FOURTH FIVE-YEAR REVIEW REPORT FOR RIPON CITY LANDFILL (A/K/A RIPON FF/NN LANDFILL) SUPERFUND SITE

Fond du Lac County, Wisconsin

Prepared by

Wisconsin Department of Natural Resources
for the
U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by:

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ACRONYMS and ABBREVIATIONS

ARARs	Applicable or relevant and appropriate requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of concern
DCE	Dichloroethene
EPA	United States Environmental Protection Agency
ES	Enforcement standard [see NR 140.05(7) of the WAC]
FS	Feasibility study
FFS	Focused feasibility study
FYR	Five-year review
ICs	Institutional controls
LEL	Lower explosive limit
MCL	Maximum contaminant level
µg/L	Micrograms/liter ("parts per billion")
MNA	Monitored natural attenuation
MW	Monitoring well
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and maintenance
OU	Operable unit
P	Piezometer
PAL	Preventive action limit [see NR 140.02(3) and 140.05(17) of the WAC]
PCE	Tetrachloroethene
PHA	Public Health Assessment
PRPs	Potentially responsible parties
RA	Remedial action
RD	Remedial design
RI	Remedial investigation
ROD	Record of Decision
TCE	Trichloroethene
UU/UE	Unlimited use and unrestricted exposure
VC	Vinyl chloride
VOC	Volatile organic compound
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources

EXECUTIVE SUMMARY

The Wisconsin Department of Natural Resources (WDNR), in consultation with the United States Environmental Protection Agency (EPA), has completed the fourth five-year review (FYR) at the Ripon City Landfill Superfund site (site), also known as the Ripon FF/NN Landfill site, located in the Town of Ripon, Fond du Lac County, Wisconsin. The purpose of this FYR is to evaluate current 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 report on September 27, 2011.

The Ripon City Landfill site was a gravel pit until 1967, when the land was leased to several entities for waste disposal. The City of Ripon operated the landfill until 1983, having accepted for disposal municipal, commercial, and industrial solid wastes plus sludge from the Ripon wastewater treatment facility. Due to volatile organic compounds (VOCs) being detected in a private water supply well in 1984, the site was placed on the National Priorities List (NPL) in May 1994. Several potentially responsible parties (PRPs) entered into a contract with WDNR in 1992 to conduct a remedial investigation (RI) and feasibility study (FS), conduct the remedial design (RD) of a selected remedial action (RA), and implement the RA at the site.

In 1996, WDNR issued a Record of Decision (ROD) for both the source control operable unit (OU) (OU1) and the groundwater OU (OU2). EPA concurred with the ROD. The remedial action objectives in the ROD included preventing direct contact with landfill contents; reducing contaminant leaching to groundwater; controlling surface water run-on, runoff and erosion; preventing off-site migration of landfill gas; restoring groundwater quality to state standards; monitoring groundwater quality, landfill gas and leachate.

To achieve these objectives, the selected remedy for OU1 consisted of installing a composite landfill cover and a passive landfill gas venting system, recording institutional controls (ICs), and conducting groundwater, landfill gas and leachate monitoring. For OU2, the No Action remedy was selected, and it was expected that the actions taken to control the source would decrease the migration of contaminants into groundwater. The PRP group completed RA construction in 1996. Although the remedy has not yet been modified to include these actions, in 2006, the PRPs installed an active gas extraction system at the site, and in 2002 and 2015, they arranged to connect nearby residences to the municipal water supply.

The remedy at the Ripon City Landfill site is currently protective of human health and the environment because the remedy is functioning as intended. Groundwater and landfill gas monitoring results and the connection of nearby residences to the municipal water supply show that exposure pathways that could result in unacceptable risks are currently under control. Currently, only one contaminant in groundwater is present at concentrations exceeding state and federal drinking water standard.

However, in order for the remedy to be protective in the long term, the following actions need to be taken: WDNR should issue a decision document to incorporate the installation of the active gas extraction system and the connection of the nearby residences to the municipal water supply into the site remedy. In addition, a final remedy for the groundwater contaminant plume needs to be incorporated into a decision document to ensure long-term protectiveness. The 2012 Focused Feasibility Study (FFS) completed by the PRPs included evaluations of several active groundwater remedies as well as an evaluation of monitored natural attenuation (MNA). At the time of the 2012 FFS, data seemed to indicate that MNA was working. Although levels of

contaminants in groundwater have decreased over time, EPA had questions about the adequacy of the lines of evidence supporting MNA at the site. To address this, the PRPs should conduct a Supplemental MNA Evaluation to review the current effectiveness of MNA as a remedy. This will include the installation of a sentinel monitoring well located approximately 1,500 feet downgradient of the site. If MNA is shown to be effective, WDNR should issue a decision document to select it as the final groundwater remedy. Also, because of dewatering activities that have occurred in the vicinity of the landfill, the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed.

Furthermore, for the remedy to be protective in the long term, the PRPs also need to review the effectiveness of the current ICs, including the ICs for preventing dewatering activities in the vicinity of the landfill and for preventing the installation of wells beyond 1,200 feet from the landfill boundary. Long-term protectiveness requires compliance with ICs, which will be ensured by long-term stewardship to monitor, maintain, and enforce the restrictions, as well as maintenance of the site remedy components. The PRPs should update the IC Plan to provide for long-term stewardship of ICs, and, if necessary, implement additional ICs.

Because hazardous substances, pollutants, or contaminants remain in place at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE), WDNR plans to conduct a fifth FYR at the Ripon City Landfill site no later than five years after the signature date of this report.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Ripon City Landfill (a/k/a Ripon FF/NN Landfill)		
EPA ID: WID980610190		
Region: 5	**State:** WI	**City/County:** Town of Ripon, Fond du Lac 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): Gary A. Edelstein
Author affiliation: WDNR
Review period: 09/16/2015 – 05/12/2016
Date of site inspection: October 28, 2015
Type of review: Statutory
Review number: 4
Triggering action date: 09/27/2011
Due date *(five years after triggering action date)*: 09/27/2016

Issues/Recommendations

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

OU(s): **1 & 2, Site-wide**	**Issue Category:** Changed Site Conditions
	Issue: WDNR has not issued a decision document to incorporate the active gas extraction system and the municipal water connections into the site remedy.
	Recommendation: WDNR should issue a decision document to incorporate these additional remedial actions into the site remedy.

Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	State	EPA	3/31/2021

OU(s): 2 (Groundwater)	**Issue Category:** Changed Site Conditions			
	Issue: Although the overall area of groundwater contamination has been stable, contamination has been identified in wells that previously had non-detect results. Monitoring parameters provide some indications that MNA may be an effective remedy; however, EPA has questions about the adequacy of the lines of evidence supporting MNA at the site.			
	Recommendation: The PRPs should conduct a Supplemental MNA Evaluation to review the effectiveness of MNA as a remedy. This evaluation will supplement the analyses of MNA and several active remedies presented in the 2012 FFS and will include installation of a sentinel monitoring well. If MNA is shown to be effective, WDNR should issue a decision document to select it as the final groundwater remedy.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State/EPA	3/31/2021

OU(s): 2 (Groundwater)	**Issue Category:** Changed Site Conditions			
	Issue: Dewatering activities have occurred in the vicinity of the landfill and may have caused groundwater flow direction to change.			
	Recommendation: The PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State/EPA	3/31/2021

OU(s): 2 (Groundwater)	**Issue Category:** Institutional Controls			
	Issue: ICs currently in place may not be adequate to prohibit installation of residential wells in the area of the groundwater plume and to prevent dewatering activities in the vicinity of the landfill, and the IC Plan may need modifications to provide for long-term stewardship of ICs.			
	Recommendation: The PRPs should conduct a review of the effectiveness of the current ICs to prevent dewatering activities in the vicinity of the landfill and to prevent the installation of wells beyond 1,200 feet from the landfill boundary. The PRPs should update the IC Plan to include plans for long-term stewardship and, if necessary, implement additional ICs.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State/EPA	9/30/2019

Protectiveness Statement(s)

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

Protectiveness Statement:
The remedy for OU1 at the Ripon City Landfill site currently protects human health and the environment because the remedy is functioning as intended and the landfill cap has been maintained. An active gas extraction system installed in 2006 is operating as planned. However, in order for the remedy to be protective in the long term, WDNR should issue a decision document to incorporate the active gas extraction system into the site remedy.

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

Protectiveness Statement:
The remedy for OU2 at the Ripon City Landfill site currently protects human health and the environment because groundwater monitoring results show that exposure pathways that could result in unacceptable risks are currently under control and nearby residences have been connected to the municipal water supply.

However, in order for the remedy to be protective in the long term, the following actions should be taken: WDNR should issue a decision document to incorporate the connection of the nearby residences to the municipal water supply into the site remedy; the PRPs should conduct a Supplemental MNA Evaluation to review the effectiveness of MNA as a groundwater remedy; the PRPs should install a sentinel monitoring well downgradient of the site; the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed; and WDNR should issue a decision document to incorporate MNA as the final groundwater remedy, if it is shown to be effective. The PRPs should also conduct a review of the effectiveness of current ICs. including the ICs for preventing dewatering activities in the vicinity of the landfill and for preventing installation of wells beyond 1,200 feet from the landfill boundary. The PRPs should update the IC Plan to provide for long-term stewardship of ICs, and if necessary, implement additional ICs.

Site-wide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

Protectiveness Statement:
The remedy at the Ripon City Landfill site is currently protective of human health and the environment because the remedy is functioning as intended. Groundwater and landfill gas monitoring results and the connection of nearby residences to the municipal water supply show that exposure pathways that could result in unacceptable risks are currently under control.

However, in order for the remedy to be protective in the long term, the following actions need to be taken: WDNR should issue a decision document to incorporate the installation of the active gas extraction system and the connection of the nearby residences to the municipal water supply into the site remedy; the PRPs should conduct a Supplemental MNA Evaluation

to review the effectiveness of MNA as a remedy; the PRPs should install a sentinel monitoring well downgradient of the site; the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed; the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed; and WDNR should issue a decision document to select MNA as a final groundwater remedy if it is shown to be effective.

In addition, to ensure long-term protectiveness, the PRPs should conduct a review of the effectiveness of the current ICs, including the ICs for preventing dewatering activities in the vicinity of the landfill and for preventing installation of wells beyond 1,200 feet from the landfill boundary. The PRPs should update the IC Plan to provide for long-term stewardship of ICs, and if necessary, implement additional ICs.

I. Introduction

The purpose of a FYR is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of the review are documented in a FYR report. In addition, the FYR report identifies issues found during the review, if any, and provides recommendations to address them.

EPA conducts FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA 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 Section 300.430(f)(4)(ii), which 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."*

WDNR is the lead agency for developing and implementing the remedy for the site and has conducted this FYR. EPA has reviewed all supporting documentation and provided input to WDNR during the FYR process. This report documents the results of the FYR.

This is the fourth FYR for the Ripon City Landfill site. The triggering action for this statutory review is the signature date of the third FYR report on September 27, 2011. The FYR is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for UU/UE. The site consists of two OUs, and both OUs are addressed in this FYR report. OU1 addresses the source control remedy, and OU2 addresses the groundwater remedy.

II. Progress since the Last Five-Year Review

Table 1: Protectiveness Determinations/Statements from the 2011 FYR Report

OU#	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	For the source control operable unit, OU1, the remedy is protective in the short term because there is no evidence of exposure to site-related contaminants. To be protective in the long term, enhanced gas extraction must be adopted through a decision document and implemented to maintain gas control.
2	Short-term Protective	For the groundwater operable unit, OU2, the remedy is protective in the short term because there is no evidence of exposure to site-related contaminants. A remedy to address the contaminated plume in addition to the alternative water supply and the active gas extraction system that have already been provided must be selected and implemented through a decision document. Long-term protectiveness of the groundwater will be achieved when the groundwater reaches cleanup levels.
Site-wide	Short-term Protective	For the entire site, the remedy is protective in the short term because there is no evidence of exposure to site-related contaminants. Site-wide long-term protectiveness will be achieved when the additional remedy components are selected and implemented and the groundwater reaches cleanup levels. Long-term protectiveness requires compliance with effective ICs, which will be ensured by implementing effective ICs and through long-term stewardship to monitor, maintain, and enforce them, as well as maintaining the site remedy components.

Table 2: Status of Recommendations from the 2011 FYR Report

OU#	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
1	Groundwater contamination expansion	Continue groundwater monitoring	PRP	State	July 2012	Completed	04/13/2012
1 & 2	Groundwater contamination expansion	Issue a ROD Amendment for alternative water supply, active landfill gas extraction, addressing groundwater contamination, additional ICs that are needed, and a monitoring program	State	EPA	Sept. 2012	Ongoing – Decision document was put on hold until further evaluation of MNA was completed	NA
2	Groundwater contamination expansion	Implement revised remedy	PRP	State	Begin Sept. 2012	Ongoing – data is being collected to re-evaluate MNA as a possible remedy	NA
Site-wide	ICs	Implement the IC Plan and ensure long-term stewardship for the site	PRPs/ State	EPA	June 2016	On-going – some issues identified in the 2011 IC Plan have not yet been implemented	NA

The first recommendation in the 2011 FYR was to continue groundwater monitoring to provide data necessary for the selection of a final groundwater remedy. The recommendation was made due to the identification of contamination in wells that had previously been non-detect. The PRPs had begun analyzing groundwater samples for natural attenuation parameters in 2009. Using this data, the PRPs completed a FFS which was approved in April 2012. The FFS provided a comparison of MNA, groundwater pump and treatment, and *in situ* groundwater treatment remedy options. Some of the alternatives also included a contingency plan to provide connections to the municipal water supply.

The second and third recommendations in the 2011 FYR were to issue a ROD Amendment and implement the revised remedy. The ROD Amendment was to include the alternative water supply (connections to the municipal water supply), the active landfill gas extraction system, a final groundwater remedy, implementation of additional ICs, and a monitoring program. A ROD Amendment was drafted in May 2012; however, WDNR and EPA determined that additional groundwater data was necessary to evaluate the effectiveness of MNA, so the document was not finalized. Levels of contaminants in groundwater have decreased over time and have either reached or are slightly above maximum contaminant levels (MCLs). At the time the FFS was completed in 2012, site data seemed to support the selection of MNA as an effective groundwater remedy. Because of questions raised by EPA about the adequacy of the lines of evidence supporting MNA and results from groundwater monitoring since May 2012, the ROD Amendment was put on hold.

The final recommendation in the 2011 FYR was to implement an IC Plan to ensure long-term stewardship of ICs. An IC Plan was completed in 2011. Some of the recommendations in the 2011 IC Plan have been implemented, and some modifications to existing or additional ICs may be necessary. Information about IC implementation and stewardship is provided below.

Remedy Implementation Activities

The State of Wisconsin regulates groundwater contamination under Wisconsin Administrative Code (WAC) Ch. NR 140, which has two criteria to apply to contaminant levels in drinking water. One is the enforcement standard (ES), which is typically equivalent to the MCL under the federal Safe Drinking Water Act. Actions must be taken if levels of contaminants in drinking water exceed ESs. The second criterion is the preventative action limit (PAL). PALs are more stringent than ESs and serve as indicators of a potential problem if the contaminant levels increase above the PAL.

During routine groundwater monitoring at the Ripon City Landfill site in April 2012, vinyl chloride (VC) was detected in a residential well on Charles Street at an estimated concentration of 0.13 µg/L (micrograms per liter or parts per billion). The well was located approximately 1,500 feet southwest of the landfill. When the well was resampled later that month, no VC was detected. The well was resampled in April, May, and July 2014. The samples collected in April and July showed VC at a concentration of 0.41 µg/L and 0.30 µg/L, respectively; however, the result for May was non-detect. The ES for VC under WAC Ch. NR 140 is 0.2 µg/l.

As an interim response to these ES exceedances, the PRPs provided the resident with bottled water for drinking and cooking. The City of Ripon finalized an agreement to permanently

connect the residence to the municipal water supply and completed the connection in July 2015. The private well was disconnected from the home's internal water piping and remains connected to outside faucets. Use of water from the outdoor faucets is not considered to be a significant concern because of the low levels of the contamination in groundwater, the location of the water source being outside, and the seasonal and less frequent use of the water.

Although no VOCs had ever been detected in the residential well across the street from the residence discussed above, the homeowners agreed to have their residence connected to the municipal water supply also. In September 2015, the City connected the residence to the municipal water supply. The private well was disconnected from the home's internal water piping and remains connected to outside faucets. All residences on Charles Street are now connected to municipal water.

Previous remedial implementation activities are discussed in Appendix A, and a site map is included as Figure 1.

Institutional Controls

ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for exposure to contamination and that protect the integrity of the remedy. ICs are required to assure long-term protectiveness for any areas that do not allow for UU/UE. In addition to the site-specific IC required by the ROD, a number of other governmental and informational devices serve as ICs to further protect the remedy at the Ripon City Landfill site. The ICs in place for the site are summarized below, and implemented and planned ICs are listed in Tables 3 and 4. A map showing the areas in which the ICs apply is included in Figure 2.

The IC required by the ROD was the placement of a deed restriction that prohibited disturbing the landfill cap except for maintenance purposes. To fulfill the ROD requirement for a deed restriction, on October 21, 1997, the former landfill property owner signed a Declaration of Restrictions on the property containing the Ripon City Landfill. The restriction was filed with the Register of Deeds for Fond du Lac County. The Declaration of Restrictions prohibits installing water wells, other than monitoring or leachate wells; prohibits certain specified site uses; and prohibits any use that might damage or impair the effectiveness of any remedial action component constructed at the site and any interference with the performance of the remedial work. Two of the PRPs, the City of Ripon and the Town of Ripon, are now the owners of, and possess control over, the landfill property, through a February 2004 Personal Representative's Deed. Ripon City Landfill is identified on the WDNR GIS Registry map as a site with ongoing cleanup that has continuing obligations.

At the state level, the State of Wisconsin regulates the final use of a closed landfill under WAC Ch. NR 506.085 and NR 504.7(9). Under these codes, using the waste disposal area for agricultural purposes, constructing any buildings over the waste disposal area, and excavating the final cover or any waste materials are all activities that are prohibited at solid waste disposal sites unless a variance is granted by WDNR.

Unless an exception under WAC Ch. NR 812.43 is granted by WDNR, another layer of protection is the restrictions set forth in WAC Ch. NR 812.08(4)(g)1. Under this section of state

administrative code, the minimum separation distance between a proposed or new well and a proposed, existing, or abandoned landfill is 1,200 feet, as measured from the proposed well location to the nearest property boundary of the landfill or edge of waste, if known. The process for obtaining an exception to this minimum separation distance is provided in WAC Ch. NR 812.43. Per this section of the code, if development might entail construction of private water supply well systems *within* the minimum separation distance to the landfill, the State requires the property developer to receive a variance from WDNR. An application for a variance is reviewed by WDNR using the concept of comparable protection. Comparable protection may be provided by appropriate measures including, but not limited to, a deeper well casing depth setting, specific grouting materials or methods, specific drilling methodology or additional well water sampling results. The purpose of these measures is to safeguard groundwater and water supplies from potential sources of contamination. If WDNR grants a variance for a well under WAC Ch. NR 812.43, the code requires it to notify the landfill owner, or, if the landfill owner is unknown, the municipality where the landfill is located. In the case of the Ripon City Landfill site, one of the landfill owners and PRPs is the Town of Ripon, which is the municipality in which the site is located.

To prevent installation of wells in the area beyond 1,200 feet from the landfill, which is not covered by WAC Ch. NR 812.08(4)(g)1, WDNR imposed a Special Well Casing Depth Area pursuant to WAC Ch. NR 812.12(3). WDNR sent memoranda regarding the establishment of this protected area to Wisconsin licensed well drillers in 2004. The Special Well Casing Depth Area covers approximately 1.5 square miles surrounding the landfill. Requirements apply to the construction of new wells and the reconstruction of existing wells. Figure 2 shows the location of the area. Section 4.510 of the Town of Ripon zoning ordinance discusses the requirements for the Special Well Casing Depth Area established by WDNR.

The PRPs have contracts with the nearby homeowners who are connected to the municipal water supply and these contracts include requirements to have the residential water supply wells abandoned or converted to groundwater monitoring wells. The decision as to whether to abandon a water supply well or convert it to a monitoring well was at the discretion of the PRPs, and the contracts stipulate that the PRPs will be responsible, at their expense, for the abandonment of a converted well when the well is no longer required for monitoring groundwater quality. The contract states that, to the extent permitted by law, the contract would be governed by the laws of the State of Wisconsin.

The PRPs prepared an IC Plan in 2011 that provides a comprehensive summary of the IC instruments and controls on the site and outlines the ways in which compliance with ICs are monitored. The plan states that City of Ripon personnel conduct a weekly drive-by inspection of the landfill property and fencing. Site inspections of the gas/leachate wells, gas probes and groundwater monitoring wells are performed during each monitoring event. The landfill cap is formally inspected once a year. The IC Plan also identified some areas where ICs could be supplemented or improved. These areas are discussed further in the sections below. Summaries of ICs for soil and groundwater are shown in Tables 3 and 4, respectively.

Table 3: Institutional Controls at the Ripon City Landfill Site for Soil

ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (if applicable)
Yes	Placement of a deed restriction to prohibit disturbing the landfill cap except for maintenance purposes	Area within landfill boundaries	Prohibit certain specified site uses, including any use that might damage or impair the effectiveness of a remedy component or interfere with the performance of the remedial work.	Declaration of Restrictions, recorded on October 21, 1997 at the Register of Deeds for Fond du Lac County for the site property. WAC Ch. NR 506.085 regulates closed landfills and prohibits using the waste disposal area for agricultural purposes, constructing any buildings over the waste disposal area, and excavating the final cover or any waste materials, unless a variance is granted by WDNR. The site is listed in the WDNR GIS Registry as a site with ongoing cleanup that has continuing obligations.

Table 4: Institutional Controls at the Ripon City Landfill Site for Groundwater

ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (if applicable)
Yes	None (except WAC Ch. NR 812.08)	Area that exceeds groundwater cleanup standards	Prohibit installation of water wells, other than monitoring or leachate wells, on the site and throughout the area of contaminated groundwater.	Declaration of Restrictions recorded on October 21, 1997 at the Register of Deeds for Fond du Lac County for the site property which prohibits water wells on the landfill property. WAC Ch. NR 812.08 forbids construction of a potable or non-potable well within 1,200 feet of a landfill. WAC Ch. NR 812.43 requires that any property development, either residential or commercial, which could entail construction of private water supply well systems within the minimum separation distance to the landfill can only be constructed following receipt of a variance from WDNR. Pursuant to WAC Ch. NR 812.12(3), WDNR issued memoranda dated July 15, 2004, to Wisconsin licensed well drillers that imposed a "Special Well Casing Pipe Depth Area" for the an area surrounding and containing the landfill that covers approximately 1.5 square miles. The site is listed in the WDNR GIS Registry as a site with ongoing cleanup that has continuing obligations. Agreements between PRPs and homeowners who are hooked up to the municipal water supply include requirements to have their water supply well abandoned or converted to a groundwater monitoring well.

Current Compliance

The remedy appears to be functioning as intended, and no site uses which were inconsistent with the implemented ICs or remedy IC objectives were noted during the FYR site inspection. Although WDNR was not aware of site or media uses which were inconsistent with the stated objectives to be achieved by the ICs at the time of the FYR site inspection, in May 2016 WDNR was notified that dewatering was occurring at the quarry located 500 feet northeast of the site. This dewatering was being investigated during the period when this FYR was being finalized.

City of Ripon personnel conduct a weekly drive-by inspection of the landfill property and fencing. Site inspections of the gas/leachate wells, gas probes and groundwater monitoring wells are performed during each monitoring event. The landfill cap is formally inspected once a year.

IC Evaluation and Follow up Actions Needed

The IC Plan prepared by the PRPs in 2011 includes a comprehensive summary of ICs in place for the site. The plan also identified some areas where ICs could be supplemented or improved.

Since the 2011 FYR, the PRPs have connected two residences to municipal water. The residential area is approximately 1,500 feet to the southwest of the site. One resident was connected to municipal water in July 2015 after VC concentrations were detected in their well above the ES. Although no VOCs had been detected in the residential well across the street, these homeowners also agreed to have their residence connected to the municipal water supply. All residences on Charles Street are now connected to municipal water. All of the residential wells in the Charles Street area were constructed before the remedy was implemented at the Ripon City Landfill site.

To ensure that new residential wells will not be installed in the vicinity of the site in the future, including in areas not within the 1,200-foot boundary beyond the landfill that is covered by WAC Ch. NR 812.08, WDNR issued two memoranda pursuant to WAC Ch. NR 812.12(3) in 2004. The memoranda imposed a "Special Well Casing Pipe Depth Area" for the area surrounding that site that covers approximately 1.5 square miles. Requirements apply to the construction of new wells and the reconstruction of existing wells throughout this area. The effectiveness of this IC will be evaluated as part of the review of the IC Plan.

Another issue identified prior to the 2011 FYR were two events of dewatering activities conducted in the quarry operated by Northeast Asphalt, Inc. (NEA) located 500 feet northeast of the site. The two incidents occurred in 2002 and 2008 and after each incident, WDNR sent the quarry owners/operators a non-compliance letter warning them that under WAC Ch. NR 292.11, a mine operator could incur liability for cleanup if its operations caused the release of a hazardous substance or mobilized or altered contaminants in a groundwater plume.

The extensive pumping by NEA in 2002 altered groundwater flow and seemed to correlate with increases in VOC concentrations in an upgradient well (P-102) and may have been correlated with increases in VOC concentrations in two downgradient wells – one located near the southwest corner of the landfill (MW-112) and one located approximately 300 feet south of the landfill (MW-107). Although WDNR immediately ordered NEA to cease dewatering activities, it

took nearly two years for the water levels to recover. The pumping in 2008 was stopped before the groundwater flow direction was altered. Another quarry, R&R Wash (Roger Washkovic), has a nonmetallic mining operation approximately 900 feet to the west of the site.

To respond to these dewatering incidents, the Town of Ripon agreed to notify the PRPs if the township board received an application for a special use permit, under Section 4.303 or 4.405 of the zoning ordinance, for any parcel within the vicinity of the landfill that proposed a use that would involve surface water or groundwater dewatering activities. This would allow comments to be submitted during the public notice period. An example of this occurred in June 2009 when a special use permit application was submitted for a new sand and gravel pit operation on the Roger Washkovic property located approximately 300 southeast of the landfill. Based on comments from WDNR and the PRPs, the Town of Ripon denied the permit.

A second response to these dewatering incidents was that the PRPs agreed to review the Annual Discharge Monitoring Reports filed by NEA each year, evaluate the potential for adverse hydraulic impacts on the groundwater plume, and notify WDNR of its findings.

WDNR was notified in May 2016 that dewatering activities were again occurring at the NEA quarry. This was being investigated at the time this FYR was being finalized. The effectiveness of the ICs in place to prevent these adverse pumping events from reoccurring will be reviewed.

Long-Term Stewardship

Since compliance with ICs is necessary to assure the protectiveness of the remedy, planning for long-term stewardship is required. Ensuring that ICs are maintained, monitored and enforced will allow the remedy to continue to function as intended. Long-term stewardship involves having procedures in place to properly maintain and monitor the site. The IC Plan for the site was approved on April 13, 2012. It summarized the procedures currently in place to ensure long-term IC stewardship including regular inspections of the engineering controls and access controls at the site. The IC Plan will be reviewed to ensure the effectiveness of ICs and will be updated to include information about how ICs will be reviewed and how the results of the reviews will be reported.

Operation and Maintenance

Since the 2011 FYR, the PRPs have conducted operation and maintenance (O&M) activities at the site, including routine monitoring and submittal of annual reports. The PRPs conduct site inspections periodically throughout the year.

To monitor groundwater, water table levels are checked at 27 monitoring wells annually. The O&M activities also include semi-annual sampling of 20 monitoring wells and 3 monitoring wells converted from residential wells. Currently, the groundwater sampling analysis includes field measurements, VOCs, and, as of 2009, MNA parameters. Samples from two leachate wells are analyzed for VOCs.

Sampling for landfill gas is also part of routine O&M, and gas samples are collected from eleven gas probes, four monitoring wells, one gas vent, three leachate wells, and the system exhaust. All

landfill gas samples are analyzed for concentrations of methane, carbon dioxide, and oxygen, in percent by volume, and gas samples from five locations are also analyzed for VOCs. Since 2013, gas monitoring and VOC analyses of samples from the gas probes and four monitoring wells have taken place annually in April. Biweekly landfill gas monitoring continues to take place at the monitoring locations within the fill.

Annual increases in methane at the leachate wells are seen in the late summer to early fall months. The operation of the gas extraction system is seasonally adjusted to maximize landfill methane gas extraction while minimizing the introduction of atmospheric oxygen in order to maintain oxygen levels less than 5 percent. There are no buildings or confined spaces on the site.

III. Five-Year Review Process

Administrative Components

WDNR notified EPA and the PRPs that it was initiating the FYR at the Ripon Landfill site in 2015. The FYR was led by Gary Edelstein, WDNR State Project Manager. Mary Tierney, EPA Remedial Project Manager, assisted in the review as the representative for the support agency.

The FYR consisted of the following components:

- Community notification and involvement;
- Document review;
- Data review;
- Site inspection; and
- Report preparation.

Community Notification and Involvement

In September 2015, WDNR placed advertisements in the *Ripon Commonwealth Express* and in the *Ripon Commonwealth Press* announcing that the FYR was in progress. The ads indicated that questions and comments could be directed to the State Project Manager. Copies of the ads are included in Attachment 1. No comments were received.

Document Review

In addition to existing site documents that included the ROD and the 2011 FYR report, WDNR reviewed the PRP-prepared report, *Fourth Five-Year Review Report, Ripon FF/NN Landfill, Ripon, Wisconsin* (January 9, 2016) for this FYR. WDNR also reviewed periodic PRP reports that document site monitoring results and any additional site work that had been done.

Data Review

EPA and WDNR reviewed the data from the site monitoring program that has been performed since the completion of the construction of the original remedy. The monitoring program includes collection of groundwater samples from monitoring wells and residential wells and

landfill gas and leachate samples. The contaminants of concern (COCs) at the site have been primarily chlorinated VOCs including tetrachloroethene (PCE) and trichloroethene (TCE) and their reductive dechlorination byproducts 1,2-DCE and VC. Benzene has also been detected historically at concentrations exceeding the WAC Ch. NR 140 PAL (0.5 µg/L), but has never been detected above the ES (5 µg/L).

Leachate Sampling

Historical sampling of leachate wells has shown that very little leachate is generated by the site. Three leachate wells are included in the monitoring plan. Since the time the cap was constructed on the landfill in 1996, the levels of leachate in the leachate wells have fallen by 3 to 8 feet. This is consistent with the fact that the cap allows a negligible quantity of precipitation to enter the top of the landfill to produce leachate. The leachate well in the thickest portion of the landfill has been dry since 1998. The chemical constituents in the leachate well in the middle of the landfill include primarily aromatic compounds such as benzene, toluene, ethylbenzene and xylene and trimethylbenzenes with little or no chlorinated compounds. The chemical constituents in the leachate well along the west border of the landfill has included mostly chlorinated compounds (1,2-DCE and VC) with very few aromatic compounds.

Landfill Gas Sampling

In 2004, 11 gas probes were installed within 150 feet of the perimeter of the waste on all four sides of the landfill. In 2004 and 2005, the lower explosive limit (LEL) for methane was exceeded in four of these 11 probes. WAC Ch. NR 504.04(4)(e) requires that methane concentrations greater than the LEL, which is 5 percent, should not occur outside the limits of the waste. In response to these exceedances, the PRP installed an active gas extraction system. Concentrations of methane in all wells and gas probes outside the limits of waste have been below the LEL since 2012. Shortly after the active gas extraction system began operating in 2006, concentrations of methane gas had already decreased to below the LEL at all except one measuring point, GP-1. Methane concentrations at GP-1 have been below the LEL since 2012.

The landfill gas monitoring system and monitoring program in place at the Ripon City Landfill site comply with the specifications in both the state regulations (WAC Ch. NR 504.04) and federal regulations (40 CFR Section 258.23). The monitoring data show that the active gas extraction system has controlled methane gas migration from the fill area since it was installed. Currently, monitoring and VOC analyses of samples from the 11 gas probes and from four monitoring wells are done each year in April. Biweekly landfill gas monitoring continues to take place at the monitoring locations within the fill. Because of the small volume of landfill gas generated by the site, it can be safely vented to the atmosphere without causing exceedances of air emission standards. There are no buildings or confined spaces on the landfill where gas could collect and pose an explosion risk.

Groundwater Sampling

Groundwater monitoring results date back to 1993 when the RI began. Information collected during the RI led to site monitoring wells being organized into categories based on the stratigraphic units in which they were screened and on well screen elevations. Monitoring wells were grouped into four different "layers." Layers 1 through 4 refer to separate water-bearing soil and/or bedrock layers or units, all of which exhibit unique flow characteristics.

The depths of the stratigraphic units, in feet below ground surface (bgs), for each layer are shown below.

Layer 1: *25-65 feet bgs*
Layer 2: *62-95 feet bgs*
Layer 3: *152-199 feet bgs*
Layer 4: *281-328 feet bgs*

The groundwater flow direction in Layers 1, 2, and 3 is generally to the southwest. The direction of groundwater flow in Layer 4 varies, however, because it is influenced by the operation of the City of Ripon municipal water supply Well #9 (Well #9). Well #9 is approximately 3,000 feet to the southeast of the landfill. Prior to a temporary shutdown of Well #9 in 2007, the flow direction in Layer 4 was to the southeast. After a temporary shutdown, site monitoring well sampling showed that the flow direction in Layer 4 had reverted back to the west. Currently, the groundwater flow direction in Layer 4 shifts to the southeast when Well #9 is operating and to the west when Well #9 is not operating.

Currently, the only COC in groundwater that still exceeds the ES in some monitoring wells is VC. In the past five years, most of the exceedances have occurred in the deepest wells – Layers 3 and 4. The highest concentration of VC since the last FYR in 2011 was 12.2 µg/L at P-111D, which is located approximately 900 feet southwest of the landfill. Historically, however, the highest contaminant concentrations were detected in Layer 1 wells near the south (downgradient) edge of the landfill. Around the time of the RI, the maximum concentrations of COCs detected in these wells were 11 µg/L TCE, 1100 µg/L 1,2-DCE and 440 µg/L VC.

Since monitoring began in 1993, VC has been detected in 13 site monitoring wells at concentrations above the ES. Since the last FYR, VC at concentrations above the ES has only been detected in five site monitoring wells. The ESs for TCE and 1,2-DCE have never been exceeded in any well other than in three water table wells. The downgradient extent of the VC plume is approximately 1,500 feet south-southwest of the landfill in Layer 3. In Layer 4, the downgradient extent of the VC plume is approximately 300 feet south of the landfill.

Since the last FYR in 2011, the following wells have had *no* detections of *any* COCs:

Layer 1 Wells: MW-101, MW-102, MW-104, MW-106, MW-107, MW-108, MW-111
Layer 2 Wells: P-101, P-102, P-104, P-106, P-108, P-111
Layer 3 Wells: MW-3B, P-113B, P-116
Layer 4 Wells: MW-3A, P-113A

A summary of the detections of 1,2-DCE, TCE, and VC in groundwater between 2011 and 2016 is provided below.

Layer 1 Wells

- MW-103: TCE has been detected at concentrations above the PAL but below the ES throughout this five-year reporting period with concentrations remaining stable.
- MW-112: TCE and VC were last detected in 2011 and have not been detected during the remainder of the five-year reporting period.

Layer 2 Wells

- P-103: VC last detected in 2012 and has not been detected during the remainder of the five-year reporting period.
- P-107: VC was detected intermittently during the five-year reporting period at concentrations of 1.1 µg/L or less.

Layer 3 Wells

- P-103D: VC concentrations exceed the ES but at concentrations less than 1.0 µg/L. Intermittent detections of 1,2-DCE but at concentrations below the PAL.
- P-111D: VC concentrations exceed the ES with concentrations ranging from 4.3 to 12.2 µg/L, and was detected at 6.5 µg/L during the last sampling event (April 2015). 1,2-DCE was detected, but at concentrations below the PAL.
- P-114: VC concentrations exceed the ES with concentrations ranging from 5.0 to 10 µg/L, and was detected at 6.5 µg/L during the last sampling event (April 2015). 1,2-DCE was detected, but at concentrations below the PAL.
- P-115: VC concentrations exceed the ES but at concentrations less than 1.7 µg/L.

Layer 4 Wells

- P-107D: VC concentrations exceed the ES with concentrations ranging from 1.8 to 5.6 µg/L, and was detected at 3.1 µg/L during the last sampling event (April 2015). 1,2-DCE was detected intermittently at concentrations below the PAL during this 5 year review period.

The concentrations of VC in most site monitoring wells have decreased since the gas extraction system startup in 2006. In April 2006, VC was detected in 11 groundwater monitoring wells. Following startup and operation of the active gas extraction system, five of those wells have shown no detections of VC. In the remaining six monitoring wells, VC concentrations range from 0.26 to 6.5 µg/L. A comparison of VC detections in April 2006, before the active gas extraction was started, to the most recent data from October 2015 is shown below. (Concentrations are in µg/L.) This comparison is also shown in Figures 3 and 4.

Well	Layer	Date	Conc.	Date	Conc.	PRP Group Interpreted Trend
MW-103	1	4/25/06	1.8	4/28/15	ND	Decreased; ND since 2007
MW-104	1	4/25/06	1.1	4/15/15	ND	Decreased; ND since 2006
MW-112	1	4/25/06	2.8	10/28/15	ND	Decreased; ND since 2011
P-103	2	4/25/06	2.9	10/27/15	ND	Decreased; ND since 2012
P-107	2	4/25/06	0.79	4/15/15	0.57 J	Slightly decreasing
P-103D	3	4/25/06	2.6	10/27/15	0.26 J	Slightly decreasing
P-111D	3	4/25/06	11	10/27/15	6.5	Stable since 2012
P-114	3	4/25/06	7.9	10/27/15	6.5	Stable since 2012
P-115	3	4/25/06	0.62	10/27/15	1.1	Stable since 2008
P-107D	4	4/25/06	7.7	10/27/15	3.1	Stable since 2007

FYR Site Inspection

WDNR conducted the FYR site inspection on October 28, 2015. At that time, the State Project Manager found the landfill cover, wells, and active gas extraction system to be in good condition and in operating order. The landfill cover had been recently mowed and was in good condition. No settlement or vegetative bare spots were noted. The fence around the landfill was in good condition. A stand of trees serves as a boundary for the northern edge of the landfill. The completed inspection form and site photographs are included as Attachments 2 and 3.

VI. Technical Assessment

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

Yes. The review of documents, groundwater data, methane gas data, leachate collection records, Applicable or Relevant and Appropriate Requirements (ARARs), and site inspection observations indicate that the remedy at the Ripon City Landfill site is functioning as intended; however, additional work is needed to ensure long-term protectiveness. The capping of the landfill has helped to reduce the migration of contaminants to groundwater and has prevented direct contact with waste materials. O&M of the cap and the gas extraction system has been effective.

Overall, levels of contaminants in groundwater have decreased over time and are currently very low. Detection of low levels of VOC contamination in several residential wells to the southwest of the landfill, however, led the PRPs to connect the residences to the municipal water system. Although some of the residents' wells are still connected to the outdoor faucet, the use of this water is not considered to be a significant concern because of the low levels of the contamination in groundwater, the location of the water source being outside, and the seasonal and less frequent use of the water. The PRPs also installed an active gas extraction system to address VC contamination in groundwater. Levels of VC in groundwater have decreased significantly since the active gas extraction system was installed. Concentrations of contaminants in monitoring wells are non-detect, stable or decreasing, and VC is currently the only COC in groundwater at concentrations exceeding the ES. In May 2016 WDNR was notified that dewatering was occurring at the quarry located 500 feet northeast of the site. This dewatering was being investigated during the period when this FYR was being finalized.

Because EPA had questions about the adequacy of the lines of evidence supporting MNA at the site, the PRPs should conduct a Supplemental MNA Evaluation to determine its effectiveness as a groundwater remedy. This will include the installation of a sentinel monitoring well located approximately 1,500 feet downgradient of the site. If MNA is determined to be effective, a decision document will be prepared to document the final groundwater remedy. Also, because of dewatering activities in the vicinity of the landfill that may be affecting the direction of groundwater flow, the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed.

The decision document will also incorporate the actions taken by the PRPs – the installation of an active gas extraction system and the connection of several residences to municipal water – into the site remedy. The PRPs will also review the effectiveness of the current ICs to prevent dewatering activities in the vicinity of the landfill and to prevent wells from being installed beyond 1,200 feet from the landfill boundary. If necessary, the PRPs will implement additional ICs. In addition, the PRPs will update the IC Plan, based on comments from the WDNR and EPA, and include plans for long-term stewardship of ICs.

Question B. Are the exposure assumptions, toxicity data, clean-up levels, and remedial action objectives used at the time of the remedy selection still valid?

Yes. The exposure assumptions used in the 1994 risk assessment were conservative and remain

valid for this site. The remedial action objectives of reducing infiltration through the waste, controlling landfill gases, and restricting access and future use of the site remain valid. WDNR modified its PAL and ES for arsenic in 2004 to 1 µg/L and 10 µg/L, respectively. These changes, however, have not affected the protectiveness of the remedy. There are no recently modified ARARs that would require a change in the remedy or additional remedial action.

Groundwater monitoring at the Ripon City Landfill site has shown low levels of VOCs in several wells at concentrations that are either stable or decreasing. At the time of the ROD, levels of contaminants in groundwater were determined to be too low to warrant active groundwater remedial measures. Since that time, however, contaminated groundwater with concentrations of VC greater than the PAL or both the PAL and the ES were detected in several residential wells that had previously had non-detect results. This exposure pathway has been eliminated with the provision of an alternative water supply to the area. Because of the low levels of contaminants in site monitoring wells and the fact that approximately 100 feet of uncontaminated groundwater is present between the contaminated groundwater and the basements of the residences, the potential for vapor intrusion of VOCs into any residences is extremely low.

The exposure assumptions used to develop the human health risk assessment included both current and potential future exposures. These assumptions are still valid. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. There has been no change to the standardized risk assessment methodology that would affect the protectiveness of the remedy. Although the approach to evaluating potential risks to human health due to VOCs via the vapor intrusion pathway has been reevaluated since the 2011 FYR, the potential for vapor intrusion risks at the site is extremely low.

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

Yes. The discovery of exceedances of the PAL or both the PAL and the ES for VC in some residential wells resulted in additional actions being taken to ensure continued short-term protectiveness of the remedy. These actions included provision of an alternative water supply to a number of residences, installation of an active gas collection system, and increased groundwater monitoring. Although levels of contaminants in groundwater have decreased over time and are currently very low, EPA had questions about the adequacy of the lines of evidence supporting MNA at the site. To address this, the PRPs will evaluate the effectiveness of MNA to achieve groundwater cleanup goals and will install a sentinel monitoring well downgradient of the site. If MNA is determined to be effective, it will be incorporated as the final groundwater remedy in a decision document. The decision document will also include the installation of an active gas collection system and the provision of an alternate water supply as part of the remedy.

Another issue identified prior to the last FYR that led to additional ICs being implemented were two events of dewatering activities nearby the landfill that occurred in 2002 and 2008. Although the dewatering in 2008 was stopped before it impacted the groundwater flow direction, data indicated that the 2002 pumping altered the groundwater flow direction. The effect of the pumping in 2002 seemed to correlate with increases in VOC concentrations in an upgradient well

and may have also been the reason for increases in VOC concentrations in two downgradient wells. Additional ICs were implemented in response to these incidents. However, because another instance of dewatering near the landfill was reported to WDNR in May 2016, these ICs will be reviewed to determine if supplemental ICs are required.

Technical Assessment Summary

The remedy for the Ripon City Landfill site was constructed in accordance with the RD. The landfill cap and gas collection system have minimized the migration of contaminants into groundwater. Overall, contaminant concentrations in monitoring wells have been decreasing or are stable and have either reached or are slightly above MCLs. The IC required by the ROD was implemented, and other governmental and informational ICs are in place. Since the remedy selected in the ROD was implemented, two remedy enhancements have been completed. One is the provision of an alternative water supply to affected residences, and the other is the installation of an active gas extraction system.

Based on the review of the analytical data collected for the site over the last five years and the actions that have been taken since the ROD, the remedy that is currently in place is protective of human health and the environment in the short term. Because of the low levels of contaminants in site monitoring wells and the fact that approximately 100 feet of uncontaminated groundwater is present between the contaminated groundwater and the basements of the residences, the potential for vapor intrusion of VOCs into any residences is extremely low.

To ensure the remedy remains protective in the long term, WDNR and EPA will require that the PRPs evaluate the effectiveness of MNA as a remedy for groundwater. This will include the installation of a sentinel monitoring well located approximately 1,500 feet downgradient of the site. If MNA is determined to be effective, it will be selected as the final groundwater remedy and will be incorporated into the remedy, along with the installation of the active gas extraction system and the provision of alternate water supply to several residents, in a decision document. Because of dewatering activities in the vicinity of the landfill that may be affecting the direction of groundwater flow, the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed.

In addition, the PRPs will review the effectiveness of the current ICs for preventing dewatering activities in the vicinity of the landfill and for preventing the installation of wells beyond 1,200 feet from the landfill boundary. The PRPs will update the IC Plan to include plans for long-term stewardship of ICs, and, if necessary, will implement additional ICs.

VII. Issues/Recommendations and Follow-Up Actions

Table 5: Issue and Recommendations

OU#	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
1/2/Site wide	WDNR has not issued a decision document to incorporate the active gas extraction system and the municipal water connections into the site remedy.	WDNR should issue a decision document to incorporate these additional remedial actions into the site remedy.	State	EPA	3/31/2021	No	Yes
2	Although the overall area of groundwater contamination has been stable, contamination has been identified in wells that previously had non-detect results. Monitoring parameters provide some indications that MNA may be an effective remedy; however, EPA has questions about the adequacy of the lines of evidence supporting MNA at the site.	The PRPs should conduct a Supplemental MNA Evaluation to review the effectiveness of MNA as a remedy. This evaluation will supplement the analyses of MNA and several active remedies presented in the 2012 FFS and will include installation of a sentinel monitoring well. If MNA is shown to be effective, WDNR should issue a decision document to select it as the final groundwater remedy.	PRPs	State/EPA	3/31/2021	No	Yes
2	Dewatering activities have occurred in the vicinity of the landfill and may have caused groundwater flow direction to change.	The PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed.	PRPs	State/EPA	9/30/2019	No	Yes

OU#	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
2	ICs currently in place may not be adequate to prohibit installation of residential wells in the area of the groundwater plume and to prevent dewatering activities in the vicinity of the landfill, and the IC Plan may need modifications to provide for long-term stewardship of ICs.	The PRPs should conduct a review of the effectiveness of the current ICs to prevent dewatering activities in the vicinity of the landfill and to prevent the installation of wells beyond 1,200 feet from the landfill boundary. The PRPs should update the IC Plan to include plans for long-term stewardship and, if necessary, implement additional ICs.	PRPs	State/EPA	9/30/2019	No	Yes

VIII. Protectiveness Statements

Protectiveness Statement(s)

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

Protectiveness Statement:
The remedy for OU1 at the Ripon City Landfill site currently protects human health and the environment because the remedy is functioning as intended and the landfill cap has been maintained. An active gas extraction system installed in 2006 is operating as planned. However, in order for the remedy to be protective in the long term, WDNR should issue a decision document to incorporate the active gas extraction system into the site remedy.

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

Protectiveness Statement:
The remedy for OU2 at the Ripon City Landfill site currently protects human health and the environment because groundwater monitoring results show that exposure pathways that could result in unacceptable risks are currently under control and nearby residences have been connected to the municipal water supply.

However, in order for the remedy to be protective in the long term, the following actions should be taken: WDNR should issue a decision document to incorporate the connection of the nearby residences to the municipal water supply into the site remedy; the PRPs should conduct a Supplemental MNA Evaluation to review the effectiveness of MNA as a groundwater remedy; the PRPs should install a sentinel monitoring well downgradient of the site; the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed; and WDNR should issue a decision document to select MNA as the final groundwater remedy if it is determined to be effective. The PRPs should also conduct a review of the effectiveness of current ICs, including the ICs for preventing dewatering activities in the vicinity of the landfill and for preventing the installation of wells beyond 1,200 feet from the landfill boundary. The PRPs should update the IC Plan to include plans for long-term stewardship of ICs and, if necessary, implement additional ICs.

Site-wide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

Protectiveness Statement:
The remedy at the Ripon City Landfill site is currently protective of human health and the environment because the remedy is functioning as intended. Groundwater and landfill gas monitoring results and the connection of nearby residences to the municipal water supply show that exposure pathways that could result in unacceptable risks are currently under control.

However, in order for the remedy to be protective in the long term, the following actions need to be taken: WDNR should issue a decision document to incorporate the installation of the active gas extraction system and the connection of the nearby residences to the municipal water supply into the site remedy. In addition, the PRPs should conduct a Supplemental MNA Evaluation and install a sentinel monitoring well downgradient of the site. If MNA is determined to be effective, WDNR should issue a decision document to select it as the final groundwater remedy. Because of dewatering activities in the vicinity of the landfill that may be affecting the direction of groundwater flow, the PRPs should review the adequacy of the groundwater monitoring network to determine whether any additional wells are needed.

In addition, to ensure long-term protectiveness, the PRPs should conduct a review of the effectiveness of the current ICs to prevent dewatering activities in the vicinity of the landfill and to prevent the installation of wells beyond 1,200 feet from the landfill boundary. The PRPs should update the IC Plan to include plans for long-term stewardship and, if necessary, implement additional ICs.

IX. Next Review

The next FYR report for the Ripon City Landfill Superfund site will be completed within five years of the signature date of this report.

APPENDIX A – SITE BACKGROUND INFORMATION

A. Site Chronology

Event	Date
Landfill operations	1967-1983
WDNR and Settling PRPs agree to contract for remedial investigation, feasibility study, remedial design, and remedial action of source control operable unit (OU)	8/14/92
Proposed for placement on the NPL	6/23/93
Final on NPL	5/31/94
RI report	8/26/94
FS report	12/30/94
Public comment period	8/31/95-9/29/95
Public meeting	9/13/95
RD report approved by WDNR	1/26/96
ROD signed	3/27/96
Contractor for composite cap installation mobilizes at Site	5/13/96
Preliminary Close Out Report (construction completion under CERCLA)	9/25/96
Construction Documentation Report--Final Cover System	6/23/97
First five-year review report	5/22/01
Vinyl chloride detected in residential well for first time	October 2001
Municipal water supply pipeline extended from City of Ripon to and along Charles St. and first residences connected to the line	November 2002
Site inspection for the second five-year review	5/16/06
Interim active gas extraction installed	March 2006
Second five-year review report	9/27/06
Site inspection for the third five-year review	10/13/10
Third five-year review report	09/27/11
Vinyl chloride detected in Gaastra well	May 2014
Gaastra and Perry wells connected to municipal water supply pipeline	July and September 2015
Site inspection for the fourth five-year review	10/28/15

B. Background

Physical Characteristics

The Ripon City Landfill [also known as "Ripon City of Ldfl (Hwy FF)" or "Ripon FF/NN Landfill"] Superfund site (Site) is located outside the northwestern city limits of the City of Ripon in the Town of Ripon, Fond du Lac County, Wisconsin. More specifically, it is located in the S½ of the SE¼ of Section 7, T16N, R14E, Town of Ripon. The map in Figure 1 shows the Site and some of the area around it. The landfill cap, where the gas vent wells (GV wells) are located, is denoted by the dashed line in the figure. The landfill is bordered on the north by a stand of trees, on the west by South Koro Road (County Highway NN), on the south by former residential property that is now used as a dog park, and on the northeast by County Highway FF. A wetland area is located to the southwest and is a shallow groundwater discharge area. A former quarry is located across Highway FF to the east, and an operating sand and gravel quarry across Koro Road to the west.

Land and Resource Use

Land use in the area is predominantly agricultural and there are no known plans for or indications of significant change or development. Private residences in close proximity to the site used to obtain drinking water from privately owned water supply wells and are located approximately xxx feet south of landfill.

History of Landfill Use

The facility had been a gravel pit before it was leased to Speed Queen in 1967 for the disposal of wastes. The City of Ripon began leasing the property in 1968 for the disposal of wastes, and in 1969 was issued a license to operate the landfill (WDNR license # 467). Later, the Town of Ripon began to share operation of the landfill with the City of Ripon. The landfill operated until 1983, accepting municipal, commercial, and industrial solid wastes. The landfill also accepted approximately 3.3 million gallons of sludge from the Ripon wastewater treatment facility, which were disposed of at the landfill between 1977 and 1983. In 1985, the landfill area was capped with clay, vegetation was established, and a gas venting system was placed along the western edge of the landfill. From 1985 to 1992, hay was grown on the cap; however, this was discontinued in 1993 to avoid disturbing the integrity of clay cap. The landfill was constructed without a liner or leachate collection system. The refuse in the landfill was approximately 30 feet thick on the western side near County Highway NN and slopes to less than 10 feet thick on the eastern side of the landfill. Approximately 180,000 cubic yards of waste were placed in the landfill, which occupies about 7.3 acres. The volume of leachate in the landfill at the time of the RI was estimated to be between 6 and 11 million gallons.

History and Extent of Contamination

During the RI, samples collected from two leachate head wells were found to contain 10 different VOCs. Both chlorinated solvents and their breakdown products, as well as petroleum hydrocarbons, such as benzene, ethylbenzene, toluene and xylenes, were detected in the leachate. The landfill was found to be producing a small amount of landfill gas consisting predominantly of methane and carbon dioxide. Methane was detected in monitoring wells and gas vents at concentrations which exceeded 25 percent of the lower explosive limit (LEL).

Eight different VOCs were detected in groundwater monitoring wells during the RI. Vinyl chloride (VC), cis-1,2-dichloroethene (cis-1,2-DCE), benzene, trichloroethene (TCE), and tetrachloroethene (PCE) were present at concentrations exceeding the preventive action limits (PALs) of Chapter NR 140 of the Wisconsin Administrative Code (Wis. Admin. Code). The concentrations of two of these compounds (VC and TCE) exceeded their respective NR 140 enforcement standards (ES). Three VOCs (TCE, cis-1,2-DCE, and VC) were detected in samples from more than one location. Concentrations of VC detected in the groundwater also exceeded the federal maximum contaminant level (MCL). (For the five compounds whose concentrations exceeded the PALs, the PAL is 10 percent of the ES. For four of these five, the ES equals the MCL; for VC the ES is 10 percent of the MCL.)

Concentrations of VOCs in the shallow (water table) groundwater exceeding NR 140 PALs were limited to wells immediately adjacent to and downgradient (toward the southwest) from the landfill. The highest concentrations of VOCs were detected along the southern edge of the landfill. In well MW-103, the highest concentration of VC was more than two orders of magnitude greater than the MCL and the highest concentration of cis-1,2-DCE was more than an order of magnitude greater than the MCL. Locations of the wells are shown on Figure 1. Note that some of the wells shown on this figure were installed after the completion of the RI. In the shallow well in the MW-107 well nest, about 400 feet downgradient from the southern edge of the landfill, VC and cis-1,2-DCE were not found during the RI but the concentrations of TCE did exceed the PAL, which is 10 percent of the MCL. In the other monitoring well in the shallow groundwater further to the south no VOCs were detected at concentrations exceeding the PALs.

A discharge point for some of the shallow groundwater is the wetland located southwest of the Site. There were no VOCs detected in either of the two samples collected from the southwest wetland during the RI.

In the deeper groundwater, only VC was detected at concentrations exceeding the ES, at well nest MW-107, south of the landfill. Contaminant concentrations in the deeper groundwater were measured at two depths at this location during the RI. At this location, contaminants were detected in the unconsolidated deposits and the granite at the bottom of the Cambrian sandstone. The private water supply wells located near the landfill were completed at a depth near the interface of the unconsolidated deposits and the sandstone. No detections of VOCs were found in the analyses of samples obtained from these private water supply wells during the RI.

The RI activities are documented in a report dated August 26, 1994. The FS report, dated December 30, 1994, presented remedial action alternatives for the source control and groundwater OUs.

Hydrology

The Site is located in a glaciated area of south central Wisconsin. The surficial geology of the area generally consists of ground, terminal, and recessional moraine deposits of unsorted silt, clay, sand and gravel, and glacial-lacustrine silt and clay underlain by a preglacial drainage and glacial drift fill. Outwash deposits of sand and gravel are evident in the quarry located just west of the Site. The landscape slopes gently eastward. The landfill rises to the approximate elevation of County Highway NN on the west [872 ft above mean sea level (msl)] and slopes downward to the east where it is approximately 20 feet lower.

The geology at the Site consists of approximately 180 feet of unconsolidated glacial deposits, primarily sand with some silty and clayey lenses and gravel, overlying the bedrock. The bedrock is the Cambrian Franconian Formation, a medium-grained sandstone approximately 150 feet thick at the Site.

The glacial unconsolidated deposits and the Cambrian sandstone are the two principal aquifers present in the area surrounding the landfill. The municipal wells and most private water supply wells use the sandstone as their water source. The lower limit of the Cambrian sandstone aquifer

is delineated by the granite Precambrian basement at a depth of approximately 330 feet. Depth to ground water is variable and dependent on topography and precipitation. Groundwater is present at depths ranging from approximately 5 to 50 feet below ground surface, with the water table occurring at an approximate elevation of 820 feet above msl. The water table is approximately 20 feet below the base of the landfill.

It was found during the remedial investigation that the shallow ground water at or near the water table flows to the southwest toward a wetland area. This flow system has an average horizontal gradient of approximately 0.01 feet per foot (ft/ft). Shallow piezometers completed between 30 and 40 feet below the water table were used to confirm a southwesterly flow direction in the deeper unconsolidated deposits. The mean horizontal hydraulic gradient of the shallow potentiometric surface is approximately 0.005 ft/ft. Groundwater flow in the sandstone is to the west, based on regional information. Vertical hydraulic gradients are primarily upward and range from 0.001 to 0.096 ft/ft. The highest upward vertical gradients were seen to the south and southwest of the landfill. Three locations had downward gradients ranging from 0.001 to 0.013 ft/ft. Several residences to the south of the landfill have private water supply wells, some of which are screened in the sandstone.

It has been reported that the highest hydraulic conductivities were observed in the sandstone while the lowest were noted in the wetland clay located to the northeast of the Site (2.0×10^{-5} feet per minute (ft/min)). Horizontal gradients, hydraulic conductivities based on bail down testing, and estimated porosities were used in the past to calculate average groundwater flow velocities. Velocities calculated in the unconsolidated sand and gravel were approximately 650 feet per year (ft/yr). However, in a focused feasibility study report submitted in October 2005, it was reported that calculated velocities in the shallow groundwater ranged from 0.02 to 708 ft/yr, with an arithmetic mean of 99 ft/yr.

Initial Response

In 1984, volatile organic compounds (VOCs) were detected in a private water supply well located approximately 350 feet south of the Site. Sampling of a replacement well confirmed the elevated levels of VOCs at this location. The well was later abandoned, the house was relocated, and the City of Ripon purchased the property and converted it to a dog park. Following the completion of a hazard assessment by WDNR, the Site was proposed for inclusion on the NPL in June 1993 and was added to the NPL in May 1994.

Several of the potentially responsible parties (PRPs) formed a group to investigate the Site. These PRPs entered into a contract with WDNR on August 14, 1992 to complete the following: conduct a remedial investigation (RI) to adequately characterize the Site; perform a feasibility study (FS) to identify and evaluate potential remedial options for the Site; prepare plans and specifications for a landfill cap and landfill gas extraction system for source control; and implement the remedy.

Basis for Taking Action

On March 30, 1995, the Wisconsin Division of Health completed a Public Health Assessment

(PHA) of the Site. This document was used for the risk discussion in the ROD. The PHA concluded that groundwater beneath and next to the Site was contaminated with VOCs at concentrations that could pose a health hazard if this water were used for domestic purposes, such as drinking. In addition, leachate seeps along the eastern edge of the landfill could also represent a direct contact health risk. The PHA concluded that if the use of contaminated groundwater for domestic purposes was restricted and the leachate seeps were eliminated then the Site would not pose a threat to human health. In addition, landfill gas was detected in some of the groundwater monitoring wells indicating that some gas was migrating away from the landfill. Based on these facts, it was determined that remediation of the landfill was needed.

C. REMEDIAL ACTIONS

Remedy Selection

Remedial action objectives were developed for the Site to address the source of contamination, provide short-term and long-term protection of human health and the environment, and meet the applicable or relevant and appropriate requirements. The site specific remedial objectives developed for the Site included:

- prevent direct contact with landfill contents;
- reduce contaminant leaching to the groundwater;
- control surface water run-on, run-off, and erosion;
- prevent off-site migration of landfill gas;
- restore groundwater quality to NR 140 standards; and
- monitor groundwater quality, landfill gas, and leachate for environmental control.

On March 27, 1996 EPA concurred with WDNR regarding the remedies identified for the Ripon City Landfill site in the ROD signed by WDNR on February 26, 1996. One component of the remedy addressed the contamination source, OU1, and the second component addressed the groundwater, OU2. The selected OU1 source control remedy was a composite landfill cap and passive landfill gas venting in conjunction with a groundwater monitoring plan.

The components specified for the source control remedy were:

- composite landfill cover (that is, a landfill cover containing both a plastic membrane and soil materials) over the entire waste disposal area;
- passive landfill gas venting system installed through the landfill cover;
- monitoring groundwater, in both monitoring wells and selected residential wells, to determine the effectiveness of the landfill cap towards improving groundwater quality;
- monitoring for gas migration from the landfill using the gas probes installed around the landfill to ensure that landfill gas is not migrating away from landfill in an uncontrolled manner;
- fencing the landfill perimeter to restrict access;
- maintaining the landfill cover; and
- providing a deed restriction that prohibits disturbing the landfill cover.

The selected OU2 groundwater remedy was the no action alternative. WDNR stated that the levels of contamination in groundwater did not warrant active remedial measures and that implementing the source control remedy would decrease migration of contaminants from the landfill into groundwater. In addition to the groundwater monitoring program that is part of the source control remedy, the ROD recognized Chapter NR 812 of the Wisc. Admin. Code as an IC that prohibits the construction of new wells within 1200 feet of the landfill without a variance. This minimum separating distance does not apply to dewatering wells approved under section NR 812.09(4)(a). Also, greater separation distances may be required for wells requiring plan approval under section NR 812.09.

Remedy Implementation

The PRPs implemented the design and construction of the remedy in accordance with the terms of the contract with WDNR. Work at the Site began in May 1996. The remedy was constructed as planned, and no additional areas of contamination were identified during the construction. EPA conducted a final inspection on September 10, 1996. The Site achieved construction completion when EPA signed the Preliminary Close-Out Report on September 25, 1996.

The PRPs submitted an as-built report in June 1997. The cap consisted of:

- passive gas collection trenches that were placed within the waste;
- 6- to 12-inch layer of sandy clay;
- 24-inch layer of compacted clay;
- 40-millimeter thick low density polyethylene geosynthetic membrane;
- 12-inch layer of granular drainage material and piping;
- geofabric filter over the granular drainage layer;
- 18-inch layer of fill soil over the geofabric; and
- final 6-inch layer of topsoil to establish vegetation.

A fence restricts access to the landfill. The trenches for the passive gas collection system were installed in a 150-foot grid network across the landfill so that no portion of the landfill would be more than 75 feet from a collection trench. Slotted 4-inch diameter high-density polyethylene pipe was placed in the trench. Vertical vent pipes were connected to the slotted pipe at the trench intersections. These vertical pipes were connected to the geosynthetic membrane with a pipe boot that was clamped to the pipe.

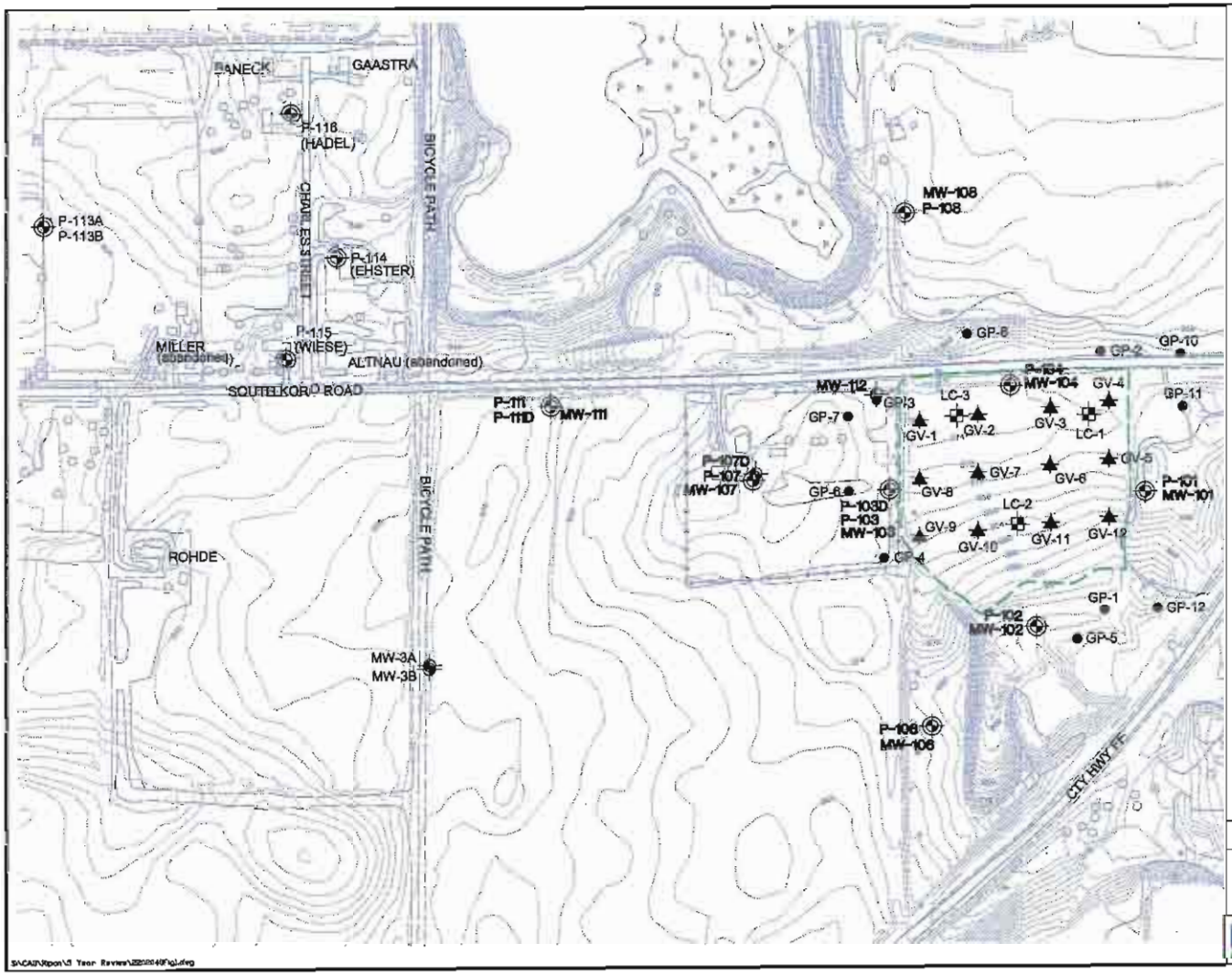
System Operation/Operation and Maintenance

Table 10: Annual System Operations/O&M Costs

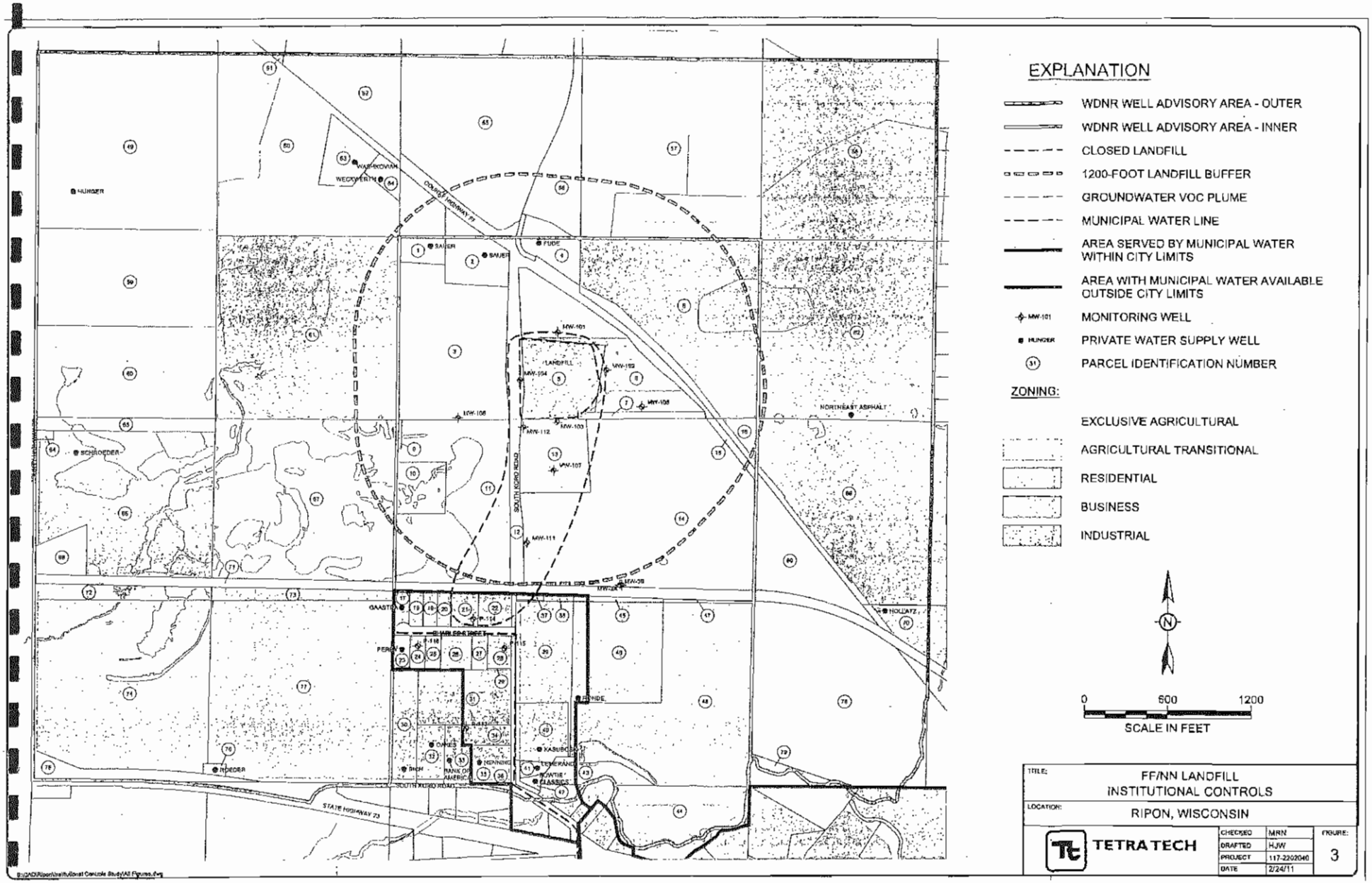
Year	ESS	Analytical	Leachate & Electrical	Total
2010	$220,311	$25,595	$48,722	$294,628
2011	$123,371	$12,557	$44,568	$180,496
2012	$94,612	$10,470	$28,207	$133,288

2013	$99,701	$8,076	$30,504	$138,281
2014	$107,477	$15,973	$41,335	$164,785
Average	$129,094	$14,534	$38,667	$182,296

FIGURE 1 – SITE MAP



FF/NN LANDFILL RIPON, WISCONSIN	DATE: 10/12/10	
	DESIGNED:	HJW
	CHECKED:	MRN
SITE LAYOUT	APPROVED:	MRN
	DRAWN:	HJW
	PROJ.: 117-2202040	
GeoTrans, Inc.	Figure 1	



TITLE:	FF/NN LANDFILL INSTITUTIONAL CONTROLS
LOCATION:	RIPON, WISCONSIN

TETRA TECH

CHECKED	MRN
DRAFTED	HJW
PROJECT	117-2202040
DATE	2/24/11

FIGURE: 3

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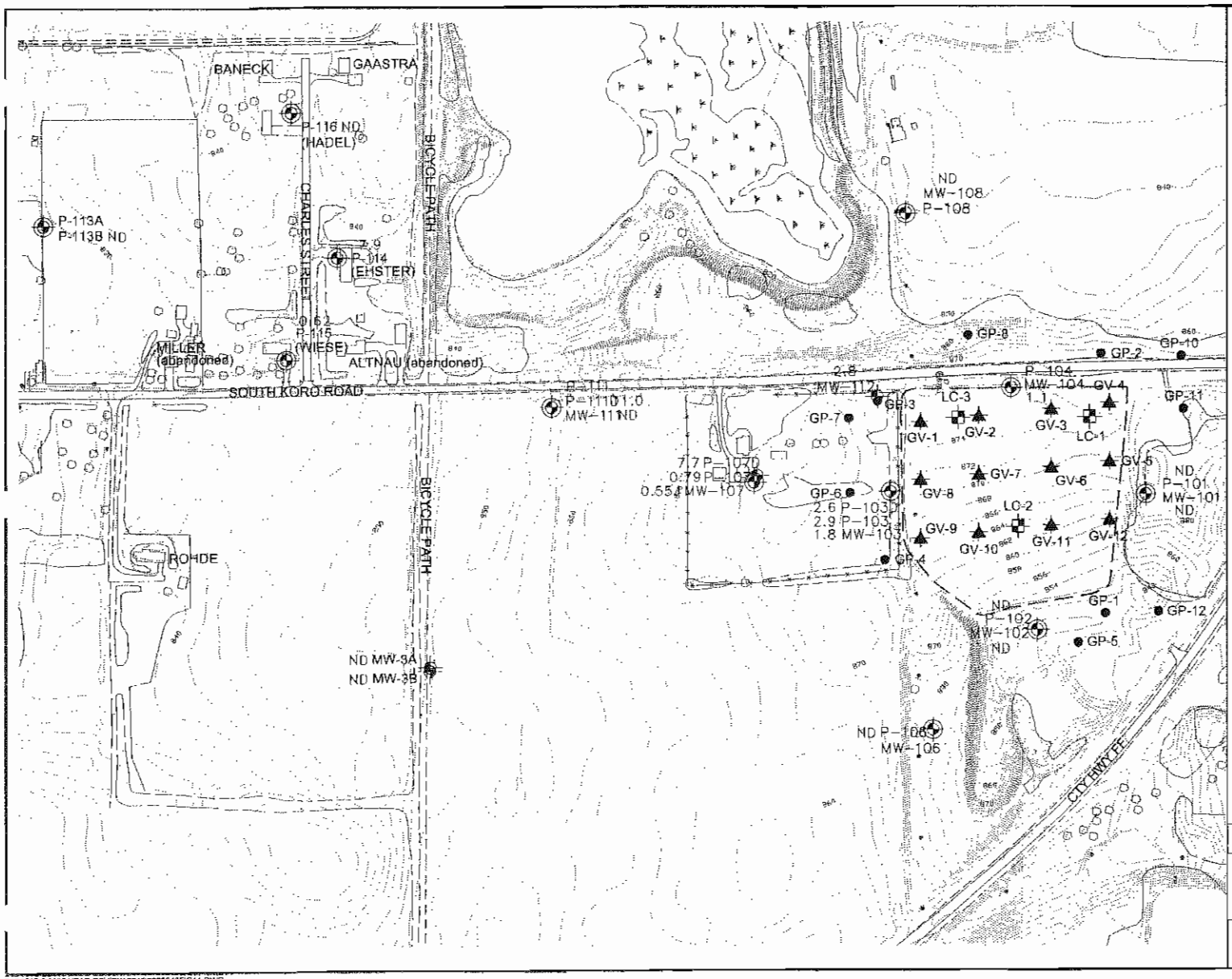


EXPLANATION

- P-104 / MW-104 — MONITOR WELL, PIEZOMETER LOCATION, DESIGNATION
- LC-2 — LEACHATE HEAD WELL LOCATION, DESIGNATION
- OUTLINE OF CLOSED LANDFILL
- GP-1 — GAS PROBE LOCATION AND DESIGNATION
- GV-1 — GAS VENT LOCATION AND DESIGNATION
- 7.7 — VINYL CHLORIDE CONCENTRATION (ug/L)
- ND — NOT DETECTED

N

SCALE

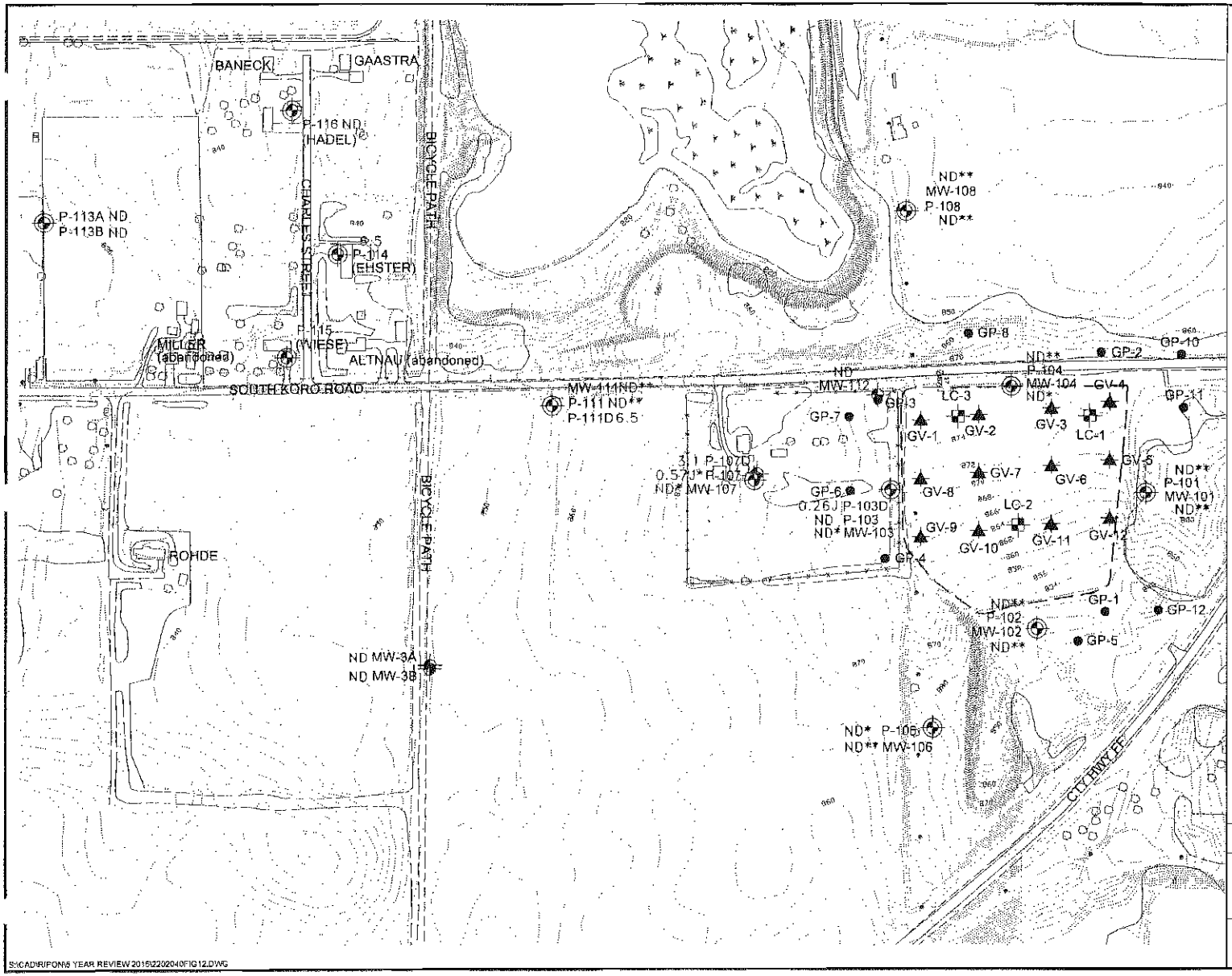
0 500

Feet

BASEMAP FROM FOND DU LAC COUNTY PLANNING DIVISION, SPRING 2000.

FF/NN LANDFILL RIPON, WISCONSIN	DATE: 2/2/11
	DESIGNED: HJW
VINYL CHLORIDE CONCENTRATIONS APRIL 2006	CHECKED: MRN
	APPROVED: MRN
	DRAWN: HJW
	PROJ.: 117-2262040
TETRA TECH	Figure 11

S:\CAD\RIPON\5 YEAR REVIEW 2010\2262040FIG11.DWG



EXPLANATION

P-104 / MW-104	MONITOR WELL, PIEZOMETER LOCATION, DESIGNATION
LC-2	LEACHATE HEAD WELL LOCATION, DESIGNATION
	OUTLINE OF CLOSED LANDFILL
GP-1	GAS PROBE LOCATION AND DESIGNATION
GV-1	GAS VENT LOCATION AND DESIGNATION
3.1	VINYL CHLORIDE CONCENTRATION (ug/L) (OCTOBER 2015)
0.57J*	VINYL CHLORIDE CONCENTRATION (ug/L) (APRIL 2015)
ND**	VINYL CHLORIDE CONCENTRATION (ug/L) (APRIL 2012)
ND	NOT DETECTED

NOTE: DUE TO CHANGES IN THE MONITORING PLAN, SOME WELLS WERE NOT SAMPLED IN OCTOBER 2015. RESULTS FROM APRIL 2015 AND APRIL 2012 ARE DESIGNATED WITH ASTERISKS.

N

SCALE

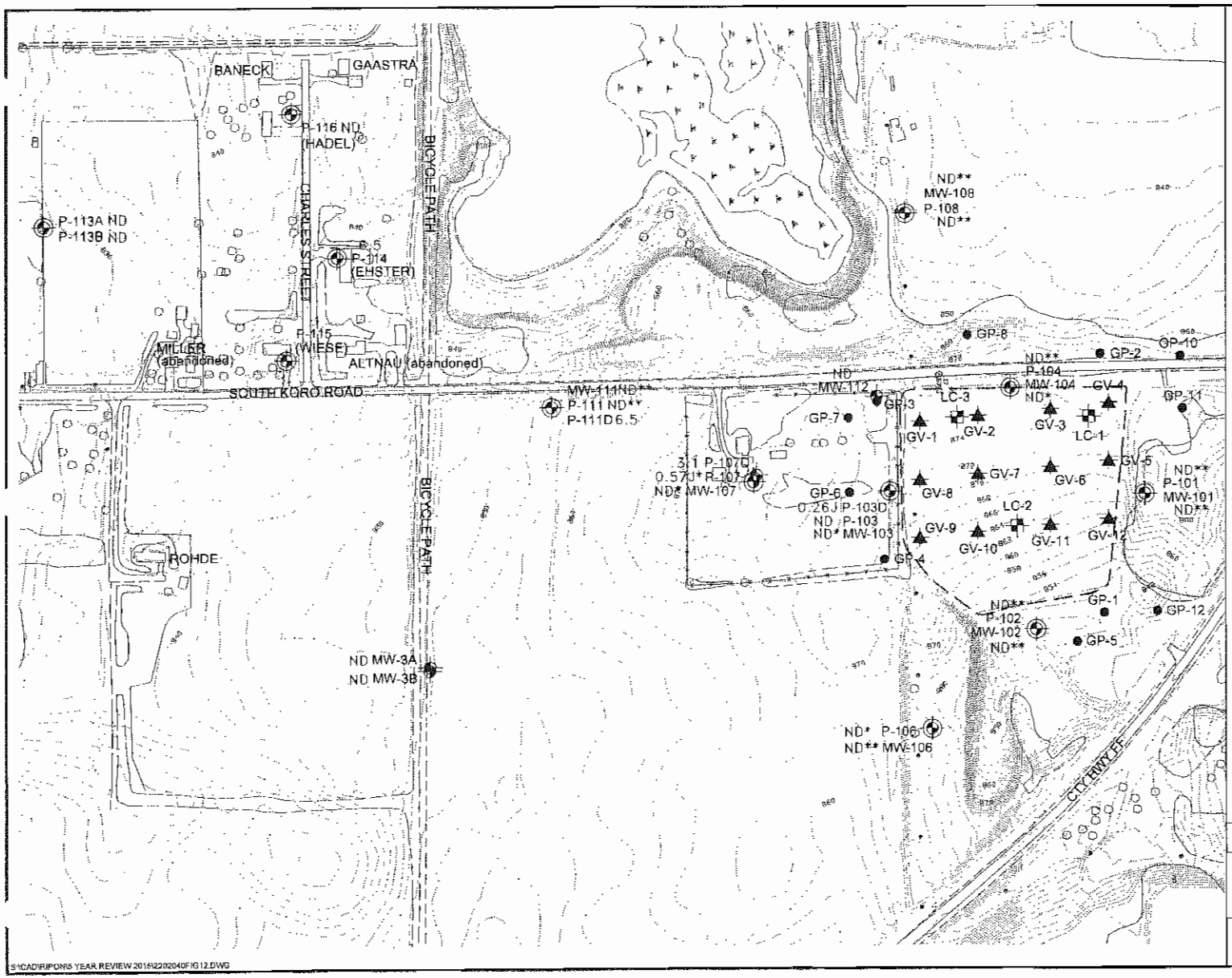
0 500

Feet

BASEMAP FROM FOND DU LAC COUNTY PLANNING DIVISION, SPRING 2000

FF/NN LANDFILL RIPON, WISCONSIN	DATE: 11/17/15
	DESIGNED: HJW
	CHECKED: MRN
VINYL CHLORIDE CONCENTRATIONS OCTOBER 2015	APPROVED: MRN
	DRAWN: HJW
	PROJ.: 117-2202040
TETRA TECH	Figure 12

S:\CAD\RIPON\5 YEAR REVIEW 2015\2202040FIG12.DWG



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N

SCALE

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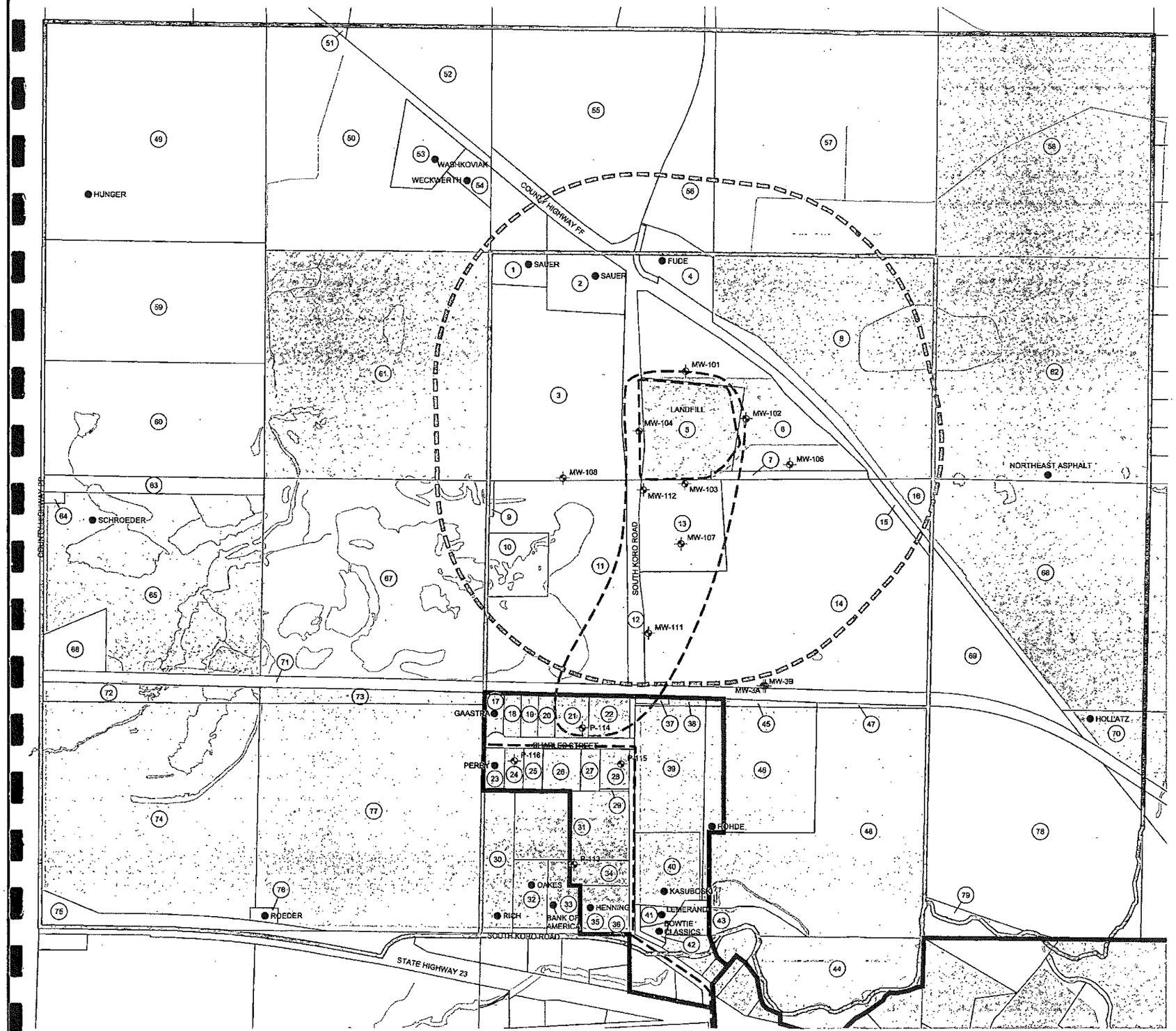
Feet

BASEMAP FROM FOND DU LAC COUNTY PLANNING DIVISION, SPRING 2000.

FF/NN LANDFILL RIPON, WISCONSIN	DATE: 11/17/15
	DESIGNED: HJW
VINYL CHLORIDE CONCENTRATIONS OCTOBER 2015	CHECKED: MRN
	APPROVED: MRN
	DRAWN: HJW
	PROJ.: 117-2292040
TETRA TECH	Figure 12

S:\CAD\RIPON\5 YEAR REVIEW 2015\2292040FIG12.DWG



EXPLANATION

- WDNR WELL ADVISORY AREA - OUTER
- WDNR WELL ADVISORY AREA - INNER
- CLOSED LANDFILL
- 1200-FOOT LANDFILL BUFFER
- GROUNDWATER VOC PLUME
- MUNICIPAL WATER LINE
- AREA SERVED BY MUNICIPAL WATER WITHIN CITY LIMITS
- AREA WITH MUNICIPAL WATER AVAILABLE OUTSIDE CITY LIMITS
- MW-101 — MONITORING WELL
- HUNGER — PRIVATE WATER SUPPLY WELL
- (31) — PARCEL IDENTIFICATION NUMBER

ZONING:

- EXCLUSIVE AGRICULTURAL
- AGRICULTURAL TRANSITIONAL
- RESIDENTIAL
- BUSINESS
- INDUSTRIAL

N

0 600 1200

SCALE IN FEET

TITLE:	FF/NN LANDFILL INSTITUTIONAL CONTROLS
LOCATION:	RIPON, WISCONSIN

TETRA TECH

CHECKED	MRN	FIGURE: 3
DRAFTED	HJW	
PROJECT	117-2202040	
DATE	2/24/11	

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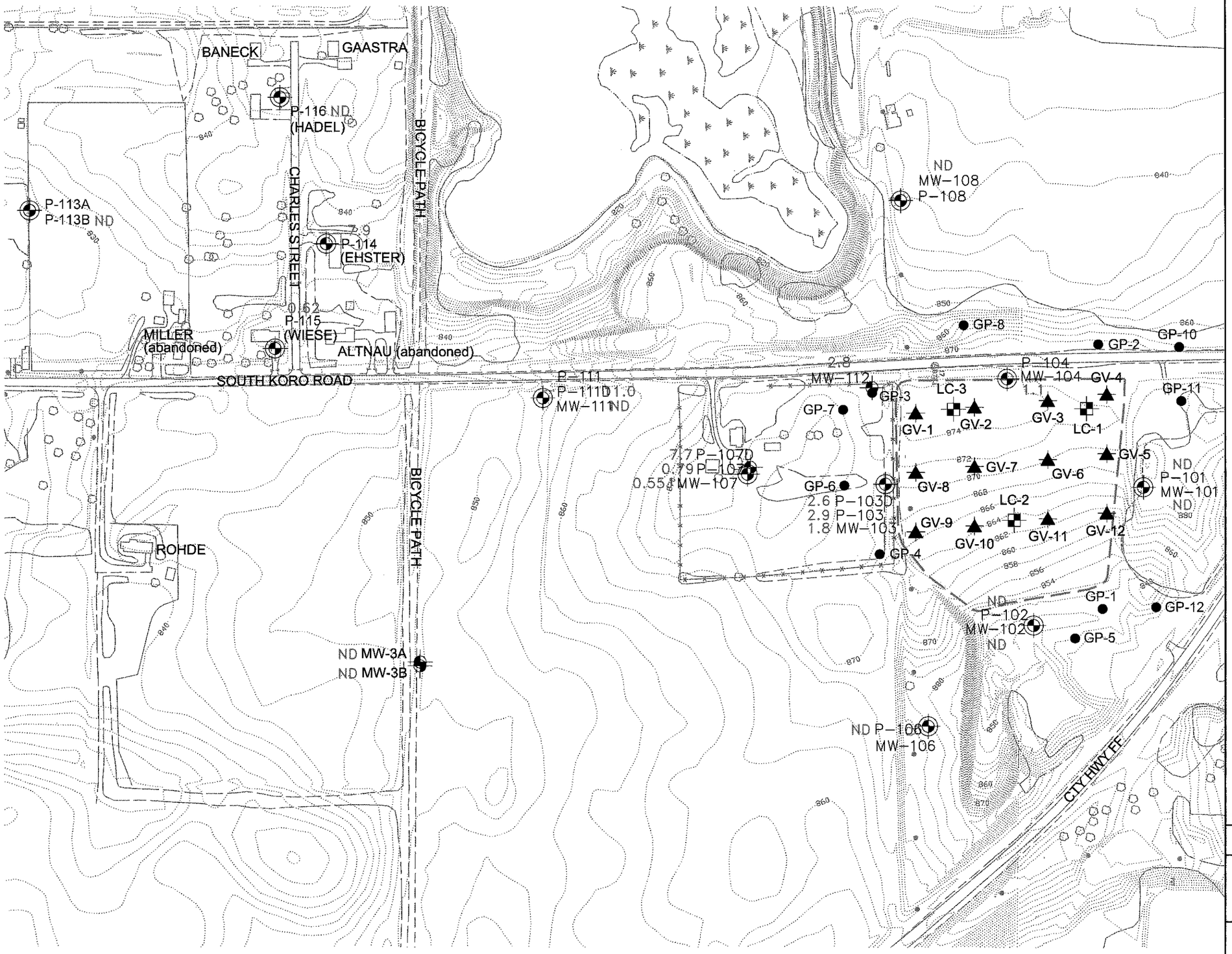

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- 7.7 — VINYL CHLORIDE CONCENTRATION (ug/L)
- ND — NOT DETECTED

N

SCALE

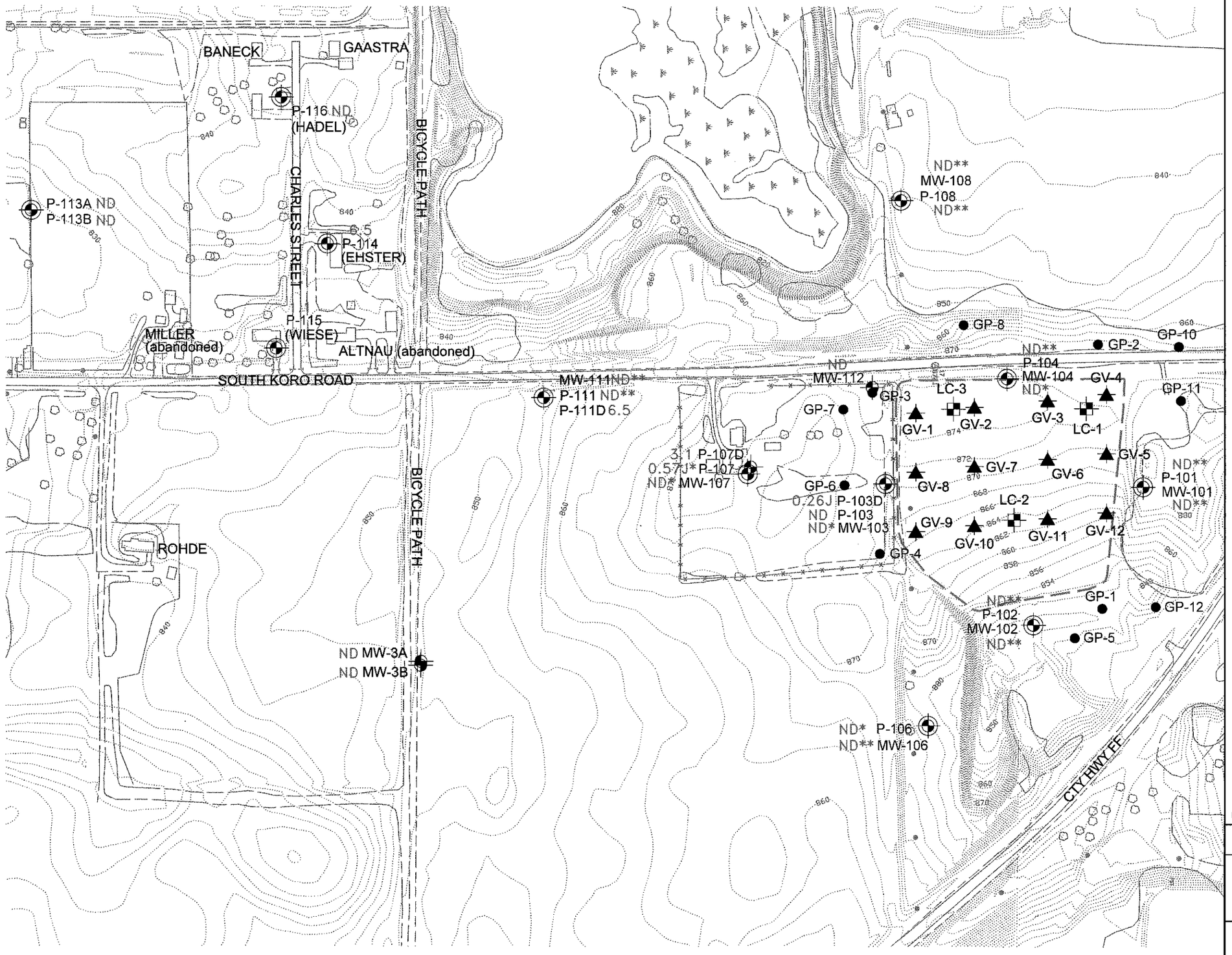
0 500

Feet

BASEMAP FROM FOND DU LAC COUNTY PLANNING DIVISION, SPRING 2000.

FF/NN LANDFILL RIPON, WISCONSIN	DATE: 2/2/11
	DESIGNED: HJW
VINYL CHLORIDE CONCENTRATIONS APRIL 2006	CHECKED: MRN
	APPROVED: MRN
	DRAWN: HJW
	PROJ.: 117-2202040
TETRA TECH	Figure 11

S:\CAD\RIPON\5 YEAR REVIEW 2015\2202040FIG11.DWG



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SCALE

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VINYL CHLORIDE CONCENTRATIONS OCTOBER 2015	CHECKED: MRN
	APPROVED: MRN
	DRAWN: HJW
	PROJ.: 117-2202040
TETRA TECH	Figure 12

S:\CAD\RIPON\5 YEAR REVIEW 2015\2202040FIG12.DWG

ATTACHMENT 1

FYR Announcement Ads
Ripon City Landfill Site

FYR Announcement Ad – Ripon Commonwealth Express

2 BR TOWNHOUSE includes basement, porch, central air, stove, refrig, off-street parking, water included. Sorry no pets. Located in historic Long House. $505/mo. JJ Rikkers Properties, 920-748-3185.

3 BEDROOM HOUSE, Ripon. 2 baths, den, formal DR, refrigerator, range, A/C, laundry hookups, softener, 2 car garage. No smokers. Good credit. Lease/deposit. $795/mo. 920-229-6339.

3 BEDROOM, 2 bath ranch house in Ripon. Available now. $750/mo. plus utilities. 920-851-7610.

AFFORDABLE TWO BEDROOM upper. Off-street parking. Washer/dryer. One block from downtown and college. $600 plus utilities. Sewer and water included. One year lease and security deposit. Available immediately. 920-579-0089 or 920-748-6796.

AVAILABLE NOW!! Silver Creek Apartments is now renting a two bedroom upper, like-new. Rent includes heat, water, appliances, laundry facilities on-site. Quiet atmosphere & close to town. Also taking applications for future openings. Call now for more information. 920-748-3080. Professionally managed by KMG Prestige, an Equal Opportunity Provider and Employer and Equal Housing Opportunity.

BRANDON, ONE BEDROOM apartment under new management. Single leave units. Located on dead end street. Community room. Utilities not included. No pets. 10 miles from Ripon. $475/mo. plus security. 920-219-4167.

CONVENIENT LOCATION!!! GREAT amenities. Close to bank, grocery store & gas station. Plus community room w/kitchen, elevator & laundry on each floor. Rent includes heat, electric, A/C, water/sewer and storage locker. Affordable adult living at it's finest. Central Park Apartments. Ripon. 920-748-1245.

HILLSIDE TERRACE APARTMENTS. 1 and 2 bedroom with washer/dryer. Includes one covered and one uncovered parking spot. Country setting. 525 Union St., Ripon. 920-279-4601.

LONGFELLOW HOUSE APARTMENTS. 2 bedroom apartment with porch. Indoor parking available. Heat included. Country setting. 511 Union St., Ripon. 920-279-4601.

N5408 BROOKLYN G. Ripon. 3 bedroom, 1 bath w/ garage and large yard. Tenant pays all utilities, mows the lawn, and plows the driveway. Stove/Ref included. 1 yr. lease w/ application and deposit. Avail. Aug. 1st. $750/mo. Call Heartland Prop. Mgrs., Inc. 920-229-2305.

ROSENDALE. 2 BEDROOM. Heat, appliances, water, quiet building. No pets. Available now. $490. 920-579-5251.

ROSENDALE: QUIET, 2 bedroom unit with stove/refrigerator. Attached garage, central air, storage room, washer/dryer hook-up. Low utilities. Security deposit required. No pets. $545/mo. Available Immediately. 920-960-5320.

TWO BEDROOM UPPER apartment in Ripon w/applicances. Security deposit and references required. Sorry no pets. $375/mo. +utilities. 920-369-8071.

UPPER TWO BEDROOM apartment for rent. Near downtown. Stove and refrigerator furnished. Laundry hook-up in unit. References. No pets. Available Oct. 1. Security deposit. $500/mo. Call 748-7197 after 6pm.

WILLOWBROOK APARTMENTS IN Ripon Quality apartments for those 55+! Come join our chair exercise group! Close to area shopping, fun social activities, NEW large screen TV w/Wii, free fresh popcorn, noon meals & rent is based on income! Utilities included, small pet welcome, big closets & lots more! Immediate Availability! Call 920-748-3096 or visit us at www.homzmanagement.com! EHO. Licensed broker in Wisconsin.

REAL ESTATE

CANTERBURY VILLAGE: SECLUDED lot off of Cass St. Call JJ Rikkers Properties. 748-3185.

KENSINGTON GARDENS OFFERS convenience of condominium living, yet having the privacy of your own free-standing home. Contact JJ Rikkers Properties. 920-748-3185.

FOR SALE

2 REFRIGERATORS (1 dorm size, used 2 times), entertainment center w/TV, new futon, two tables one with six chairs and 7.5' Christmas tree decorated. 920-748-3793.

20 CUBIC FT. upright freezer and 9 drawer desk. 920-896-0343.

LEGAL NOTICE

Notice is hereby given that on Monday, September 28, 2015 at 3:30 p.m., a public auction will be held for the purpose of satisfying a landlord's lien. The auction will be held at the storage warehouse site of Sweeney's Mini Warehouses of Ripon, West Fond du Lac Street (across from Pick n' Save, behind Atomic Plumbing), Ripon, WI. The name, address and storage space number are as follows: **#230, Matthew Mahoney, Abbotsford, WI; #311, #246 & #223 David Demotts, Ripon, WI.** Bidding is on complete contents of each unit. Call 920-748-5100 after 9:00 a.m. on Monday, September 28, 2015 to confirm sale will proceed as scheduled. TERMS: All payments must be cash, certified funds or MasterCard/Visa Credit or Debit cards. All items are being sold "AS IS, WHERE IS" with no warranty or guarantee expressed or implied. A $60.00 deposit on each unit purchased is required. When the unit is cleaned out the deposit will be returned to the purchaser of the unit. Col. Patrick Sweeney, Ripon, WI. Registered Wisconsin Auctioneer #332.

EXPRESSion

Dear Readers:

Why do they say that tornados "touch down"?

It sounds like their funnels give the earth a gentle tap when they merely *touch* down.

No, we should be saying that tornados slap down, or hurl down or drop down or even slam down.

But "touch" down? That's what ballerinas do after a pirouette, or what running backs do when they score 6 points.

Next week I'll talk to you about storms that weather forecasters say are "packing winds."

Why do we say this? Seems to me the storms are unpacking those gusts and throwing them at our trees so they can break off branches that touch down into our lawns ... 'til next week,

TL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WISCONSIN DEPT. OF NATURAL RESOURCES

WDNR and EPA to Review Ripon FF/NN Landfill Superfund Site

Ripon, Wisconsin

The Wisconsin Department of Natural Resources (WDNR) and the U.S. Environmental Protection Agency (EPA) are conducting a status review of the Ripon FF/NN Landfill Superfund site, Ripon, Wis. The Superfund law requires regular reviews of sites (at least every five years) where the cleanup has been conducted but hazardous materials remain managed on site. These reviews are done to ensure that the cleanup continues to protect human health and the environment.

The review will include an evaluation of site background information, cleanup requirements, effectiveness of the cleanup and any anticipated future actions. It will also look at ways for WDNR to operate the site cleanup more efficiently.

WDNR selected several cleanup actions for the site that were implemented: The landfill cleanup included placing a new cover on the landfill, installing a passive landfill gas extraction system, which was later modified to be an active extraction system, providing municipal water to affected residences with contaminated private wells, fencing the site and monitoring the groundwater and soil gas near the site.

This is the fourth five-year review report for the Ripon FF/NN Landfill. The last five-year review report was completed for the site on September 16, 2011.

The five-year-review report, which is planned to be available by April, 2016, will detail the site's progress.

Further information about this review can be obtained by contacting:

Gary A. Edelstein, Waste Management Engineer
Wisconsin Department of Natural Resources
(608)267-7563
Internet E-Mail => Gary.Edelstein@wisconsin.gov

Site-related documents are available for review at:
Wisconsin Department of Natural Resources Area Office
625 E. County Rd Y, Suite 700
Oshkosh WI 54901-9731
(920) 424-3050

FYR Announcement Ad – Ripon Commonwealth Express Press

Page 28 - Thursday, September 17, 2015

Bowling

Ripon leader board

Men		Women	
Series		**Series**	
Clint Wiesmueller	749	Karin Keeler	622
Matt Vandebrink	718	Lesa Sauerbrei	581
Rick Erdmann	715	Sarah Kesich	567
Game		**Game**	
Clint Wiesmueller	279	Vicki Stracy	225
Zach Bryant	279	Lesa Sauerbrei	224
Rick Erdmann	268	Sarah Kesich	217

PLAZA BOWL

OFFICIAL NOTICE

RIPON AREA SCHOOL DISTRICT

NOTICE FOR ANNUAL DISTRICT MEETING

(SECTION 120.08(1))

NOTICE IS HEREBY GIVEN to qualified electors of the Ripon Area School District, that the annual meeting of said district for the transaction of business, will be held in the Ripon Middle School Media Center, 651 Metomen St., on the twenty-eighth day of September, 2015, at 6:00 o'clock in the evening.

Dated this 17th day of August, 2015

David Olson,
Clerk, Ripon Area School District

Publish: September 17 & 24, 2015 WNAXLP

WISCONSIN DEPT. OF NATURAL RESOURCES

WDNR and EPA to Review Ripon FF/NN Landfill Superfund Site

Ripon, Wisconsin

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625 E. County Rd Y, Suite 700
Oshkosh WI 54901-9731
(920) 424-3060

OFFICIAL NOTICE

CITY OF RIPON

ORDINANCE NO. 1450

ORDINANCE TO AMEND CERTAIN SECTIONS OF CHAPTER 20.43 HISTORIC PRESERVATION CODE, SPECIFICIALLY SECTIONS 20.43.090 HISTORIC PRESERVATION COMMISSION DUTIES AND POWERS, AND 20.43.170 PROCEDURE FOR THE REVIEW OF PROPOSED ALTERATIONS TO DESIGNATED PROPERTIES AND FOR NEW CONSTRUCTION IN DESIGNATED DISTRICTS

WHEREAS, the Common Council for the City of Ripon is desirous to amend certain sections of CHAPTER 20.43 HISTORIC PRESERVATION CODE, specifically Sections 20.43.090 Historic preservation commission duties and Powers, and 20.43.170 procedure for the Review of Proposed Alterations to Designated Properties and for New Construction in Designated Districts and;

NOW THEREFORE BE IT ORDAINED BY THE COUNCIL OF THE CITY OF RIPON, WISCONSIN AS FOLLOWS:

The Common Council for the City of Ripon does hereby amend Sections 20.43.090 Historic Preservation Commission Duties and Powers, and 20.43.170 Procedure for the Review of Proposed Alterations to Designated Properties and for New Construction in Designated Districts to read as follows:

Section:

20.43.090 Historic preservation commission duties and powers.

Publish: September 17, 2015 WNAXLP

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

Five-Year Review Site Inspection Checklist (Template)

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

I. SITE INFORMATION

Site name: Ripon FF/NN Landfill	**Date of inspection:** 10/28/15
Location and Region: Tn of Ripon, WI Reg 5	**EPA ID:** WID980610190
Agency, office, or company leading the five-year review: WI DNR Gary Edelstein	**Weather/temperature:** Rain, 50° F

Remedy Includes: (Check all that apply)

- [X] Landfill cover/containment
- [X] Access controls
- [X] Institutional controls
- [ ] Groundwater pump and treatment
- [ ] Surface water collection and treatment
- [ ] Monitored natural attenuation
- [ ] Groundwater containment
- [ ] Vertical barrier walls
- [X] Other Active gas extraction (interim retrofit), extension of municipal water to residents with contaminated private wells

Attachments: [ ] Inspection team roster attached [X] Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Chris Liveris (Name) — Utility Manager (Title) — 10/28/15 (Date)
   Interviewed [ ] at site [X] at office [ ] by phone Phone no. _____
   Problems, suggestions; [ ] Report attached _____

2. **O&M staff** Mike Noel (Name) — Consultant (Title) — 10/28/15 (Date)
   Interviewed [ ] at site [X] at office [ ] by phone Phone no. _____
   Problems, suggestions; [ ] Report attaehed _____

Also Jack Wendler, POTW Operator

All were present at site walkaround

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 Wisconsin DNR
Contact Gary Edelstein — Engineer — 10/28/15 — 608-267-7563
Name — Title — Date — Phone no.
Problems; suggestions; G Report attached Prepared this report

Ageney City of Ripon
Contact Lori Rich — City Administrator
Name — Title — Date — Phone no.
Problems; suggestions; G Report attached

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

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

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

Jeffy Tracey, Quantum management - Represent the RP group - present @ interview 10/28/15

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

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

   Remarks: At site gas trailer / logs kept @ POTW

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

   Remarks: Kept at site trailer and POTW

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

   Remarks: HAZWOPER kept @ POTW and consultants offices

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

   Remarks:

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

   Remarks: At POTW, forwarded to consultant

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

   Remarks:

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

   Remarks: kept by consultant

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

   Remarks:

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

   Remarks: Condensate hauled to POTW records kept there

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

    Remarks: Kept @ POTW Still inspected at least once a week

IV. O&M COSTS

1. **O&M Organization**
   - G State in-house
   - G Contractor for State
   - X PRP in-house
   - G Contractor for PRP
   - G Federal Facility in-house
   - G Contractor for Federal Facility
   - G Other_____

2. **O&M Cost Records**
   - X Readily available
   - G Up to date
   - G Funding mechanism/agreement in place
   - Original O&M cost estimate_____ G Breakdown attached

   Total annual cost by year for review period if available

   From_____ To_____ _____ G Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ G Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ G Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ G Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ G Breakdown attached
   Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
   Describe costs and reasons: Hookup of 2 residents (one time) to municipal water - really a remedy cost

V. ACCESS AND INSTITUTIONAL CONTROLS G Applicable G N/A

A. Fencing

1. **Fencing damaged** G Location shown on site map X Gates secured G N/A
   Remarks Site not fenced on portion of N side
   Fence in good condition

B. Other Access Restrictions

1. **Signs and other security measures** G Location shown on site map G N/A
   Remarks Signs noted, no evidence of trespass or problems

C. Institutional Controls (ICs)

1. **Implementatiou and enforcement**

Site conditions imply ICs not properly implemented — G Yes ☒ No G N/A
Site conditions imply ICs not being fully enforced — G Yes ☒ No G N/A

Type of monitoring (*e.g.*, self-reporting, drive by) City does regular inspections
Frequeney at least weekly
Responsible party/agency City of Ripon
Contact Chris Rivers

Name	Title	Date	Phone no.

Reporting is up-to-date — ☒ Yes G No G N/A
Reports are verified by the lead agency 1/4 reports — ☒ Yes G No G N/A

Specifie requirements in deed or decision documents have been met — ☒ Yes G No G N/A
Violations have been reported — G Yes G No ☒ N/A
Other problems or suggestions: G Report attached

Town notifies City of any building permits, consultant checks DWR well logs
City watches for unusual activities

2. **Adequacy** ☒ ICs are adequate G ICs are inadequate G N/A
Remarks IC Plan approved in 2011

D. General

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

2. **Land use changes on site** G N/A
Remarks N/A

3. **Land use changes off site** G N/A
Remarks N/A

VI. GENERAL SITE CONDITIONS

A. Roads G Applicable ☒ N/A Short drive ways only

1. **Roads damaged** G Location shown on site map G Roads adequate ☒ N/A
Remarks No driveway damage

B. Other Site Conditions

Remarks_____

VII. LANDFILL COVERS G Applicable G N/A

A. Landfill Surface

1. **Settlement** (Low spots) G Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Cracks** G Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____

3. **Erosion** G Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** G Location shown on site map X Holes not evident
   Areal extent_____ Depth_____
   Remarks_____

5. **Vegetative Cover** X Grass X Cover properly established X No signs of stress
   G Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** X N/A
   Remarks_____

7. **Bulges** G Location shown on site map X Bulges not evident
   Areal extent_____ Height_____
   Remarks_____

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

Remarks_____

9. **Slope Instability** G Slides G Location shown on site map ☒ No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches G Applicable ☒ N/A
(Horizontally construeted 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 eonvey the runoff to a lined ehannel.)

1. **Flows Bypass Bench** G Location shown on site map ☒ N/A or okay
Remarks_____

2. **Bench Breached** G Location shown on site map ☒ N/A or okay
Remarks_____

3. **Bench Overtopped** G Loeation shown on site map ☒ N/A or okay
Remarks_____

C. Letdown Channels G Applieable ☒ N/A
(Channel lined with erosion eontrol mats, riprap, grout bags, or gabions that deseend down the steep side slope of the eover and will allow the runoff water eolleeted by the benehes to move off of the landfill eover without creating erosion gullies.)

1. **Settlement** G Location shown on site map ☒ No evidenee of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** G Location shown on site map ☒ No evidenee of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** G Location shown on site map ☒ No evidenee of erosion
Areal extent_____ Depth_____
Remarks_____

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

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

6. **Excessive Vegetative Growth** Type_____
X No evidence of excessive growth
G Vegetation in channels does not obstruct flow
G Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations G Applicable G N/A

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

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

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

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

5. **Settlement Monuments** G Located G Routinely surveyed X 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 Considered an interim system, no permanent blower house, gas is vented to atmosphere

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 Probes are OK

F. Cover Drainage Layer ☒ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☒ Functioning ☐ N/A
   Remarks Outlets at road inspected

2. **Outlet Rock Inspected** ☐ Functioning ☒ N/A
   Remarks

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks

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 G Applicable X G N/A

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

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

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

1. **Siltation** G Location shown on site map X Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

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

3. **Erosion** G Location shown on site map X G Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** G Functioning X G N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS G Applicable X G N/A

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

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

IX. GROUNDWATER/SURFACE WATER REMEDIES G Applicable X N/A

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

1. **Pumps, Wellhead Plumbing, and Electrical**
   G Good condition G All required wells properly operating G Needs Maintenance G N/A
   Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   G Good condition G Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   G Readily available G Good condition G Requires upgrade G Needs to be provided
   Remarks_____

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

1. **Collection Structures, Pumps, and Electrical**
   G Good condition G Needs Maintenance
   Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   G Good condition G Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   G Readily available G Good condition G Requires upgrade G Needs to be provided
   Remarks_____

C. Treatment System G Applicable X N/A

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

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

3. **Tanks, Vaults, Storage Vessels**
   - G N/A G Good condition G Proper secondary containment G Needs Maintenance
   - Remarks_____

4. **Discharge Structure and Appurtenances**
   - G N/A G Good condition G Needs Maintenance
   - Remarks_____

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

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

D. Monitoring Data

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

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

D. Monitored Natural Attenuation

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

Cover in good condition

Gas collection system in good condition

B. Adequacy of O&M

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

O&M is adequate for long-term protectiveness based on the inspection

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.

N/A

D. Opportunities for Optimization

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

N/A

ATTACHMENT 2

FYR Site Inspection Photos
Taken October 28, 2015
Ripon City Landfill Site

Photo 1 Looking N from dog park (property adjacent to the S) towards landfill

Photo 2 Looking NE onto LF from SW corner

Photo 3 Looking NW towards gas extraction blower trailer

Photo 4 Looking W towards active gas venting equipment; background drip tank, foreground is blower system trailer

Photo 5 Looking S from NW corner

Photo 6 Looking E along northern boundary

Photo 7 Looking SE from NW corner

Photo 8 Looking N along W fence line towards monitoring well MW-104

Photo 9 Looking NE from W side of LF

Photo 10 Looking E from W side of LF

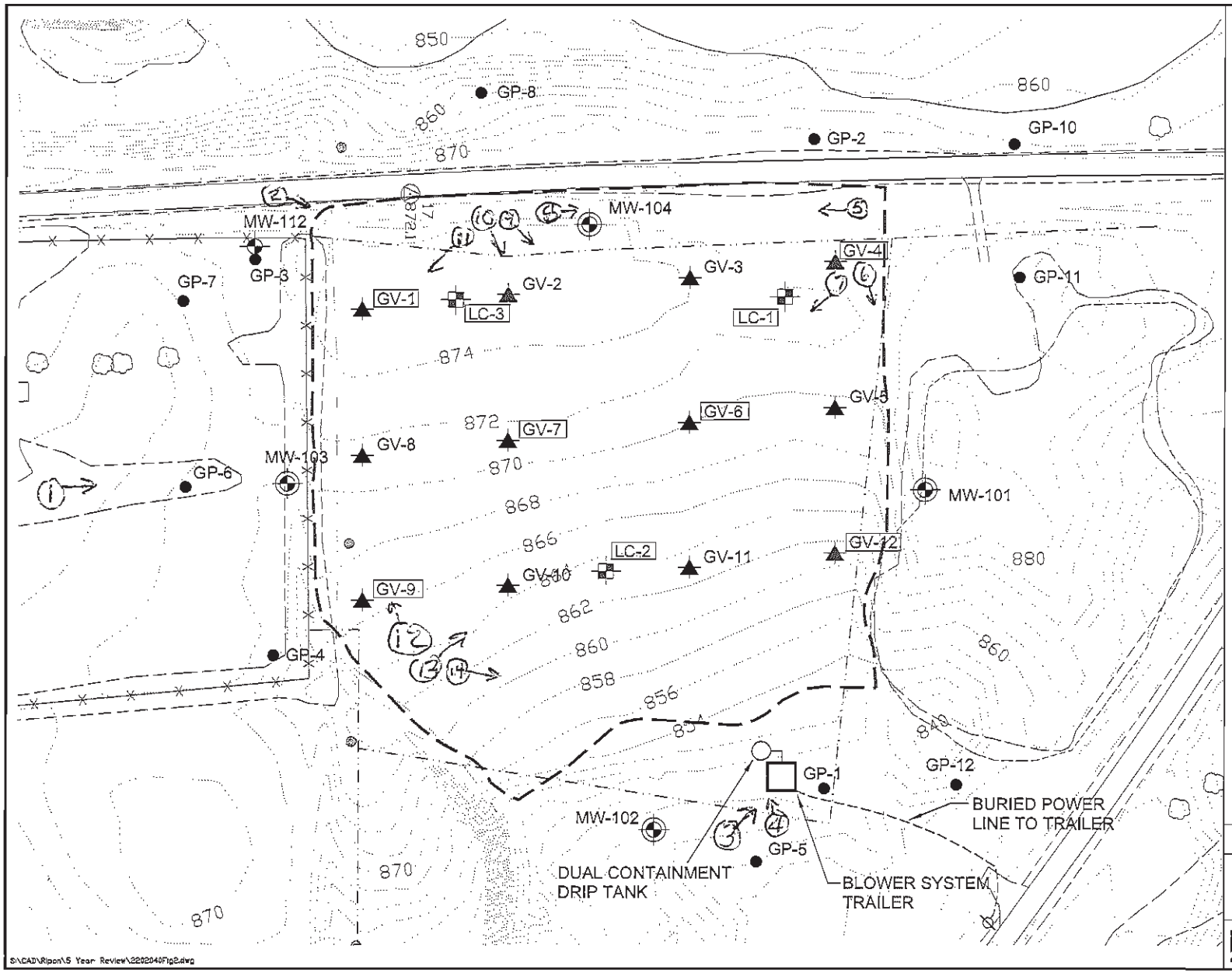
Photo 11 Looking SE from W side of LF

Photo 12 Looking W from S side of LF

Photo 13 Looking NW from SEcorner of LF

Photo 14 Looking N towards gas extraction equipment from SE corner of LF

October 28, 2015
Inspection Photo Key



EXPLANATION

- MW-104 — MONITOR WELL LOCATION, DESIGNATION
- LC-2 — LEACHATE HEAD WELL LOCATION, DESIGNATION
- GP-1 — GAS PROBE LOCATION AND DESIGNATION
- GV-9 — GAS VENT LOCATION AND DESIGNATION
- GV-1 — ACTIVE LANDFILL GAS EXTRACTION POINT
- PROPERTY LINE
- OUTLINE OF CLOSED LANDFILL

N

SCALE
0 200
Feet

FF/NN LANDFILL
RIPON, WISCONSIN

LANDFILL DETAIL

DATE:	10/12/10
DESIGNED:	HJW
CHECKED:	MRN
APPROVED:	MRN
DRAWN:	HJW
PROJ.:	117-2202040

GeoTrans, Inc.

Figure 2