issue: The required ICs have not been fully evaluated on-site and off-site. A review of the ICs is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in place for long-term stewardship at the site.			
	Recommendation: An IC Plan will be prepared by EPA and WDNR documenting required IC activities necessary by the PRPs and the agencies to further evaluate and implement additional ICs, as necessary, and to ensure that effective ICs are in place and effective and are monitored, maintained and enforced.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State	EPA	6/17/2019

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
1	Short-term Protective

Protectiveness Statement:

The source control OU1 remedy currently protects human health and the environment in the short term because human and ecological exposures are currently under control, since the waste relocation project is being carried out in such a way as to maintain protectiveness. The workers are following a Health and Safety Plan to prevent exposure to the waste and the site is completely fenced with controlled access at the gate. However, in order for the remedy to be protective in the long-term, the source control remedy will need to be evaluated after the waste relocation project is completed and a determination made whether any further actions are necessary to ensure protectiveness.

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
2	Short-term Protective

Protectiveness Statement:

The groundwater OU2 remedy currently protects human health and the environment in the short term because human health and ecological exposures are currently under control. There are no known uses of the shallow aquifer and the monitoring data shows it to be stable with reducing concentrations within the plume. For the deep groundwater aquifer, the human exposure pathway was eliminated via provision of bottled water and installation of a filter to one resident, and the other impacted drinking water well is not being used, having been converted to a monitoring well. There are no other known users of the deep aquifer where drinking water standards are exceeded. However, in order for the remedy to be protective in the long-term the following actions need to be taken: completion of the investigation of the deep aquifer contamination to determine the source and extent of the contaminant plume, implementation of possible further remedial measures, and compliance with effective ICs. Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.

Sitewide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

Protectiveness Statement:

The site-wide remedy currently protects human health and the environment in the short term because human health and ecological exposures are currently under control. However, in order for the remedy to be protective in the long-term the following actions need to be taken: completion of the investigation of the deep aquifer to define degree, extent, and source of the groundwater contaminant plume, evaluation of the source area OU1 remedy once the waste relocation project is completed, determination if further remedial measures are necessary, and compliance with effective ICs.

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy 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 prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."*

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), states:

> *"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."*

The WDNR is the lead agency for developing and implementing the remedy at the Hechimovich Sanitary Landfill Superfund site in Williamstown, Dodge County, Wisconsin. As the lead agency, the WDNR conducted a FYR on the remedy implemented at the site. EPA has reviewed the supporting documentation and provided input to WDNR during the FYR process. See Figures 1 and 2 in Appendix B for site maps which show the site location and sampling locations, respectively.

This is the fourth FYR for the site. The triggering action for this statutory review is the completion date of the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The site consists of two Operable Units, all of which are addressed in this FYR. OU1 is for source control and consists of a permanent cover (capping) and a gas extraction system. OU2 is groundwater.

II. PROGRESS SINCE THE LAST REVIEW

This is the fourth FYR for the site. The key actions over the last five years have been:

1. The discovery in early 2009 of private water supply well contamination from vinyl chloride at concentrations exceeding state and federal drinking water standards;

2. Continued operation of the landfill gas extraction system as a remedial response to reduce volatile organic compound (VOC) concentrations within the waste fill; and

3. The decision by the PRPs to move all the waste from the Hechimovich Landfill to an adjacent landfill as part of the Glacier Ridge Landfill expansion project.

Table 1: Protectiveness Determinations/Statements from the 2009 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1, 2 and sitewide	Short-term Protective	Based on the 2009 site inspection, as it exists today, with the provision of bottled water and the relocation of some of those residents with vinyl chloride contaminated water, the remedy selected in the ROD is protective of human health and the environment in the short term. The bottled water and relocation activities are mitigating the groundwater/drinking water exposure pathway. If the landfill is found to be the source of these known threats, the exposure pathways will need to be addressed through one or more response actions to be taken by the potential responsible party group. However, long-term protectiveness will require further investigation of the deep aquifer contamination, implementation of possible further remedial measures, and compliance with effective ICs. Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.

Table 2: Status of Recommendations from the 2009 FYR

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
2	The deep aquifer contamination and water supply contamination concerns are affecting the future protectiveness of the remedy.	An investigation of the contamination in the deep aquifer will be conducted by the landfill owner.	PRP	State	Fall 2009	Ongoing	N/A
Sitewide	Institutional Controls: The required ICs have not been fully evaluated. A review of the institutional controls is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in place for long-term stewardship at the site.	An IC Plan will be prepared by EPA and WDNR documenting required IC activities necessary by the PRPs and the agencies to further evaluate and implement additional ICs, as necessary, and to ensure that effective ICs are in place and effective and are monitored, maintained and enforced.	EPA/State	EPA	June 2010	Addressed in Next FYR	N/A

Recommendation 1
An investigation of the contamination in the deep aquifer is ongoing. There are currently three on-site wells located in the bedrock aquifer (one of which is up-gradient and used as a background well). There are also two-off site wells installed into the bedrock aquifer. See Figures 2 and 3 in Appendix B for locations of the bedrock wells. Sampling has also been conducted at several private wells in the area. The sampling locations can be found on Figure 3 in Appendix B. Additional monitoring wells are proposed to define the degree and extent of contamination in the deep aquifer. The proposed locations of these wells are shown in Figure 3 in Appendix B. The PRP (the landfill's owner/operator, Advanced Disposal) is using a phased approach to this investigation. As the information from the additional sampling points becomes available, it will be reviewed. At this time additional sampling points may be needed.

Recommendation 2
No ICs have been executed for this or the surrounding properties. As a Wisconsin licensed landfill, the State has restrictions for any construction on landfills. Furthermore the site is the location of an active landfill. It is standard operating procedure to wait to execute any ICs (in the form of deed restrictions) on landfills until after the facility stops accepting waste and is in the process of closure. These ICs are a condition of landfill closure.

No casing requirements have been executed due to the lack of information as to the degree and extent of groundwater contamination in the deep aquifer. However the State reviews all applications for new wells and would provide recommendations on any new private drinking water wells in the proximity of Hechimovich.

As described above, certain State regulations that govern landfills have already been implemented, however an IC Plan/IC evaluation will be needed going forward in order to evaluate any additional ICs that may be needed on-site and off-site in the future.

Remedy Implementation Activities

A plan has been developed and initiated by the PRP (Advanced Disposal) and approved by WDNR on October 13, 2013, to expand the adjacent commercial landfill, Glacier Ridge Landfill. The plan involves expanding the liner and leachate collection system of the Glacier Ridge Landfill to the east, located between Glacier Ridge and Hechimovich. After this is completed, Advanced will relocate all of the waste from Hechimovich with some of the underlying soil, most of which is expected to be contaminated, place the waste and soil into the expanded adjacent landfill, and deconstruct Hechimovich. Upon the completion of these actions, the liner from the expanded Glacier Ridge Landfill will be expanded again, as part of the Southeast Expansion, to encompass the footprint of the current Hechimovich landfill. This action will be carried out in accordance with the state-approved Plan of Operation and if carried out in accordance with the requirements of those approvals, is expected to have no – or a minimal temporary – adverse impact on the groundwater. The Hechimovich waste relocation will be conducted in four phases over four separate calendar years. The first phase that affects Hechimovich (known as Phase 6) is currently underway and addresses the north end of Hechimovich. This area includes what is believed to be the source of the groundwater contamination of the site.

The waste will be removed and once at the base, soil sampling will be conducted to determine the degree and extent of soil contamination. If the soils are contaminated, they will be segregated and treated depending on the levels of contamination. Once the base is cleared the liner from Glacier Ridge

will again be extended and will then begin accepting new waste. This process will continue for three additional phases: the second phase (Phase 7) includes the center portion of Hechimovich, the third phase (Phase 8) includes the south end of Hechimovich, and the fourth phase (Phase 9) encompasses a small remaining portion of the south end of Hechimovich. See Figure 5 in Appendix B for a map of the phases. Each phase will take approximately one calendar year to complete. The waste relocation is expected to result in a long-term improvement to the shallow groundwater quality over time. It is not likely that there would be a noticeable improvement in the deep aquifer, but removing the source should shorten the time till the aquifer contamination concentrations fall below standards. The Hechimovich gas collection system will continue to operate until the waste has been completely moved and measures will be taken to limit the time waste is exposed so as to limit groundwater infiltration.

The expansion of the Glacier Ridge liner and removal of the Hechimovich cap began in February 2014. The relocation of the Hechimovich waste is expected to be completed by June 2017.

Outside of the waste relocation project, additional investigations are being conducted of the OU2 deep groundwater contamination.

In the spring of 2009, the information concerning site conditions changed. As a result of contamination exceeding state and federal drinking water standards found in two private drinking water wells located 1,800 – 4,000 feet northeast of the waste boundary, it was determined that a deeper, previously unknown, groundwater contaminant plume may be leaving the landfill moving to the northeast through various bedrock units and possibly impacting private wells cased 180-190 feet below the ground surface. As an interim public health protection measure, bottled drinking water is being provided to one home with contaminant levels exceeding drinking water standards. A filtration system was also installed at this home and the sampling indicates that it is working properly. The only other well that had exceedances was converted to a monitoring well (PW-27) and is no longer useable as a drinking water supply well. It is believed that there is not a pathway for vapor intrusion into the residences due to the fact that the contamination is located approximately 180-190 feet below ground surface and because there is a shale layer between the shallow and deep aquifer.

Since 2009, sampling has been conducted at over 25 private wells in the area with continued sampling at 11 private wells. Investigations are currently being conducted to determine the source(s) of the deep contaminant groundwater plume, including the landfill; to define the degree and extent of the plume; to assess potential human and environmental risks; to identify remedial options; and to implement any necessary remedial actions. The results of the sampling that has been conducted can be found in Appendix C-2 and are discussed in more detail in the Data Review section of this FYR. Table 3 lists a summary of the remedial activities that have been conducted since the last FYR in June 2009.

Table 3: Summary of Remedial Activities since June 2009

September 2009	Two monitoring wells were installed to the bedrock aquifer (P401D and P402D)
January 2010	P402D was replaced by P402E due to a low flow zone over its screened interval
July 2010	Monitoring wells P421D and P422D were installed
October 2010	New private drinking water well (PW-21RR) was installed to replace impacted well
November 2010	Decommissioned private well was converted to a sampling point (PW-27)
August 2012	Monitoring well P424D (dolomite) was installed
October 2012	Monitoring well P424SS (sandstone) was installed
February 2014	Two proposed sampling points were installed and are being evaluated

More information regarding the deep groundwater investigation can be found in the document entitled "Status of Off-Site Investigation of Chlorinated Volatile Organic Compounds in Groundwater in Bedrock" dated August 13, 2013, from SCS Engineers to WDNR.

Institutional Controls

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential to exposure to contamination and that protect the integrity of the remedy. ICs in the form of enforceable solid waste landfill regulations are required by the NR 500, Wisconsin Administrative Code series, and outlined in the 1995 Record of Decision for the site to restrict property use, maintain the integrity of the remedy, and assure the long term protectiveness for areas which do not allow for unlimited use or unrestricted exposure. A summary of the implemented ICs for the site is listed in Table 4 and ICs are further discussed below.

Specific to this site, the applicable ICs are the state prohibition to building on a closed landfill and the state prohibition of drilling a water supply well within 1200 feet of the landfill boundary without permission from the WDNR. Both of these prohibitions are set in state administrative code and are enforced by the WDNR. To date there have been no problems with the enforcement of these controls.

Table 4: Summary of 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 Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	All of landfill and 1200 feet from the waste boundary	Prohibition of the drilling of water supply wells within 1200 feet of the landfill boundary without prior approval from the WDNR	Wisconsin Administrative Code, already in effect
Engineered Landfill Cover	Yes	No	All of covered landfill area	Prohibition of construction of any sort on the landfill cover without prior approval from the WDNR	Wisconsin Administrative Code, already in effect

Note: Additional ICs may be determined to be necessary off-site based on the results of the deep groundwater investigation being conducted.

Current Compliance: Specific to this site, the applicable ICs are the state prohibition to building on a closed landfill and the state prohibition of drilling a water supply well within 1200 feet of the landfill boundary without permission from the WDNR. Both of these prohibitions are set in state administrative code and are enforced by the WDNR. Based on oversight of the site by the assigned WDNR Waste Management and Remediation and Redevelopment staff, to date there have been no problems with the enforcement of these controls.

Long-Term Stewardship:

Long-term protectiveness at the site requires compliance with the above restrictions to assure the remedy continues to function as intended.

System Operation/Operation and Maintenance Activities

Advanced Disposal, a successor corporation to Veolia Environmental and the company that now owns the Hechimovich Landfill, has been conducting long-term monitoring and maintenance activities according to state approvals. The primary activities associated with operation and maintenance (O&M) include the following:

- Visual inspection of the cap with regard to vegetative cover, settlement, stability, and any need for corrective action;
- Inspection of the drainage swales and ditches for blockage, erosion and instability, and any need for corrective action;
- Inspection of the condition of groundwater monitoring wells;
- Environmental monitoring: Monitoring of groundwater quality, leachate head wells and gas probes; and
- Annual reports to the WDNR documenting the operation of the remedy.

III. FIVE-YEAR REVIEW PROCESS

Administrative Components

The PRP (Advanced Disposal) was notified of the initiation of the FYR on 10/3/2013. The FYR was led by the WDNR project manager for the site.

The review, which began on 9/12/2013, consisted of the following components:

- Community Notification and Involvement;
- Document Review;
- Data Review;
- Site Inspection;
- Interviews; and
- Five-Year Review Report Development and Review.

Community Notification and Involvement

Activities to involve the community in the five-year review process were initiated with a meeting in October 2013 between the PRP (Advanced Disposal) and the state project manager. A notice was published in the local newspaper, the "Dodge County Pioneer," on 2/28/2014, stating that there was a five-year review and inviting the public to submit any comments to the WDNR.

The results of the review and the report will be made available at the site information repository located at:

Mayville Public Library
111 North Main Street
Mayville, WI 53050

Document Review

This FYR consisted of a review of relevant documents including O&M records and monitoring data. Applicable soil and groundwater cleanup standards, as listed in the January 1994 ROD, were also reviewed.

Data Review

Groundwater monitoring has been conducted at the site since the early 1980s. However, groundwater quality data collected since the early 1990s are primarily used to make decisions about the condition of the site. The shallow groundwater contamination plume is stable in both the concentration of detectable contamination and in the plume boundaries. See the tables in Appendix C-1 for historic monitoring results at the shallow groundwater wells. As detailed in the 1995 ROD, the cleanup goals for the primary contaminants of concern are Wis. Adm. Code NR 140 Groundwater Quality Preventive Action Limits and the Maximum Contaminant Levels set in the Safe Drinking Water Act. Since June 2009, the end of the third five-year review period, the gas extraction system has removed in excess of 5,000 pounds of VOCs from the waste mass.

Groundwater monitoring discovered contamination northeast of the landfill in the bedrock units underlying the site during the sampling of more than 20 private wells in 2009. Two of the private drinking water wells (PW-21R/PW-21RR and PW-27) that capture water from the dolomitic aquifers beneath the dolomite and shale layers of the Maquoketa Formation were found to have contamination of chlorinated VOCs above the state and federal drinking water standards and detections of other chlorinated VOCs. (See Figure 4 in Appendix B for a cross section that shows the layers and aquifers at the site). Both PW-21 and PW-27 had exceedances of vinyl chloride and PW-27 also had exceedances of cis-1,2-dichloroethene (cis-1,2-DCE). Two other private drinking water wells (PW-28 and PW-32) had low detections of cis-1,2-DCE, but were well below the state and federal drinking water standards. The rest of the wells sampled in 2009 were non-detects. Continued sampling was conducted in eleven private wells; the results from these wells are presented in Appendix C-2 and the well locations are shown on Figure 3 in Appendix B. The latest sample results show that the vinyl chloride and cis-1,2-DCE concentrations in the replacement water supply well, PW-21RR, have shown an overall declining trend since mid-2012. In samples from PW-27, concentrations of cis-1,2-DCE and vinyl chloride have declined slightly since monitoring started in 2009. Samples from PW-28, PW-32 and PW-19 (which was not sampled in 2009), show low detections of cis-1,2-DCE, however the detected cis-1,2-DCE concentrations are well below the state and federal drinking water standards. The rest of the private wells sampled do not show detections for chlorinated VOCs. These wells draw water from depths of 205 to 445 feet below ground surface. The combination of organic parameters found in the drinking water wells match, to a large degree, the combination of organic contaminants found in the groundwater at the landfill. In addition to the sampling of the private drinking water wells, two monitoring wells were installed on-site and two monitoring wells were installed off-site into the deep bedrock aquifer. The chlorinated VOC concentrations found in these wells are listed in Table 5. Additional monitoring wells

are planned to be installed off-site to further define the deep groundwater plume. The proposed locations of these wells are shown in Figure 3 in Appendix B. Additional monitoring of existing and planned new monitoring wells will help determine the source and nature of this deep groundwater contamination.

Table 5: Deep Aquifer Groundwater Bedrock Well Concentrations

Well Number	Sample Date	Concentration in µg/L or ppb		
		TCE	cis-1,2 DCE	Vinyl Chloride
P-401D	10/7/2009	<0.4	<0.4	<0.4
	4/6/2010	<0.4	<0.4	<0.4
	10/27/2010	<0.4	<0.4	<0.4
	11/29/2010	<0.4	<0.4	<0.4
	4/8/2011	<0.4	<0.4	<0.4
	10/6/2011	<0.4	<0.4	<0.4
	4/13/2012	<0.4	<0.4	<0.4
	1/4/2012	<0.48	<0.83	<0.18
P-402E	1/22/2010	2.71	120	23.6
	2/24/2010	2.66	200	35
	4/7/2010	4.84J	395	48.8
	10/27/2010	11.1J	459	39.4
	11/29/2010	9.16J	346	40.6
	4/8/2011	15.7	499	53.5
	10/7/2011	13.6	344	41.9
	4/13/2012	11.5J	412	41.4
	10/4/2012	12.5	360	39.3
	4/5/2013	10.2	330	35.5
P-423D	21/16/2010	0.9J	62.1	2.53
	4/8/2011	0.73J	52	1.2
	10/7/2011	0.74J	44.9	2.19
	4/13/2012	0.92J	61.9	0.91J
	10/5/2012	0.68J	51.8	1.5
	4/5/2013	0.72J	59.4	2.1
P-424D	12/17/2012	1.7J	91.2	7.0
	2/20/2013	2.5	105	5.8

Site Inspection

The inspection of the site was conducted on 10/14/2013. In attendance were Woody Myers of the WDNR, Joseph Falle of Cornerstone Environmental Group, Joe Kwiatkowski from Advanced Disposal, and Ann Bekta and Adam Hogan of WDNR. The purpose of the inspection was to assess the protectiveness of the remedy.

The inspection of the site consisted of a walk-over of the capped landfill, a visual inspection of the gas extraction system, and an interview with the current site manager. The cap was intact and covered with short vegetation. There were no signs of erosion and the cap was free of pockets where rain water could collect. There were no seeps around the perimeter of the cap and there was no waste protruding through the cap. Adjacent to the site is an active landfill. The gates are open and monitored during business hours and secured after hours. The fencing around the facility was in good repair. Monitoring wells on-site were observed and since no damage to the protective caps was obvious, no additional inspection of the wells was made.

The results of the site inspection show that the cap and active gas extraction system have been maintained in accordance with state and federal regulations. The site inspection checklist can be found in Appendix D.

Interviews

The PRP's site manager was interviewed as part of this FYR during the site inspection, as noted above. No interviews of the public were conducted.

IV. TECHNICAL ASSESSMENT

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

No. The review of documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the ongoing monitoring indicate that the remedy may not be functioning as intended by the 1995 ROD. The capping of contaminated wastes within the landfill is working to achieve the remedial objectives to minimize the migration of contaminants to shallow groundwater and prevent significant ecological exposures through surface waters. Operation and maintenance of the cap and gas extraction system have been effective. The 10-year trend in the shallow groundwater quality results shows a stable plume with reducing concentrations within the plume. However, the landfill may be the source of a deeper groundwater contamination plume to the northeast which raises concerns about the current remedy. Two private drinking water wells located northeast of the site have been contaminated with VOCs; one of the wells exceeded state and federal drinking water standards for vinyl chloride and cis-1,2-DCE and another well for only vinyl chloride. The human exposure pathway to these two wells has been eliminated. The landfill may be the source of groundwater contamination that has migrated 1,800-4,000 feet from the site and as deep as 180-190 feet within the bedrock aquifer. An investigation of this contamination is underway. If the landfill is determined to be the source of the deeper groundwater contamination, an adjustment to the current remedies would be necessary to comply with state and federal regulations and ensure protection of human health and the environment.

The impact of the waste relocation/expansion project on the remedy in the 1995 ROD will be evaluated after the waste relocation project is complete. Best management efforts are being utilized to minimize waste exposure, groundwater infiltration, and to operate the gas extraction system as long as possible until the project is completed. WDNR oversight of this project has been expanded.

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

No. There have been no changes in the state or federal groundwater standards for the key contaminants

of cis-1,2-DCE, trichloroethene, and vinyl chloride. However, there have been changes in the site conditions that may affect the future protectiveness of the remedy, and the assumptions used during the development of the baseline risk assessment may not be valid. The earlier risk assessments were based on no known exposures to contaminants through drinking water. Since contamination has been discovered in the deep bedrock aquifer, there may be a potential contaminant exposure through drinking water ingestion in the future. Currently, the exposure pathway for drinking water has been eliminated through interim measures by providing drinking water and/or filtration systems to those affected. If the landfill is found to be the source of this contamination, a new assessment of the risks will be required once the deep groundwater aquifer investigation is complete.

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

Yes. As a part of the expansion of the Glacier Ridge Landfill, the Hechimovich Landfill is being dismantled and the waste relocated into Glacier Ridge. Upon completion of the waste relocation, the Glacier Ridge Landfill will then be expanded over the footprint of Hechimovich. The project includes a diversion of the piping for the gas extraction system. While best management practices will be utilized to minimize the time waste is exposed, there are concerns for potential impacts to the groundwater resulting from precipitation while the waste is being relocated and before the new liner can be constructed in the footprint of the site.

Technical Assessment Summary

According to the data reviewed the remedy may not be functioning as intended by the ROD. There have been changes in the site conditions that may affect the future protectiveness of the remedy. The landfill may be the source of a deeper groundwater contamination plume to the northeast which raises concerns about the current remedy. Two private drinking water wells located northeast of the site have been contaminated with VOCs; one of the wells exceeded state and federal drinking water standards for vinyl chloride and cis-1,2-DCE and another well for only vinyl chloride. The human exposure pathway to these two wells has been eliminated. The landfill may be the source of groundwater contamination that has migrated 1,800-4,000 feet from the site and as deep as 180-190 feet within the bedrock aquifer. An investigation is underway. If the landfill is determined to be the source of the deeper groundwater contamination, an adjustment to the current remedies would be necessary to comply with state and federal regulations and ensure protection of human health and the environment.

The earlier risk assessments were based on no known exposures to contaminants through drinking water. Since contamination has been discovered in the deep bedrock aquifer, there may be a potential contaminant exposure through drinking water ingestion in the future. Currently, the exposure pathway for drinking water has been eliminated through interim measures by providing drinking water and/or filtration systems to those affected. If the landfill is found to be a source of this contamination, a new assessment of the risks will be required once the deep groundwater aquifer investigation is complete.

There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The expansion of the Glacier Ridge Landfill and relocation of the Hechimovich waste into it may result in impacts to the groundwater. Best management practices are being employed to minimize waste exposure and groundwater infiltration. The waste relocation project began in March 2014 and should be completed by summer 2017.

There is no other known information that further calls into question the protectiveness of the remedy.

V. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 6: Issues and Recommendations/Follow-up Actions

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness?	
						Current	Future
1	Site being deconstructed with waste relocated to adjacent Glacier Ridge landfill, then remaining site footprint to become an expansion to Glacier Ridge landfill.	Utilize best management practices to limit waste exposure and groundwater infiltration, operate gas extraction system as long as practicable, and expand State oversight of project.	PRP	State	6/30/2017	No	Yes
2	Site waste relocation/ expansion project impacts current groundwater monitoring program.	Revise groundwater monitoring program to add new monitoring wells, and other changes as appropriate.	PRP	State/EPA	6/30/2017	No	Yes
2	New contaminant plume in deeper bedrock aquifer.	Complete groundwater investigation.	PRP	State/EPA	6/17/2019	No	Yes
Site-wide	The required ICs have not been fully evaluated on-site and off-site. A review of the ICs is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in place for long-term stewardship at the site.	An IC Plan will be prepared by EPA and WDNR documenting required IC activities necessary by the PRPs and the agencies to further evaluate and implement additional ICs, as necessary, and to ensure that effective ICs are in place and effective and are monitored, maintained and enforced.	EPA/State	EPA	6/17/2019	No	Yes

VI. PROTECTIVENESS STATEMENTS

Protectiveness Statement(s)	
Operable Unit:	*Protectiveness Determination:*
1	Short-term Protective
Protectiveness Statement: The source control OU1 remedy currently protects human health and the environment in the short term because human and ecological exposures are currently under control, since the waste relocation project is being carried out in such a way as to maintain protectiveness. The workers are following a Health and Safety Plan to prevent exposure to the waste and the site is completely fenced with controlled access at the gate. However, in order for the remedy to be protective in the long-term, the source control remedy will need to be evaluated after the waste relocation project is completed and a determination made whether any further actions are necessary to ensure protectiveness.	

Protectiveness Statement(s)	
Operable Unit: 2	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The groundwater OU2 remedy currently protects human health and the environment in the short term because human health and ecological exposures are currently under control. There are no known uses of the shallow aquifer and the monitoring data shows it to be stable with reducing concentrations within the plume. For the deep groundwater aquifer, the human exposure pathway was eliminated via provision of bottled water and installation of a filter to one resident, and the other impacted drinking water well is not being used, having been converted to a monitoring well. There are no other known users of the deep aquifer where drinking water standards are exceeded. However, in order for the remedy to be protective in the long-term the following actions need to be taken: completion of the investigation of the deep aquifer contamination to determine the source and extent of the contaminant plume, implementation of possible further remedial measures, and compliance with effective ICs. Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.	

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The site-wide remedy currently protects human health and the environment in the short term because human health and ecological exposures are currently under control. However, in order for the remedy to be protective in the long term the following actions need to be taken: completion of the investigation of the deep aquifer to define degree, extent, and source of the groundwater contaminant plume, evaluation of the source area OU1 remedy once the waste relocation project is completed, determination if further remedial measures are necessary, and compliance with effective ICs.

VII. NEXT REVIEW

The next FYR report for the Hechimovich Landfill Superfund site is required five years from the completion date of this review.

APPENDIX A
Existing Site Information

A. SITE CHRONOLOGY

Table 1: Site Chronology

Event	Date
City of Mayville dump operations	1959-70
Site operated by George Hechimovich	1970-85
WDNR issues conditional license to Hechimovich Sanitary Landfill	September 1970
WDNR issues renewal including toxic and hazardous waste disposal	December 1972
WDNR notifies Hechimovich Landfill that hazardous wastes are no longer allowed	1979
WDNR issues extension to 1980	November 1979
Site accepts liquid hazardous wastes	1970-80
Site name changed to Land and Gas Reclamation Landfill (LGRL)	July 1985
LGRL ceases accepting all wastes	October 1986
State-enforcement action requires a landfill cap and gas collection system	July 1987
Hechimovich Landfill proposed to NPL	June 24, 1988
Final NPL listing	March 31, 1989
Remedial Investigation	April 1993
Interim Source Control ROD signature	January 13, 1994
Landfill capping, gas control and long-term monitoring selected as final remedy /Feasibility Study complete	February 1994
Final ROD signed	September 6, 1995
Preliminary Close-out Report signed	September 16, 1997
First five-year-review completed	February 19, 1999
Second five-year review completed	June 21, 2004
Third five-year review completed	June 17, 2009

B. BACKGROUND

Physical Characteristics

The site is located in a rural area in the town of Williamstown, approximately 2 miles south of the City of Mayville, and approximately 3.5 miles east of the City of Horicon, Wisconsin. This 24.3-acre closed landfill is located in the east one-half of the southwest quarter of Section 35, Township 12 North, Range 16 East, Williamstown, Dodge County, Wisconsin. See Figure 1 in Appendix B for a site map. The site is fenced and access is controlled by a monitored gate. The site contains an estimated 1 million cubic yards of waste. The waste is a mix of hazardous and non-hazardous waste.

Hydrology

The geology of the area consists of multiple layers of bedrock overlaid by unconsolidated glacial material. The unconsolidated material varies between 20 and 150-feet thick. The bedrock units are (in order of youngest to oldest) the Maquoketa Shale, Galena-Platteville Dolomite and the Saint Peter Sandstone. The Maquoketa is encountered between 20 to 150-feet below ground surface (bgs) and

ranges in thickness between 80 to 160-feet thick. The Galena-Platteville is approximately 260-feet thick which is relatively uniform across the site. The Saint Peter Sandstone is found at depths greater than 400-feet bgs.

The site bears two distinct aquifers, a shallow and a deep. The communication between the two aquifers is still not clear, but appears to be greater than the original work showed. The shallow aquifer is in unconsolidated material; its depth varies between 15 to 30-feet bgs with a groundwater flow direction of northeast. This aquifer does not appear to extend into the Maquoketa.

The deep aquifer originates in the Maquoketa at approximately 80 to 120-feet bgs and extends down into the Galena-Platteville and Saint Peter. The groundwater flow direction has not been confirmed, but by looking at the contamination plume within this aquifer, it is assumed to be east-northeast. Little information is known about the flow speed, but is assumed to be relatively slow.

Land and Resource Use

The historic land use of the site prior to waste operations was agriculture. From the 1950s until 1986, hazardous waste activities conducted at the site included, at differing time intervals, battery cracking, paint disposal and waste solvent disposal. For an undetermined period of time, solvent disposal involved dumping the liquid wastes into evaporation pits either placed on the land surface or dug into the top of the waste. The majority of the waste is residential, commercial and industrial solid waste. The closed, licensed Hechimovich Sanitary Landfill (also known as the Land and Gas Reclamation Landfill or LGRL) is now incorporated in Advanced Disposal's Glacier Ridge Landfill. An expansion of the Glacier Ridge Landfill, called the Veolia Glacier Ridge South Expansion, is currently operating on the property and accepts non-hazardous waste only and is an engineered facility incorporating leachate and gas control systems. (See Figure 2 in Appendix B.)

Most of the land adjacent to the site is privately owned. Single family homes in a rural setting surround the site. Wetlands lie to the east, north and west of the site. Horicon National Wildlife Refuge lies about 3.5 miles west of the landfill. The City of Mayville is 2 miles to the north. Mayville draws its drinking water from underlying sandstone units from a depth greater than 227 feet.

The fractured dolomite and shale bedrock underlying the site at a depth greater than 60 feet is used as a drinking water source for nearby private wells. The dominant ground water flow direction in the shallow aquifer is north towards the wetlands north of the site. The groundwater flow direction in the deep bedrock aquifers is unknown.

History of Contamination

The site was a licensed landfill. It was first operated as the Mayville Dump by the City of Mayville from 1959 to 1970. The Mayville landfill was a small open dump that now is part of the northern end of the closed landfill. A variety of waste disposal activities occurred at the Mayville site including open burning, battery recycling operations and solvent disposal. It appears these past activities may be a significant contributor to the current shallow groundwater problems as the highest shallow groundwater contamination levels are directly downgradient and adjacent to the old dump site.

Beginning in 1970, the site was operated by George Hechimovich and was called the Hechimovich Sanitary Landfill. The Mayville site was sold to and became part of the Hechimovich Sanitary Landfill in 1971. In March 1984 site ownership and operations were transferred to Land and Gas Reclamation,

Inc. and the site name was subsequently changed to LGRL in July 1985. The site was closed in October 1986.

During part of the 1970-1980 time period, the site was licensed to accept hazardous waste. Paint sludge and cutting oils from local industries, possibly containing lead, chromium and solvents, were disposed of in several on-site lagoons. It is estimated by EPA that 53,000 gallons of liquid hazardous waste were disposed of at this site. In addition, the site accepted approximately one million cubic yards of non-hazardous household and commercial wastes. The landfill does not have a liner. An initial cover, consisting of 2 to 4 feet of local till soils and 6 inches of topsoil, was placed in 1987. A system of groundwater and surface water monitoring locations was included in a monitoring program required by the WDNR at site closure.

In spring 2009, routine sampling identified private water supply well contamination in wells northeast of the fill. These wells lie about 1,800-4,000 feet from the site and are cased through the Maquoketa Formation. The identification of contamination in the deep aquifers downgradient of the landfill is a serious concern. The current landfill owners are conducting a site investigation to determine if the landfill is the source of the deep bedrock impacts.

Initial Response

In July 1987, the site was the subject of a WDNR state enforcement action, resulting in a Stipulation and Order signed by the Dodge County Circuit Court, which directed George Hechimovich, Hechimovich Sanitary Landfill, Inc., and Land and Gas Reclamation, Inc. to undertake certain actions at the landfill, including the installation of a clay cap and a gas collection system. The court-ordered clay cap was installed, under WDNR supervision and approval, in 1991 and 1992. To date, the cap has been satisfactorily installed and maintained. In addition, since March 1992, the active gas extraction system has been operating according to design specifications. The installation and operation of these measures were documented and approved as a source control interim action in the January 1994 Record of Decision (ROD) signed by WDNR. EPA concurred with the ROD. The modification of this gas extraction system was the main activity in the final remedy for the site.

Based on a request from the WDNR, EPA proposed the site to the NPL in 1988. The site was listed on the NPL, as the Hechimovich Sanitary Landfill, in March 1989. Based on the information obtained from landfill records in the possession of Daniel and George Hechimovich, the WDNR issued special notice letters to fourteen potentially responsible parties (PRPs) on August 15, 1990, and to two additional PRPs on September 20, 1990.

The PRPs entered into an environmental repair contract with the WDNR, which became effective on September 28, 1990, to perform a remedial investigation/feasibility study (RI/FS) pursuant to s. 144.442, Wisconsin Statutes. After the environmental repair contract was signed, the WDNR decided that, due to the timing of the remedial actions, remediation at the site should be divided into two operable units: a source control (landfill closure) operable unit and a groundwater operable unit. The January 1994 ROD documented successful completion of the source control operable unit. The final ROD, signed by the State on September 6, 1995, with EPA concurrence, established the final remedy for the site.

Subsequent to the signing of the final ROD, site monitoring activities appear to show the site shallow groundwater impacts to be stable. The known groundwater plume extending north from the north end of the waste fill appears to be unchanging. However, in spring 2009 routine sampling identified potential

new site impacts. Two private drinking water wells were discovered contaminated with vinyl chloride concentrations exceeding maximum contaminant levels. In one of the wells the vinyl chloride was of such a concentration that the well water could not be used for any domestic purposes. Follow-up sampling in April 2009 identified these two drinking water wells with various levels of contamination.

Basis for Taking Action

Contaminants

Hazardous substances that have been released at the site in each media include:

Groundwater/Drinking Water

tetrachloroethene
trichloroethene
cis-1,2-dichloroethene
trans-1,2-dichloroethene
vinyl chloride

The July 1993 Baseline Human Health Risk Assessment conducted for the site found no human health risks in excess of levels identified by EPA as warranting remedial action. The primary pathway reviewed was groundwater ingestion. A screening level ecological risk assessment was also conducted. The assessment found the potential for exposure to contaminants in the ditches that drain the wetlands north of the landfill. However, no adverse ecological effects were observed. The ditches do not appear to be able to support a sustainable population due to frequent drying out.

Subsequent to the July 1993 risk assessment, water supply sampling in the spring of 2009 has shown there to be a potential for unacceptable human health risk from the site. Two private drinking water wells, downgradient of the landfill, had vinyl chloride concentrations exceeding state drinking water enforcement standards. Much of the current regulatory attention at the site is aimed at investigating a possible link between the landfill and these water supply impacts.

C. REMEDIAL ACTIONS

Remedy Selection

The ROD for the source control interim remedy at the Hechimovich Landfill was signed on January 13, 1994, and the final ROD was signed on September 6, 1995. EPA concurred with both RODs. Remedial action objectives (RAOs) were developed as a result of data collected during the Remedial Investigations to aid in the development and screening of remedial alternatives. The RAOs for the Hechimovich Landfill were intended to protect human health and the environment and to meet applicable or relevant and appropriate requirements.

Remedial Action Objectives

- Reduce groundwater contaminant concentrations to levels below the Preventive Action Levels established in NR 140 Wis. Adm. Code at the landfill waste edge;

- Maintain human exposure levels to contaminants below state and federal guidelines. These are

primarily the state and federal groundwater and drinking water standards. The federal standards are Maximum Contaminant Levels set in the Safe Drinking Water Act and the state drinking water standards are set in NR 809 Wis. Adm. Code; and

- Maintain ecological exposure levels to contaminants below potential levels of concern based on state and federal criteria such as the federal surface water quality criteria.

Access and use restrictions on the property, as provided in state solid waste management codes, are restricting future uses of licensed landfills and state drinking water codes are restricting placement of wells within 1200 feet of landfills. The site access restrictions are implemented by the site owner under the state trespass laws. There is a gate restricting vehicle access to the site. The private well restrictions are implemented by the state through its regulation of well drillers.

The Source Control ROD was written and signed in January 1994 and called for no further source control actions other than those being implemented under state authority. These source control actions included clay capping, installing an active landfill gas collection system, and groundwater monitoring. The final ROD was signed in September 1995. The major components of the final remedy were the following:

- Placement and compaction of at least 2 feet of clay overlain by 24 inches of rooting zone material and 6 inches topsoil;

- Seeding and mulching the finished slopes;

- Installation and enhancement of the active gas extraction system;

- Deed restrictions; and

- Establishment of a groundwater monitoring system.

Remedy Implementation

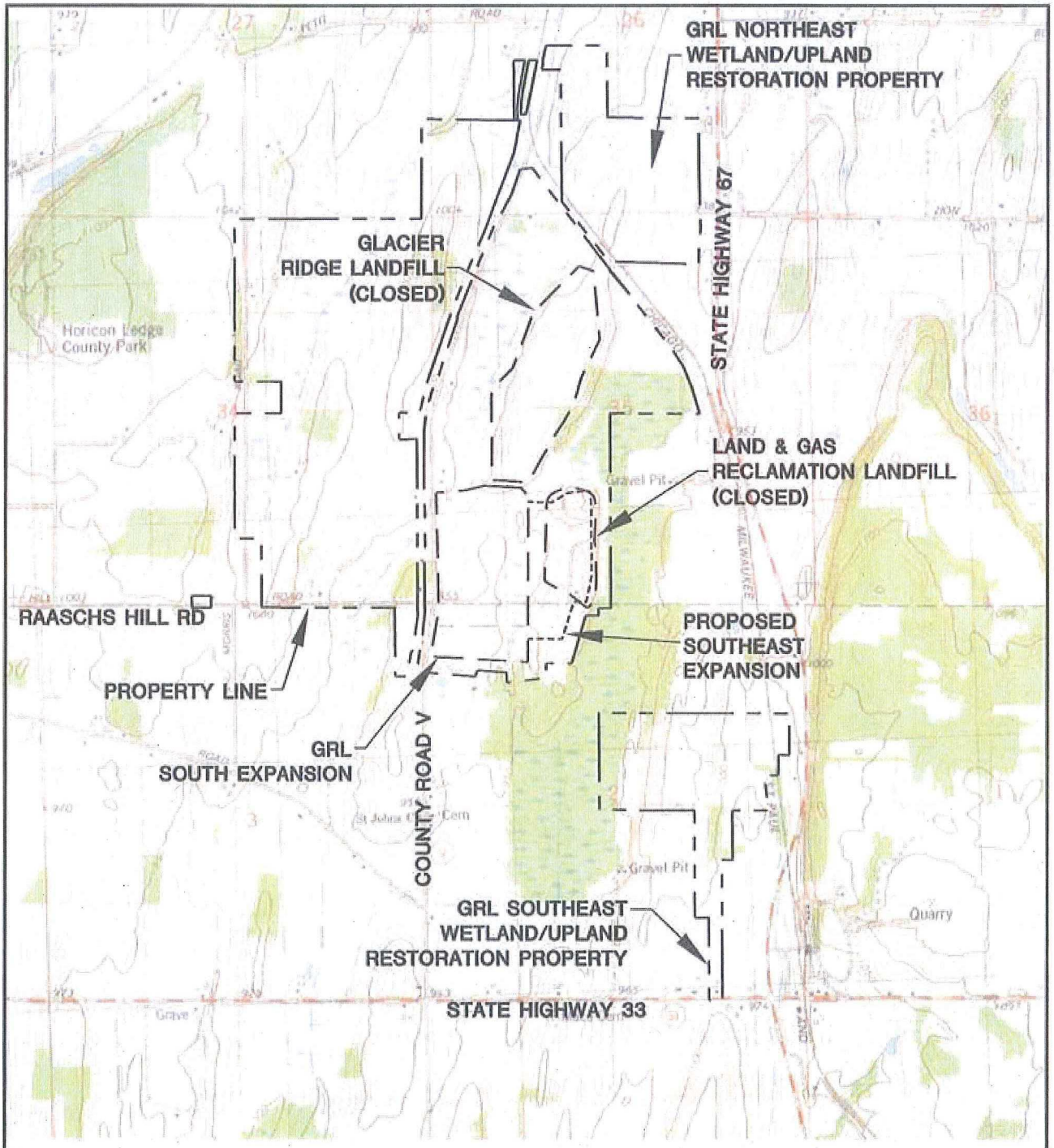
The Remedial Design (RD) and Remedial Action (RA) phase of the project was conducted through state solid waste management authority granted through ch. NR 500-526 of the Wisconsin Administrative Code. The WDNR reviewed and approved the report entitled, "Construction Observation Report Site Closure/Final Cover System and Gas Collection System Land and Gas Reclamation Landfill" dated August 6, 1992. The WDNR issued its approval on November 19, 1992. The RD and RA were conducted in conformance with the RODs.

The RA consisted of installing a clay cap and active gas extraction system on the waste mass. The activities for this phase were initiated in 1991 and completed in 1992.

The contractors for the PRPs conducted remedial activities as planned. The WDNR conducted several inspections following completion of the site work. During the inspections several leachate seeps and areas of excess settlement were identified and subsequently repaired. The series of inspections concluded that construction had been completed in accordance with the RD plans and specifications.

The WDNR and EPA determined that all RA construction activities were performed according to specifications. It is expected that cleanup levels for the shallow groundwater contaminants will be reached within approximately thirty years after completion of the RA. After groundwater cleanup levels have been met the WDNR and EPA will issue a Final Close Out Report.

APPENDIX B
Figures

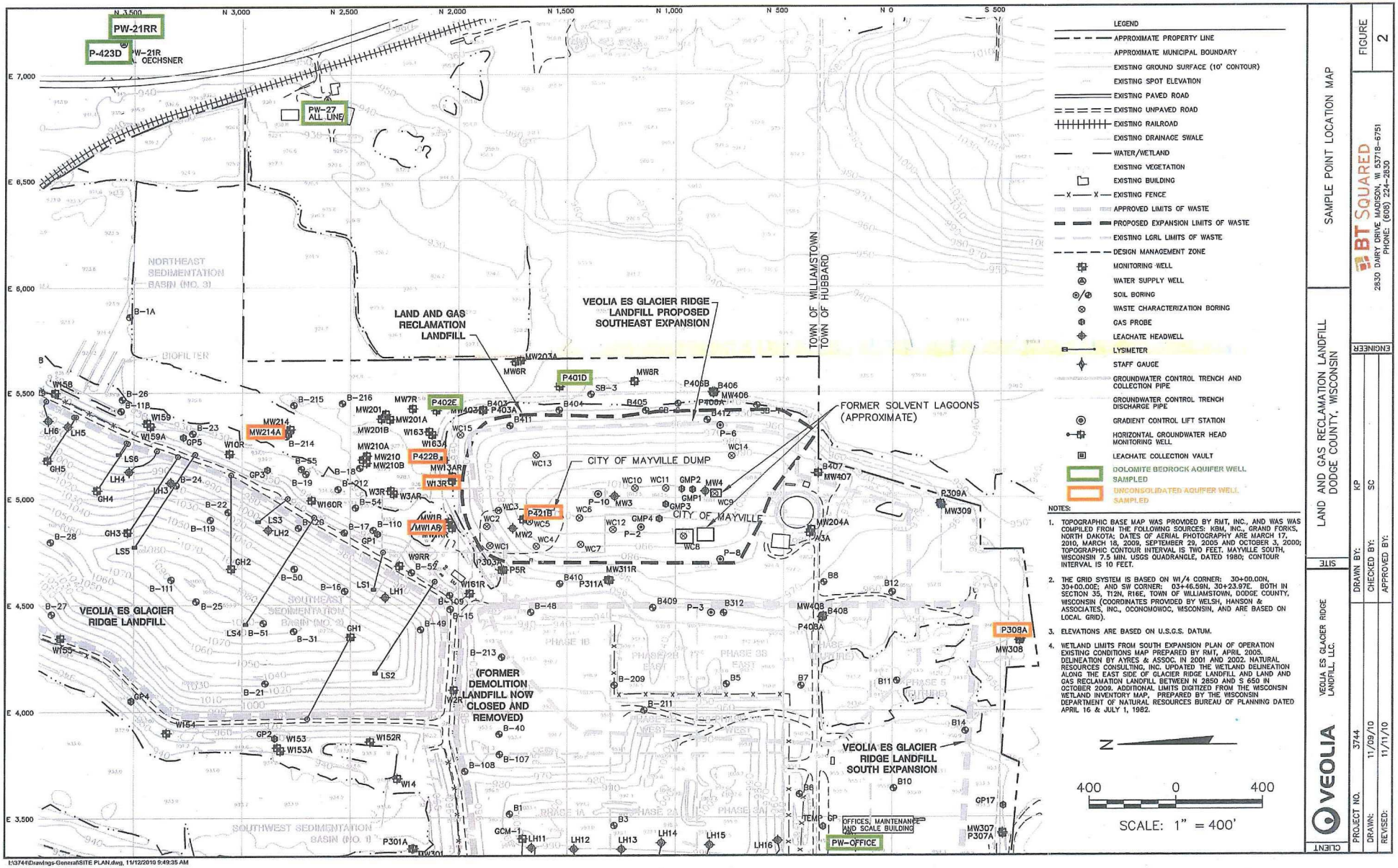


MAYVILLE SOUTH QUADRANGLE
WISCONSIN–DODGE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE/4 HORICON 15' QUADRANGLE
1980
SCALE: 1" = 2,000'

CLIENT	GLACIER RIDGE LANDFILL, LLC.	SITE	ADVANCED DISPOSAL SERVICES GLACIER RIDGE LANDFILL DODGE COUNTY, WISCONSIN
			SITE LOCATION MAP

PROJECT NO.	3701	DRAWN BY:	AHB	ENGINEER	FIGURE
DRAWN:	01/24/13	CHECKED BY:	BP	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	1
REVISED:	02/13/13	APPROVED BY:	SC 04/15/13		

I:\3701\Drawings-General\Plan of Operation\Figures\FIGURE 1.dwg, 4/22/2013 12:30:34 PM



LEGEND

- APPROXIMATE PROPERTY LINE
- APPROXIMATE MUNICIPAL BOUNDARY
- EXISTING GROUND SURFACE (10' CONTOUR)
- EXISTING SPOT ELEVATION
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING RAILROAD
- EXISTING DRAINAGE SWALE
- WATER/WETLAND
- EXISTING VEGETATION
- EXISTING BUILDING
- EXISTING FENCE
- APPROVED LIMITS OF WASTE
- PROPOSED EXPANSION LIMITS OF WASTE
- EXISTING LGRL LIMITS OF WASTE
- DESIGN MANAGEMENT ZONE
- MONITORING WELL
- WATER SUPPLY WELL
- SOIL BORING
- WASTE CHARACTERIZATION BORING
- GAS PROBE
- LEACHATE HEADWELL
- LYSIMETER
- STAFF GAUGE
- GROUNDWATER CONTROL TRENCH AND COLLECTION PIPE
- GROUNDWATER CONTROL TRENCH DISCHARGE PIPE
- GRADIENT CONTROL LIFT STATION
- HORIZONTAL GROUNDWATER HEAD MONITORING WELL
- LEACHATE COLLECTION VAULT
- DOLOMITE BEDROCK AQUIFER WELL SAMPLED
- UNCONSOLIDATED AQUIFER WELL SAMPLED

NOTES:

1. TOPOGRAPHIC BASE MAP WAS PROVIDED BY RMT, INC., AND WAS WAS COMPILED FROM THE FOLLOWING SOURCES: KBM, INC., GRAND FORKS, NORTH DAKOTA; DATES OF AERIAL PHOTOGRAPHY ARE MARCH 17, 2010, MARCH 18, 2009, SEPTEMBER 29, 2005 AND OCTOBER 3, 2000; TOPOGRAPHIC CONTOUR INTERVAL IS TWO FEET. MAYVILLE SOUTH, WISCONSIN 7.5 MIN. USGS QUADRANGLE, DATED 1980; CONTOUR INTERVAL IS 10 FEET.
2. THE GRID SYSTEM IS BASED ON W1/4 CORNER: 30+00.00N, 30+00.00E; AND SW CORNER: 03+46.59N, 30+23.97E. BOTH IN SECTION 35, T12N, R16E, TOWN OF WILLIAMSTOWN, DODGE COUNTY, WISCONSIN (COORDINATES PROVIDED BY WELSH, HANSON & ASSOCIATES, INC., OCONOMOWOC, WISCONSIN, AND ARE BASED ON LOCAL GRID).
3. ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
4. WETLAND LIMITS FROM SOUTH EXPANSION PLAN OF OPERATION EXISTING CONDITIONS MAP PREPARED BY RMT, APRIL 2005. DELINEATION BY AYRES & ASSOC. IN 2001 AND 2002. NATURAL RESOURCES CONSULTING, INC. UPDATED THE WETLAND DELINEATION ALONG THE EAST SIDE OF GLACIER RIDGE LANDFILL AND LAND AND GAS RECLAMATION LANDFILL BETWEEN N 2850 AND S 650 IN OCTOBER 2009. ADDITIONAL LIMITS DIGITIZED FROM THE WISCONSIN WETLAND INVENTORY MAP, PREPARED BY THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES BUREAU OF PLANNING DATED APRIL 16 & JULY 1, 1982.

N

400 0 400

SCALE: 1" = 400'

SAMPLE POINT LOCATION MAP

FIGURE 2

LAND AND GAS RECLAMATION LANDFILL
DODGE COUNTY, WISCONSIN

SITE

VEOLIA ES GLACIER RIDGE LANDFILL, LLC.

CLIENT

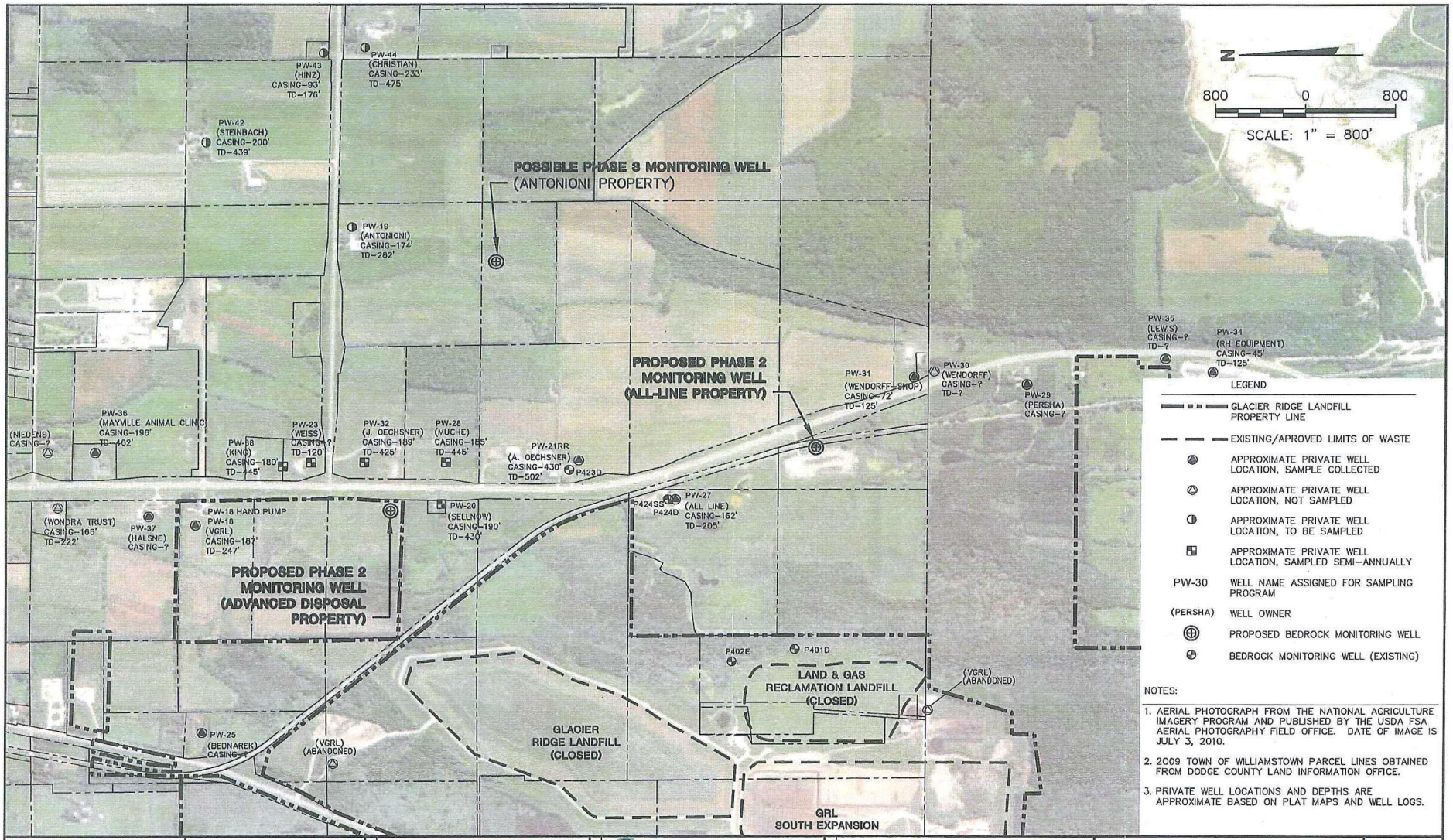
VEOLIA

BT SQUARED
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

PROJECT NO.	3744
DRAWN:	11/09/10
REVISED:	11/11/10
DRAWN BY:	KP
CHECKED BY:	SC
APPROVED BY:	

t:\3744\Drawings-General\SITE PLAN.dwg, 11/12/2010 9:49:35 AM



NOTES:

1. AERIAL PHOTOGRAPH FROM THE NATIONAL AGRICULTURE IMAGERY PROGRAM AND PUBLISHED BY THE USDA FSA AERIAL PHOTOGRAPHY FIELD OFFICE. DATE OF IMAGE IS JULY 3, 2010.
2. 2009 TOWN OF WILLIAMSTOWN PARCEL LINES OBTAINED FROM DODGE COUNTY LAND INFORMATION OFFICE.
3. PRIVATE WELL LOCATIONS AND DEPTHS ARE APPROXIMATE BASED ON PLAT MAPS AND WELL LOGS.

PROJECT NO.	3744	DRAWN BY:	KP
DRAWN:	09/13/11	CHECKED BY:	EO
REVISED:	08/01/13	APPROVED BY:	EO 08/01/13

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

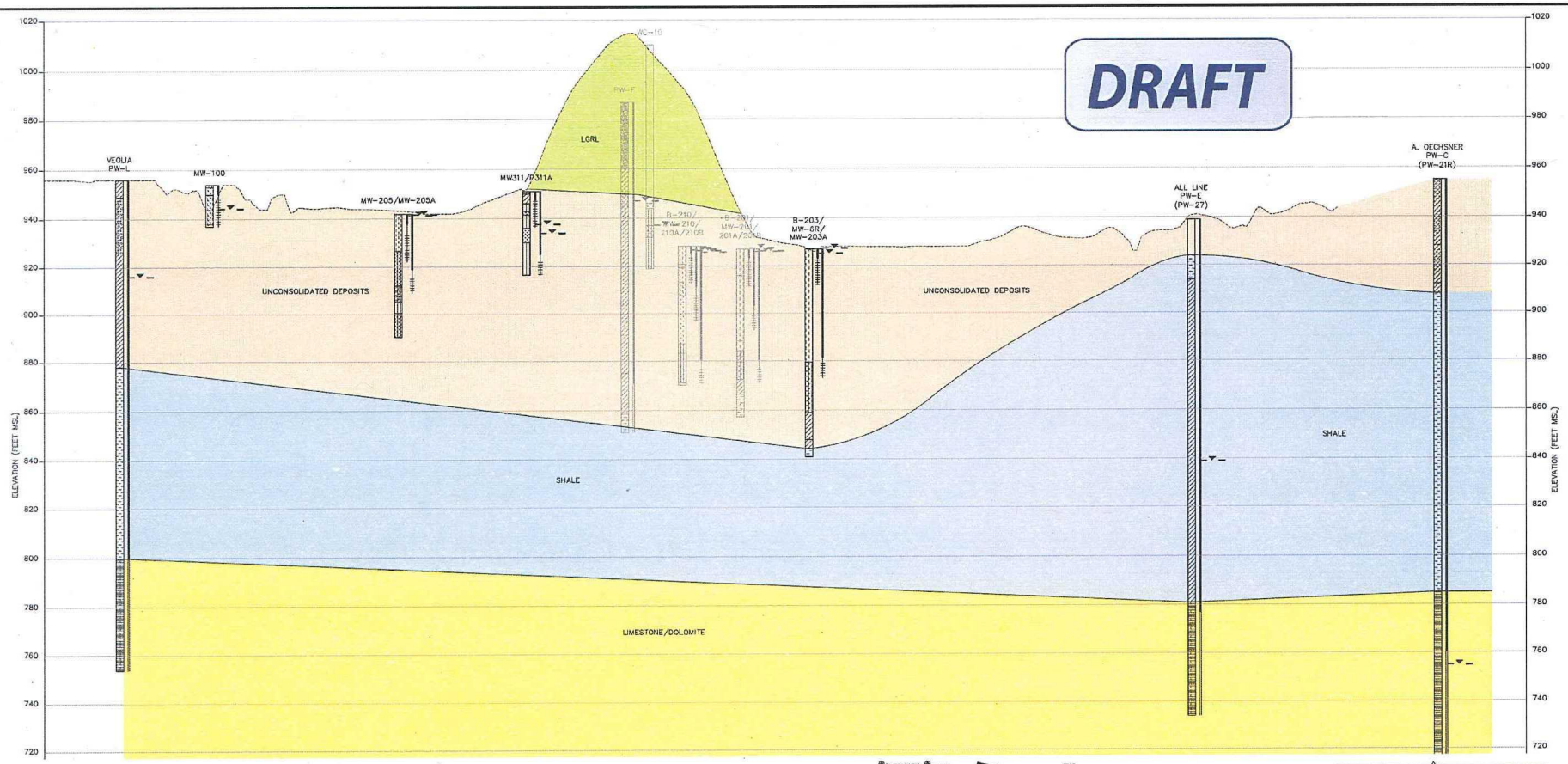
CLIENT: ADVANCED DISPOSAL SERVICES GLACIER RIDGE LANDFILL, LLC.

SITE: VOC INVESTIGATION, LAND AND GAS RECLAMATION LANDFILL, DODGE COUNTY, WISCONSIN

BEDROCK MONITORING WELL LOCATIONS

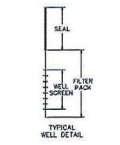
FIGURE 3

I:\3744\Drawings-General\Pr-bedrock wells 2013.dwg, 8/1/2013 3:18:39 PM



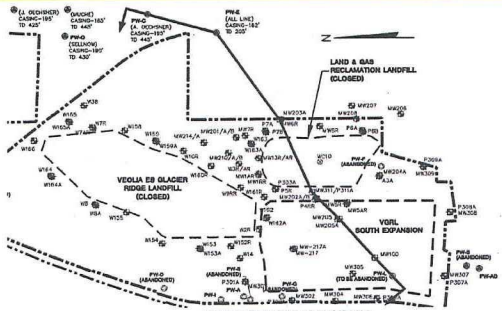
LEGEND

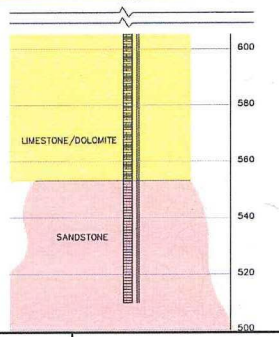
- NO BORING LOG OR BLIND DRILLED
- FILL
- PEAT (PT)
- SAND, WELL GRADED, LITTLE OR NO FINES (SW)
- SAND, POORLY GRADED, LITTLE OR NO FINES (SP)
- SILT (ML)
- ORGANIC SILT OR CLAY, LOW PLASTICITY (OL)
- LEAN CLAY, LOW PLASTICITY (CL)
- GRAVEL, POORLY GRADED, LITTLE OR NO FINES (GP)
- GRAVEL, WELL GRADED, LITTLE OR NO FINES (GW)
- SILTY SAND (SM)
- CLAYEY SAND (SC)
- CLAYEY GRAVEL (GC)
- SILTY GRAVEL (GM)
- SAND, POORLY GRADED WITH SILT FINES (SP-SM)
- SILTY CLAY (ML-CL)
- LIMESTONE
- SHALE
- SANDSTONE
- WATER LEVEL IN WELL



NOTES:

1. WATER LEVELS FOR MONITORING WELLS MEASURED OCTOBER 2008. WATER LEVELS FOR WATER SUPPLY WELLS TAKEN FROM DRILLERS LOGS.
2. GRAPHIC LOGS FOR BORINGS ARE POSTED AT THE LOCATION OF THE BORING. WELLS ARE SHOWN OFFSET FOR CLARITY. WHERE MORE THAN ONE BORING WAS DRILLED AT A WELL NEST, THE GEOLOGIC INFORMATION IS COMBINED IN ONE GRAPHIC LOG POSTED AT THE LOCATION OF THE WATER TABLE WELL.
3. BORINGS AND WELLS PROJECTED ONTO THE CROSS SECTION LINE FROM OFFSET LOCATIONS ARE SHOWN IN GRAY. GRAPHIC LOGS MAY NOT LINE UP WITH THE CROSS SECTION LINES FOR TOPOGRAPHY OR GEOLOGIC CONTACTS.





PROJECT NO.	3744	DRAWN BY:	KP
DRAWN:	04/03/09	CHECKED BY:	EO
REVISED:	04/03/09	APPROVED BY:	

BT² inc
2830 DAIRY DRIVE
MADISON, WI 53718-6751
PHONE: (608) 224-2830
FAX: (608) 224-2839

CLIENT: VEOLIA ES GLACIER RIDGE LANDFILL, LLC.

SITE: LAND AND GAS RECLAMATION LANDFILL

CROSS SECTION

FIGURE 4

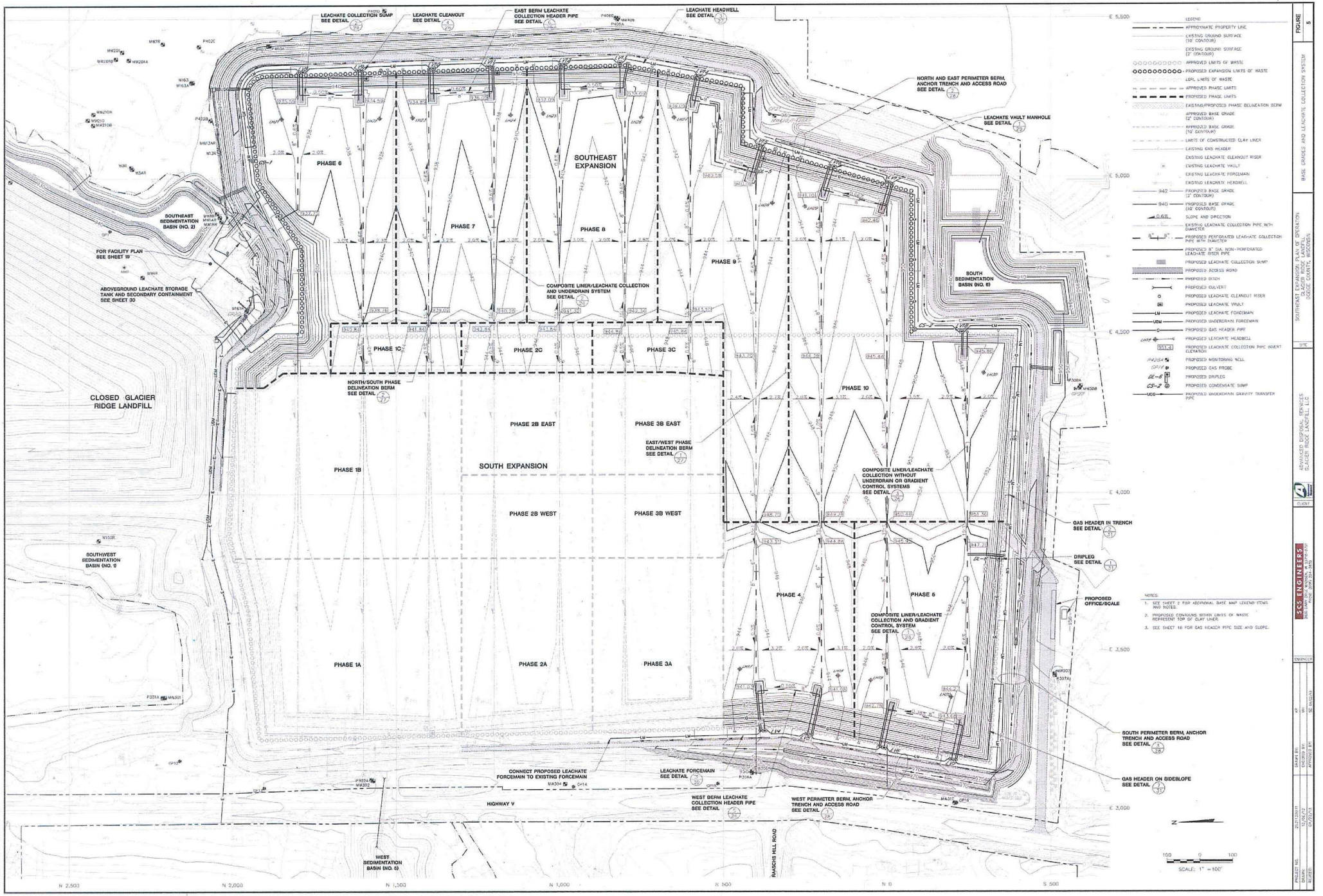


FIGURE 5

BASE GRADES AND LEACHATE COLLECTION SYSTEM

SOUTHEAST EXPANSION, PLAN OF OPERATION
GLACIER RIDGE LANDFILL
DODGE COUNTY, WISCONSIN

SHEET

ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LLC

CLIENT

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

ENGINEER

PROJECT NO.	25213031	
DRAWN BY:	12/06/22	KP
CHECKED BY:	01/27/23	BH
APPROVED BY:		SC, MJD, DJ

APPENDIX C
Historical Groundwater Data

APPENDIX C-1
Shallow Groundwater Data

Historic VOC Monitoring Results
Land Gas Reclamation Landfill
(concentrations in ug/L)

MW-1RR				MW-1AR			
Date	cis-1,2-DCE	TCE	VC	Date	cis-1,2-DCE	TCE	VC
NR 140 ES	70	5	0.2	NR 140 ES	70	5	0.2
11/21/91		1,900	2,900	11/19/91		130	3,000
5/29/92		2,800	4,300	5/29/92		100	2,800
6/17/93		580	1,800	6/17/93		30	2,200
6/21/94		10.7	198	6/21/94		24.9	1,160
4/14/95	1,500	2,000	3,800	4/14/95	7,100	200	2,900
10/4/95	6,400	620	3,400	10/4/95	6,100	180	2,800
4/4/96	1,900	130	1,300	4/4/96	6,600	150	2,600
10/12/96	16,000	1,600	3,600	10/12/96	8,500	200	2,300
4/10/97	3,800	80	3,100	4/10/97	6,000	86	2,400
10/3/97	2,500	190	1,600	10/3/97	6,300	0	2,700
4/10/98	2,800	120	2,300	4/10/98	7,200	150	2,500
10/14/98	11,000	820	3,100	10/15/98	6,500	95	1,900
4/6/99	2,100	0	2,300	4/6/99	5,500	0	2,300
10/7/99	13,000	6,800	3,400	10/8/99	6,100	0	2,000
4/3/00	2,400	77	1,500	4/3/00	5,700	54	2,200
10/4/00	4,600	0	1,210	10/5/00	4,920	0	1,190
4/4/01	2,260	0	1,240	4/4/01	5,040	0	1,300
10/3/01	6,090	411	2,300	10/3/01	4,910	0	2,000
4/3/02	4,890	274	535	4/3/02	5,320	0	795
10/1/02	4,800	525	1,180	10/1/02	5,660	0	1,220
4/2/03	1,260	29.2	593	4/2/03	4,860	17	1,100
10/9/03	2,020	0	700	10/9/03	4,470	0	1,200
4/5/04	1,220	26.7	1,220	4/5/04	4,130	16.8	1,550
10/4/04	4,590	440	2,060	10/4/04	3,950	0	1,800
4/1/05	2,510	0	736	4/1/05	3,990	0	882
10/1/05	5,130	351	1,150	10/1/05	4,420	0	951
4/6/06	2,680	0	785	4/6/06	3,820	0	659
10/5/06	4,340	295	1,160	10/5/06	3,590	0	1,020
4/5/07	708	0	360	4/5/07	2,020	0	887
10/22/07	605	8.46	351	10/22/07	2,280	<20	1,060
4/10/08	265	1.92	207	4/10/08	590	0.51	196
10/9/08	199	<4	221	10/9/08	2,020	<40	1,070
4/8/09	145	<4.0	245	4/8/09	2,260	<4.0	1,780
10/6/09	90.2	<4	232	10/6/09	1,610	<40	1,520
4/6/10	77.5	<4	152	4/6/10 [1]	24,000	<4.0	17,500
10/26/10	94.4	1.41	190	10/26/10	2,370	1.49	1,630
4/7/11	63.6	<4	137	4/7/11	1,700	<40	1,170
10/5/11	90.3	<4	168	10/5/11	1,400	<40	1,110
4/12/12	62.7	<4	136	4/12/12	2,090	<4	1,620
10/2/12	49.9	0.68	107	10/2/12	2,090	<4.8	1,390
4/1/13	23.1	0.58	75.1	4/1/13	1,940	<12	1,310
10/3/13	29.5	0.65	85.7	10/1/13	1,620	<3.6	1,580

Historic VOC Monitoring Results
Land Gas Reclamation Landfill
(concentrations in ug/L)

W-3R				W-3AR			
Date	cis-1,2-DCE	TCE	VC	Date	cis-1,2-DCE	TCE	VC
NR 140 ES	70	5	0.2	NR 140 ES	70	5	0.2
11/13/91		0	0	11/14/91		5	770
5/29/92		0	0	5/29/92		78	1,000
6/17/93		0	0.5	6/17/93		57	1,300
6/21/94		0	0	6/21/94		12	720
4/14/95	0	0	2.2	4/14/95	1,200	6.6	110
10/4/95	0	0	1.2	10/4/95	1,200	12	1,400
4/4/96	0	0	0	4/4/96	1,000	0	550
10/12/96	0	0	4	10/12/96	1,800	13	1,100
4/10/97	0	0	0.56	4/10/97	1,100	0	740
10/3/97	0	0	1.5	10/3/97	1,200	0	780
4/7/98	0.44	0	0.89	4/7/98	1,000	0	720
10/14/98	0	0	6.4	10/14/98	1,200	0	660
4/6/99	0.3	0	0.65	4/6/99	900	0	710
10/6/99	0.27	0	2.9	10/7/99	1,200	0	650
4/3/00	0.29	0	0.17	4/3/00	1,000	0	890
10/3/00	0	0	0.133	10/3/00	1,100	0	404
4/3/01	0	0	0	4/3/01	1,050	0	554
10/2/01	0	0	2.74	10/2/01	1,130	0	901
4/4/02	0	0	0	4/4/02	1,150	0	375
10/1/02	0	0	14.1	10/1/02	1,230	0	446
4/1/03	0	0	0.703	4/1/03	674	0	601
10/8/03	0	0	1.98	10/8/03	712	0	407
4/7/04	0	0	0	4/7/04	753	0	519
10/4/04	0	0	0	10/4/04	685	0	626
4/1/05	0	0	0	4/1/05	567	0	265
10/1/05	0	0	0	10/1/05	628	0	258
4/6/06	0	0	0	4/6/06	700	1.15	352
10/5/06	0	0	0	10/4/06	450	0	279
4/4/07	0	0	0	4/4/07	418	0	402
10/22/07	<0.2	<0.2	3.20	10/22/07	421	<2	410
4/11/08	<0.3	<0.4	14.30	4/11/08	476	<4	382
10/9/08	<0.3	<0.4	5.32	10/9/08	322	<4	281
4/7/09	<0.3	<0.4	2.48	4/7/09	351	0.8	357
10/7/09	<0.4	<0.4	<0.2	10/7/09	339	<4.0	358
4/7/10	<0.4	<0.4	0.95	4/7/10	339	<4	334
10/27/10	<0.4	<0.4	2.46	10/27/10	257	<4	194
4/6/11	<0.4	<0.4	3.14	4/6/11	201	0.51	256
10/5/11	<0.4	<0.4	1.45	10/5/11	170	<4	181
4/11/12	<0.4	<0.4	3.18	4/11/12	190	0.51	205
10/2/12	<0.83	<0.48	18.50	10/2/12	183	0.55	190
4/1/13	<0.83	<0.48	2.90	4/4/13	164	<0.48	146
10/3/13	<0.42	<0.36	3.40	10/3/13	87.8	<0.33	99.3

Historic VOC Monitoring Results
Land Gas Reclamation Landfill
- (concentrations in ug/L)

MW-210				MW-210A				MW-210B			
Date	cis-1,2-DCE	TCE	VC	Date	cis-1,2-DCE	TCE	VC	Date	cis-1,2-DCE	TCE	VC
NR 140 ES	70	5	0.2	NR 140 ES	70	5	0.2	NR 140 ES	70	5	0.2
12/6/91		0	0	12/6/91		0	180	12/6/91		0	0
5/28/92		0	0	5/28/92		0	200	5/27/92		0	0
				6/17/93		7	370				
7/6/94		0	28.3	7/6/94		8.6	220	7/6/94		0	0
4/14/95	41	0	27	4/14/95	1,400	13	350	4/14/95	0	0	0
10/4/95	26	0	22	10/4/95	1,600	20	600	10/4/95	0	0	0
4/4/96	32	0	27	4/4/96	1,900	35	450	4/4/96	0	0	0
10/12/96	12	0	7.9	10/12/96	2,300	47	670	10/12/96	0	0	0
4/10/97	13	0	20	4/10/97	1,900	38	420	4/10/97	0	0	0
10/3/97	10	0	23	10/3/97	1,700	66	480	10/3/97	0	0	0
4/7/98	6.5	0	14	4/7/98	1,600	57	540	4/7/98	0	0	0
10/15/98	46	0	44	10/15/98	1,600	47	510	10/15/98	0	0	no data
4/6/99	7.3	0	10	4/6/99	1,200	40	500	4/6/99	0	0	0
10/11/99	98	0	240	10/11/99	800	40	440	10/11/99	0	0	0
4/4/00	2.9	0	6.3	4/4/00	820	32	440	4/4/00	0	0	0
10/5/00	1.61	0	5.3	10/5/00	372	0	157	10/5/00	0	0	0
4/5/01	1.12	0	2.47	4/5/01	421	0	214	4/5/01	0	0	0
10/3/01	1.21	0	13.2	10/3/01	520	55.9	425	10/3/01	0	0	0
4/4/02	0.384	0	3.22	4/4/02	730	0	206	4/4/02	0	0	0
10/3/02	1.59	0	12.8	10/3/02	940	0	327	10/3/02	0	0	0
4/2/03	0	0	0.386	4/2/03	401	0	233	4/2/03	0	0	0.591
10/8/03	0	0	1.02	10/8/03	293	10	29.2	10/8/03	0	0	0.274
4/7/04	0	0	0.383	4/7/04	272	0	76.3	4/7/04	0	0	0.891
10/5/04	0	0	1.46	10/5/04	230	7.38	45.6	10/5/04	0	0	1.15
4/1/05	0	0	0	4/1/05	220	0	52.7	4/1/05	0	0	0.549
10/1/05	0	0	0	10/1/05	220	0	29.5	10/1/05	0	0	0.706
5/6/06	0.82	0	0	5/6/06	252	7.32	109	5/6/06	0	0	1.13
10/4/06	0.49	0	0.45	10/4/06	184	5.62	45.2	10/4/06	0	0	1.65
5/30/07	0.28	0	0.23	5/30/07	198	5.66	33.7	5/30/07	0	0	1.42
10/25/07	0.23	<0.2	<0.2	10/25/07	251	5.71	73.2	10/25/07	<2	<2	<2
5/27/08	<0.3	<0.4	<0.2	5/27/08	237	8.1	74.1	5/27/08	0.51	<0.4	<0.2
10/9/08	0.41	<0.4	<0.2	10/9/08	325	7.72	124	10/9/08	<0.3	<0.4	2.26
10/7/09	0.63	<0.4	0.65	10/7/09	284	5.3	125	10/7/09	<0.4	<0.4	2.72
4/7/10	0.56	<0.4	0.43	4/7/10	222	4.66	111	4/7/10	<0.4	<0.4	2.64
11/29/10	0.64	<0.4	<0.2	11/29/10	192	<4	87.6	11/29/10	<0.4	<0.4	.2.5
4/8/11	0.66	<0.4	0.46	4/8/11	163	<4	94.7	4/8/11	<0.4	<0.4	2.76
10/6/11	0.64	<0.4	0.48	10/6/11	177	<4	120	10/6/11	<0.4	<0.4	2.52
4/11/12	0.66	<0.4	0.54	4/11/12	164	3.54	74.3	4/11/12	<0.4	<0.4	2.5
10/1/12	<0.83	<0.48	1.1	10/1/12	182	3.8	28.3	10/1/12	<0.83	<0.48	2.2
4/2/13	<0.83	<0.48	0.21	4/2/13	169	2.6	102	4/2/13	<0.2	<0.48	3.5
10/2/13	<0.42	<0.36	0.19	10/2/13	221	2.2	97.4	10/2/13	<0.29	<0.36	3.4

Historic VOC Monitoring Results
Land Gas Reclamation Landfill
(concentrations in ug/L)

MW-214				MW-214A			
Date	cis-1,2-DCE	TCE	VC	Date	cis-1,2-DCE	TCE	VC
NR 140 ES	70	5	0.2	NR 140 ES	70	5	0.2
6/9/92		0	0	6/9/92		0	0
7/6/94		0	0	7/6/94		0	0
10/4/95	0	0	0	10/4/95	0	0	0
4/4/96	0	0	0	4/4/96	0	0	0
10/12/96	0	0	0	10/12/96	0	0	0
4/10/97	0	0	0	4/10/97	0	0	0
4/7/98	0	0	0	4/7/98	0	0	0
4/6/99	0	0	0	4/6/99	0	0	0
4/6/00	0	0	0	4/6/00	0	0	0
10/4/01	0	0	0	10/4/01	0	0	0
10/3/02	0	0	0	10/3/02	0	0	0
10/8/03	0	0	0	10/8/03	0	0	0.225
10/6/04	0	0	0	10/6/04	0	0	0.912
10/1/05	0	0	0	10/1/05	0	0	0.488
10/5/06	0	0	0	10/4/06	0	0	1.67
10/24/07 [2]	<0.2	<0.2	2.93	10/24/07 [2]	<0.2	<0.2	<0.2
3/14/08	<0.3	<0.4	<0.2	3/14/08	<0.3	<0.4	4.74
10/9/08	<0.3	<0.3	<0.4	10/9/08	<0.3	<0.4	6.54
10/7/09	<0.4	<0.4	<0.2	10/7/09	<0.4	<0.4	15.1
10/27/10	<0.4	<0.4	<0.2	10/27/10	<0.4	<0.4	16.9
10/6/11	<0.4	<0.4	<0.2	10/3/11	<0.4	<0.4	23.4
10/1/12	<0.83	<0.48	<0.18	10/1/12	<0.83	<0.48	29.6
10/3/13	<0.42	<0.36	<0.18	10/1/13	<0.42	<0.36	19.3

Notes: (1) Results for MW-1AR for April 2010 are suspected to be elevated 10 times due to a dilution error, but this cannot be verified.
(2) Based on sample results for MW-214 and MW-214A for October 2007, it appears that the sample vials were switched, but this cannot be confirmed.

Updated for 2013 by: AWH 3/2/14
Checked for 2013 by: LC 3/3/14
Reviewed for 2013 by: SCC 4/1/14

I:\25214008\Reports\2013 Annual Report\[LGRL VOC graphs 2013.xls]Sheet1

APPENDIX C-2
Deep Groundwater Data

Table LGRL VOC Investigation Water Supply Well Sample Results
(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
Monthly Monitoring Locations															
PW-21R	A. Oechsner N7548 Hwy. 67 Mayville	1/29/2009	NLS	12	310	<0.79	<0.31	<0.21	<0.13	11	0.26 J	<0.15	<0.18	0.61	ND
			NLS	--	--	<0.79	<0.31	<0.21	<0.13	10	0.26 J	<0.15	<0.18	0.56	ND
		2/24/2009	NLS	--	--	<0.79	<0.31	<0.21	<0.13	10	<0.19	<0.15	<0.18	0.35 J	ND
			CT	--	--	<0.40	0.56 JB	<0.21	<0.24	8.6	<0.27	<0.30	<0.24	0.39	ND
		6/30/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	19	0.52 J	<0.20	0.26	0.53	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	12	0.23 J	<0.10	<0.12	0.40 J	ND
PW-21RR	A. Oechsner N7548 Hwy. 67 Mayville	10/7/2010	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	2.74	<0.50	<0.30	<0.40	0.58 J	ND
			TA	--	--	<1.0	<0.30	<0.50	<0.50	2.0	<0.50	<0.50	<0.20	0.37 J	ND
		11/11/2010	TA	13	320	<1.0	0.47 J	<0.50	<0.50	2.6	<0.50	<0.50	<0.20	0.76 J	Chloroform 0.29 J Toluene 21
		11/29/2010	Siemens	12.4	347	<0.70	<0.40	<0.40	<1.30	3.12	<0.50	<0.30	<0.40	0.61 J	Toluene 1.25
		12/16/2010	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	3.75	<0.50	<0.30	<0.40	0.65 J	Toluene 0.99 J
		1/12/2011	NLS	--	--	<1.0	<0.16	<0.14	<0.11	4.4	0.13 J	<0.10	<0.12	0.75	ND
		2/10/2011	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	6	<0.50	<0.30	<0.40	0.79	ND
		3/1/2011	TA	--	--	<0.070	<0.063	<0.074	<0.059	6.1	<0.13	<0.067	<0.060	0.92	ND
		4/5/2011	NLS	--	--	<1.6	<0.29	<0.23	<0.13	8.9	0.32 J	<0.11	<0.28	0.94	ND
			TA	--	--	<0.10	<0.20	<0.050	<0.050	7.3	0.27 J	<0.050	<0.050	0.79	ND
		5/26/2011	TA	--	--	0.34 J	<0.20	0.080 J	<0.050	12	0.44 J	<0.050	<0.050	1.0	ND
		6/28/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	9.8	0.37 J	<0.15	<0.25	0.78	ND
		7/14/2011	TA	--	--	<0.50	0.33 J	<0.25	<0.15	10	0.40 J	<0.15	<0.25	0.75	ND
		8/16/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	9.7	0.31 J	<0.15	<0.25	0.46 J	ND
		9/1/2011	TA	--	--	<0.50	0.46 J	<0.25	<0.15	11	0.45 J	<0.15	<0.25	0.67	ND
		10/6/2011	TA	--	--	0.52	<0.30	<0.25	<0.15	10	0.40 J	<0.15	<0.25	0.63	ND

Table LGRL VOC Investigation Water Supply Well Sample Results

(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
PW-21RR (continued)	A. Oechsner N7548 Hwy. 67 Mayville	11/14/11 *	TA	--	--	<0.50	<0.30	<0.25	<0.15	11	0.43 J	<0.15	<0.25	0.82	ND
		11/14/11 **	TA	--	--	0.64	<0.30	<0.25	<0.15	12	0.43 J	<0.15	<0.25	0.81	ND
		12/12/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	12	0.42 J	<0.15	<0.25	0.83	ND
		12/27/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	12	0.45 J	<0.15	<0.25	0.74	ND
			Siemens	--	--	<0.70	<0.40	<0.40	<0.40	13.9	0.57 J	<0.30	<0.40	0.85 J	ND
		1/4/2012	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	15.4	0.62 J	<0.30	<0.40	1.09	ND
		1/11/2012	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	15.5	0.66 J	<0.30	<0.40	1.02	ND
		1/18/2012	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	15.2	0.66 J	<0.30	<0.40	1.01	ND
		1/25/2012	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	16.6	0.61 J	<0.30	<0.40	1.10	ND
		2/15/2012	TA	--	--	<0.50	<0.30	<0.25	<0.15	13	0.47 J	<0.15	<0.25	0.86	ND
		3/1/2012	TA	--	--	<0.50	<0.30	<0.25	<0.15	13	0.48 J	<0.15	<0.25	0.96	ND
		4/11/2012	TA	16	290	<0.50	<0.30	<0.25	<0.15	14	0.69	<0.15	<0.25	0.89	ND
		5/2/2012	Siemens	--	--	0.92 J	<0.40	<0.40	<0.40	19.8	0.80 J	<0.30	<0.40	1.52	ND
		6/20/2012	Pace	--	--	0.25 J	0.73 J	0.11 J	<0.16	15.1	0.51	<0.16	<0.11	0.62	ND
		7/18/2012	Pace	--	--	<0.20	<0.13	<0.072	<0.16	16	0.47 J	<0.16	<0.11	0.62	ND
		8/2/2012	Pace	--	--	0.46 J	<0.13	0.12 J	<0.16	18.6	0.64	<0.16	<0.11	0.75	ND
		9/13/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	16.1	0.49 J	<0.16	<0.11	0.55	Benzene 0.050 J Toluene 0.088 J
		10/5/2012	Pace	13.6	316	<0.31	<0.13	<0.072	<0.16	14.6	0.51	<0.16	<0.11	0.63	ND
		11/29/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	10.9	0.30 J	<0.16	<0.11	0.44	ND
		12/17/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	14.8	0.45 J	<0.16	<0.11	0.62	ND
		1/8/2013	Pace	--	--	0.62 J	<0.13	<0.072	<0.16	14.4	0.40 J	<0.16	<0.11	0.52	ND
		2/20/2013	Pace	--	--	<0.31	<0.13	<0.072	<0.16	14	0.39 J	<0.16	<0.11	0.52	ND
		3/21/2013	Pace	--	--	<0.31	<0.13	<0.072	<0.16	13.2	0.42 J	<0.16	<0.11	0.48	ND
		4/2/2013	Pace	13.1	294	<0.31	<0.13	<0.072	<0.16	9.2	0.25 J	<0.16	<0.11	0.34 J	ND
		5/7/2013	Pace	--	--	<0.31	<0.13	<0.072	<0.16	14.4	0.43 J	<0.16	<0.11	0.64	ND
		6/27/13 before	Pace	--	--	<0.50	<0.50	<0.25	<0.24	12.5	0.32 J	<0.25	<0.12	0.5	m&p-Xylene 0.22 JB
		6/27/13 after	Pace	--	--	<0.50	<0.50	<0.25	<0.24	1.5	<0.21	<0.25	<0.12	<0.20	m&p-Xylene 0.25 JB

Table LGRL VOC Investigation Water Supply Well Sample Results

(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
Semi-annual Monitoring Locations															
PW-19	Antonioni W2831 Zion Church Rd. Mayville	6/28/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	0.30 J	<0.30	<0.15	<0.25	<0.032	ND
		10/5/2012	Pace	45.1	372	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/3/2013	Pace	40.2	339	<0.31	<0.13	<0.072	<0.16	0.55	<0.14	<0.16	<0.11	<0.16	ND
PW-20	Sellnow N7627 Hwy. 67 Mayville	3/11/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	0.22 JB	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		1/21/2010	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	<0.13	<0.11	<0.10	<0.12	<0.13	ND
		4/6/2011	NLS	--	--	<1.6	<0.29	<0.23	<0.13	<0.30	<0.30	<0.11	<0.28	<0.20	ND
			TA	--	--	<0.10	<0.20	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.032	ND
		10/6/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		4/13/2012	TA	33	310	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		10/5/2012	Pace	45.6	323	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	29.3	340	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
PW-23	Weiss W2978 Zion Church Rd. Mayville	3/11/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	0.25 JB	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	<0.13	<0.11	<0.10	<0.12	<0.13	ND
		4/6/2011	NLS	--	--	<1.6	<0.29	<0.23	<0.13	<0.30	<0.30	<0.11	<0.28	<0.20	ND
			TA	--	--	<0.10	<0.20	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.032	ND
		10/6/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		4/11/2012	TA	160	320	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		10/5/2012	Pace	135	358	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	108	385	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND

Table LGRL VOC Investigation Water Supply Well Sample Results
(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
PW-27	All Line Construction N7477 Hwy. 67 Mayville	2/24/2009	NLS	--	--	<0.79	<0.31	0.91	0.36 J	120	3.9	<0.15	2.9	12	ND
			CT	--	--	3.0	1.1 B	1.0	0.47 J	110	4.4	<0.30	2.8	9.4	ND
		3/11/2009	NLS	--	--	<0.95	<0.16	0.70 J	0.26 J	100	3.2	<0.20	2.4	8.3	ND
			CT	--	--	2.4	<0.22	0.81	0.41 J	89	4.1	<0.30	2.7	7.1	ND
		6/30/2009	Siemens	--	--	2.55	<0.40	0.91 J	0.45 J	115	3.71	<0.30	2.83	8.26	ND
		2/10/2011	Siemens	32.3	386	1.98 J	<0.40	0.74 J	<0.40	101	3.45	<0.30	2.31	6.48	ND
		5/2/2012	Siemens	26.4	334	1.42 J	<0.40	0.42 J	<0.40	53.6	1.81	<0.30	1.19 J	4.02	ND
		12/17/2012	Pace	39.9	349	2.3	<0.13	0.69	0.17 J	86.2	2.8	<0.16	1.2	9.1	Methyl-tert-butyl ether 0.092 J 1,2,4 Trimethylbenzene 0.052 J
		2/20/2013	Pace	36.7	360	2.3	<0.13	0.77	<0.16	87	3.3	<0.16	1.9	7.1	ND
PW-28	W. Muche N7650 Hwy. 67 Mayville	3/11/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	0.18 J	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	0.24 J	<0.27	<0.30	<0.24	<0.11	ND
		6/30/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	0.19 J	<0.28	<0.20	<0.25	<0.19	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	0.28 J	<0.11	<0.10	<0.12	<0.13	ND
		4/6/2011	NLS	--	--	<1.6	<0.29	<0.23	<0.13	0.39 J	<0.30	<0.11	<0.28	<0.20	ND
			TA	--	--	<0.10	<0.20	<0.050	<0.050	0.30 J	<0.050	<0.050	<0.050	<0.032	ND
		10/6/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	0.33 J	<0.30	<0.15	<0.25	<0.032	ND
		4/11/2012	TA	17	280	<0.50	<0.30	<0.25	<0.15	0.45 J	<0.30	<0.15	<0.25	<0.032	ND
		10/5/2012	Pace	15.3	316	<0.31	<0.13	<0.072	<0.16	0.74	<0.14	<0.16	<0.11	<0.16	ND
		4/3/2013	Pace	16.1	339	<0.31	<0.13	<0.072	<0.16	1	<0.14	<0.16	<0.11	<0.16	ND
PW-32	J. Oechsner W2983 Zion Church Rd. Mayville	4/7/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	0.12 J	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		9/23/2009	NLS	--	--	<1.2	<0.48	<0.19	<0.22	<0.17	<0.19	<0.17	<0.23	<0.21	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	0.14 J	<0.11	<0.10	<0.12	<0.13	ND
		4/5/2011	NLS	--	--	<1.6	<0.29	<0.23	<0.13	<0.30	<0.30	<0.11	<0.28	<0.20	ND
			TA	--	--	<0.10	<0.20	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.032	Chlorobenzene 0.050 J
		10/6/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		4/11/2012	TA	41	300	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		10/5/2012	Pace	40.2	349	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	39.8	478	<0.31	<0.13	<0.072	<0.16	0.27 J	<0.14	<0.16	<0.11	<0.16	ND

Table LGRL VOC Investigation Water Supply Well Sample Results

(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
PW-38	King N7746 Hwy. 67 Mayville	5/14/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	0.57 J	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	<0.13	<0.11	<0.10	<0.12	<0.13	ND
		4/6/2011	NLS	--	--	<1.6	<0.29	<0.23	<0.13	<0.30	<0.30	<0.11	<0.28	<0.20	ND
			TA	--	--	<0.10	<0.20	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.032	Toluene 0.22 J
		10/6/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	Toluene 0.35 J
		4/11/2012	TA	<3.1	310	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		10/5/2012	Pace	<2.0	338	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	2.4 J	268	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
PW-42	Steinbach W2772 Zion Church Rd. Mayville	10/5/2012	Pace	<2.0	324	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	2.2 J	320	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
PW-43	Hinz W2698 Zion Church Rd. Mayville	10/5/2012	Pace	11.4	215	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/3/2013	Pace	10.8	211	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
PW-44	Christian N7686 Ekren Rd. Mayville	10/5/2012	Pace	<2.0	291	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	2.3 J	316	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND

Table LGRL VOC Investigation Water Supply Well Sample Results

(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
Non-Routine Monitoring Locations															
PW-1	Church View Farms J. Qualmann N7110 Hwy. V Horicon	4/7/2009	NLS	34	240	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
PW-3	Horicon Marsh Bowmen N7240 Hwy. V Horicon	4/30/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-4	Advanced Disposal N7271 Hwy. V Horicon	4/3/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
None	Wondra N7877 Hwy 67 Mayville	10/22/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	Chloroform 0.36
PW-18	Advanced Disposal N7785 Hwy. 67 Mayville	4/3/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-18 Hand Pump	Advanced Disposal N7785 Hwy. 67 Mayville	4/3/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-24	St. John's Lutheran Church N7074 Hwy. V Mayville	4/30/2009	NLS	33	320	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	0.3 J	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-26	Goodearle W3653 Decora Rd. Horicon	4/30/2009	NLS	13	310	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
PW-29	Persha N7241 Hwy. 67 Mayville	4/3/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-30	Wendorff N7306 Hwy. 67 Mayville	6/23/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-31	Wendorff N7306 Hwy. 67 Mayville	4/3/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND

Table LGRL VOC Investigation Water Supply Well Sample Results

(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
PW-33	Lagerman W3230 STH 33 Iron Ridge	4/3/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-34	R H Equipment N7123 Hwy. 67 Mayville	4/13/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-35	Lewis N7143 Hwy. 67 Mayville	4/13/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-36	Mayville Animal Clinic N7860 Hwy. 67 Mayville	4/21/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-37	Halsne N7817 Hwy. 67 Mayville	4/30/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	0.40 J	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
PW-Office Well	Advanced Disposal N7296 Hwy. V Horicon	4/7/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	3.5	<0.25	<0.19	1,4 Dichlorobenzene 0.27 J
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	3.3	<0.24	<0.11	1,4 Dichlorobenzene 0.22 J
		4/30/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
Trip Blank		4/21/2009	CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		4/30/2009	NLS	--	--	<0.95	<0.16	<0.25	<0.18	<0.10	<0.28	<0.20	<0.25	<0.19	ND
			CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		5/14/2009	CT	--	--	<0.40	<0.22	<0.21	<0.24	<0.21	<0.27	<0.30	<0.24	<0.11	ND
		7/14/2010	NLS	--	--	<1.0	<0.16	<0.14	<0.11	<0.13	<0.11	<0.10	<0.12	<0.13	ND
		10/7/2010	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	<0.40	<0.50	<0.30	<0.40	<0.20	ND
			TA	--	--	<1.0	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.20	<0.20	ND

Table LGRL VOC Investigation Water Supply Well Sample Results
(Results are in µg/L)

Note: See last page for abbreviations, notes, and groundwater standards.

Well Number	Well Owner	Sample Date	Lab	Chloride (mg/L)	Alkalinity (mg/L)	Chloroethane	Chloromethane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Other VOCs
Trip Blank		2/10/2011	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	<0.40	<0.50	<0.30	<0.40	<0.20	ND
(continued)		3/1/2011	TA	--	--	<0.070	<0.063	<0.074	<0.059	<0.12	<0.13	<0.067	<0.060	<0.059	ND
		10/7/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		12/12/2011	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		12/27/2011	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	<0.40	<0.50	<0.30	<0.40	<0.20	ND
			TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		2/15/2012	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		4/11/2012	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		4/13/2012	TA	--	--	<0.50	<0.30	<0.25	<0.15	<0.30	<0.30	<0.15	<0.25	<0.032	ND
		5/2/2012	Siemens	--	--	<0.70	<0.40	<0.40	<0.40	<0.40	<0.50	<0.30	<0.40	<0.20	ND
		6/20/2012	Pace	--	--	<0.20	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	Chloroform 0.13 J
		7/18/2012	Pace	--	--	<0.20	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		8/2/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		9/13/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		10/5/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		11/29/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		12/17/2012	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/2/2013	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.14	<0.16	<0.11	<0.16	ND
		4/3/2013	Pace	--	--	<0.31	<0.13	<0.072	<0.16	<0.080	<0.18	<0.16	<0.11	<0.16	ND
NR 140 Groundwater Enforcement Standard				250	NS	400	30	850	7	70	100	5	5	0.2	1,4 Dichlorobenzene 75 Benzene 5 Chloroform 6 Methyl-tert-butyl ether 60 Toluene 800 Trimethylbenzenes 480
Drinking Water Standard (Maximum Contaminant Level)				125	NS	NS	NS	NS	7	70	100	5	5	0.2	1,4 Dichlorobenzene 75 Benzene 5 Chloroform (TTHM) 80 Toluene 1,000

Table LGRL VOC Investigation Water Supply Well Sample Results

NS = No standard established
TTHM = Trihalomethanes (disinfection byproducts including chloroform)
B = Compound also detected in blank sample
J = Estimated value below laboratory limit of quantitation
ND = Not detected
mg/L = Milligrams per Liter

CT = CT Laboratories, Baraboo, WI
NLS = Northern Lake Service, Inc., Crandon, WI
Siemens = Siemens Water Technologies
TA = TestAmerica, Watertown, WI
Pace = Pace Analytical, Green Bay, WI

Bold indicates detected compound.
Bold and underline indicates result above drinking water standard.
-- = Not Analyzed
µg/L = Micrograms per Liter

* Sample collected at the pressure tank prior to the iron filtration system.
** Sample collected at the kitchen tap after the water passed through the iron filtration system.

By: JSN 4/27/09
Revised: EO 3/17/10; LMH 10/13/2010; SC 10/14/2010; MOB 9/17/12; JSN 1/10/2013; LMH 1/29/2013; MOB 3/11, 4/10, 5/21, 6/6 & 7/18/13
Checked: JSN 3/19/10; EO 10/13/2010; 10/25/2010; 10/10/12; LMH 1/16/2013; JSN 1/29/2013; EO 3/12/13; EO 6/5/13

I:\25213032\Tables-General\Water Supply Wells\[_Water Supply Well VOCs_120904.xlsx]Notes

APPENDIX D
Site Inspection Checklist

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Hechimovich Landfill	**Date of inspection: October 14, 2013**
Location and Region: Mayville, WI Region V	**EPA ID: WID052906088**
Agency, office, or company leading the five-year review: Wisconsin Department of Natural Resources	**Weather/temperature:**

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☐ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls
- ☒ Other GAS EXTRACTION SYSTEM

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** JOE KWIATKOWSKI (Name) OPERATIONS MANAGER (Title) 10/14/13 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** JOE FALLE, P.E. (Name) PROJECT MANAGER (Title) 10/14/13 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

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 ANN BERTA — ENGINEER — 10/14/13 — (608) 743-4845
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 _____

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 — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☐ As-built drawings — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Maintenance logs — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

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

   Remarks _____

3. **O&M and OSHA Training Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

4. **Permits and Service Agreements**
   - ☒ Air discharge permit — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Other permits _____ — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks _____

5. **Gas Generation Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

6. **Settlement Monument Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

7. **Groundwater Monitoring Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

8. **Leachate Extraction Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

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

   Remarks _____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ☒ N/A

    Remarks _____

IV. O&M COSTS

1. **O&M Organization**

☒ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____

2. **O&M Cost Records**

☐ 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 _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

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

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

_____

_____

_____

_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks _____

_____

_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks _____

_____

2. **Land use changes on site** ☒ N/A

Remarks _____

_____

3. **Land use changes off site** ☒ N/A

Remarks _____

_____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks _____

_____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS ☑ Applicable ☐ N/A

A. Landfill Surface

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 EROSION REPAIRED REGULARLY

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_____

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** ☒ 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 ☒ No evidence of slope instability Areal extent_____ Remarks_____
B. Benches	☐ Applicable ☒ 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 ☒ N/A or okay Remarks_____
2.	**Bench Breached** ☐ Location shown on site map ☒ N/A or okay Remarks_____
3.	**Bench Overtopped** ☐ Location shown on site map ☒ N/A or okay Remarks_____
C. Letdown Channels	☐ Applicable ☒ 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_____
2.	**Material Degradation** ☐ Location shown on site map ☒ No evidence of degradation Material type_____ Areal extent_____ Remarks_____
3.	**Erosion** ☐ Location shown on site map ☒ No evidence of erosion Areal extent_____ Depth_____ Remarks_____

4. **Undercutting** ☐ Location shown on site map ☒ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☒ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

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_____

D. Cover Penetrations ☒ Applicable ☐ N/A

1. **Gas Vents** ☒ Active ☐ Passive
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____

2. **Gas Monitoring Probes**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

4. **Leachate Extraction Wells**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

5. **Settlement Monuments** ☐ Located ☒ Routinely surveyed ☐ N/A
Remarks_____

E. Gas Collection and Treatment ☑ Applicable ☐ N/A

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 _____

□. Detention/Sedimentation Ponds ☐ Applicable ☑ N/A

1. **Siltation** Areal extent _____ Depth _____ ☑ N/A
   ☐ Siltation not evident
   Remarks _____

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 ☒ N/A

1. **Deformations** ☐ Location shown on site map ☒ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** ☐ Location shown on site map ☒ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☒ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Areal extent_____ Depth_____
   Remarks EROSION REPAIRED REGULARLY

4. **Discharge Structure** ☒ Functioning ☐ N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☒ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☒ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☒ N/A
   Remarks _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____

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

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)
   - ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   - ☐ Air stripping ☐ Carbon absorbers
   - ☐ Filters _____
   - ☐ Additive (*e.g.*, chelation agent, flocculent) _____
   - ☐ Others _____
   - ☐ Good condition ☐ Needs Maintenance
   - ☐ Sampling ports properly marked and functional
   - ☐ Sampling/maintenance log displayed and up to date
   - ☐ Equipment properly identified
   - ☐ Quantity of groundwater treated annually _____
   - ☐ Quantity of surface water treated annually _____
   - Remarks _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - ☐ N/A ☐ Good condition ☐ Needs Maintenance
   - Remarks _____

3. **Tanks, Vaults, Storage Vessels**
   - ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   - Remarks _____

4. **Discharge Structure and Appurtenances**
   - ☐ N/A ☐ Good condition ☐ Needs Maintenance
   - Remarks _____

5. **Treatment Building(s)**
   - ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
   - ☐ Chemicals and equipment properly stored
   - Remarks _____

6. **Monitoring Wells** (pump and treatment remedy)
   - ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   - ☐ All required wells located ☐ Needs Maintenance ☐ N/A
   - Remarks _____

D. Monitoring Data

1. Monitoring Data
   - ☒ Is routinely submitted on time ☒ Is of acceptable quality

2. Monitoring data suggests:
   - ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

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.

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.).

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.

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.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.