State of Wisconsin
Department of Natural Resources
P.O. Box 7921, Madison, WI 53707-7921

GIS REGISTRY (Cover Sheet)
Form 4400-280 (R 6/13)

Source Property Information

CLOSURE DATE: 06/12/2014

BRRTS #: **02-57-562061**

FID #: 157005530

ACTIVITY NAME: BAAP PARCEL H1

DATCP #: NA

PROPERTY ADDRESS: S7560 STH 12

PECFA#: NA

MUNICIPALITY: NORTH FREEDOM

PARCEL ID #: H1

***WTM COORDINATES:**

X: **540555** Y: **319944**

** Coordinates are in WTM83, NAD83 (1991)*

WTM COORDINATES REPRESENT:

○ Approximate Center Of Contaminant Source

◉ Approximate Source Parcel Center

Please check as appropriate: (BRRTS Action Code)

CONTINUING OBLIGATIONS

Contaminated Media for Residual Contamination:

☐ Groundwater Contamination > ES *(236)*

- ☐ Contamination in ROW
- ☐ Off-Source Contamination

*(**note:** for list of off-source properties see "Impacted Off-Source Property Information, Form 4400-246")*

☒ Soil Contamination > *RCL or **SSRCL *(232)*

- ☐ Contamination in ROW
- ☐ Off-Source Contamination

*(**note:** for list of off-source properties see "Impacted Off-Source Property Information, Form 4400-246")*

Site Specific Obligations:

☐ Soil: maintain industrial zoning *(220)*

*(**note:** soil contamination concentrations between non-industrial and industrial levels)*

☐ Structural Impediment *(224)*

☐ Site Specific Condition *(228)*

☐ Cover or Barrier *(222)*

- ☐ Direct Contact
- ☐ Soil to GW Pathway

☐ Vapor Mitigation *(226)*

☐ Maintain Liability Exemption *(230)*

*(**note:** local government unit or economic development corporation was directed to take a response action)*

Monitoring Wells:

Monitoring wells PBM-8911 and LOM-9101 will remain in use at the site as they may be used as part of BAAPs on-going groundwater monitoring

Are all monitoring wells properly abandoned per NR 141? *(234)*

○ Yes ◉ No ○ N/A

** Residual Contaminant Level*
***Site Specific Residual Contaminant Level*

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
3911 Fish Hatchery Road
Fitchburg WI 53711-5397

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

WISCONSIN
DEPT. OF NATURAL RESOURCES

June 12, 2014

Ms. Joan Kenney – Commander's Representative
Badger Army Ammunition Plant
S7560 Highway 12
North Freedom, WI 53951

KEEP THIS DOCUMENT WITH YOUR PROPERTY RECORDS

SUBJECT: Final Case Closure with Continuing Obligations
BAAP Parcel H1, S7560 Highway 12, North Freedom, WI; Sauk County
DNR BRRTS Activity #: 02-57-562061

Dear Ms. Kenney:

The Department of Natural Resources (DNR) considers the Parcel H1 case closed, with continuing obligations. No further investigation or remediation is required at this time. However, you and future property owners, and occupants must comply with the continuing obligations as explained in the conditions of closure in this letter. Please read over this letter closely to ensure that the Army complies with all conditions and other on-going requirements. Provide this letter to anyone who purchases, rents or leases this property from you.

This final closure decision is based on the correspondence and data provided, and is issued under chs. NR 726 and 727, Wisconsin Administrative Code. The South Central Region (SCR) Project Manager began reviewing the request for closure on May 20, 2014. The project manager reviewed this environmental remediation case for compliance with state laws and standards.

Only shallow soil was contaminated above remediation standards in this parcel, and only at one location. The contaminant was PCB-1260, and this location was remediated by excavation. The conditions of closure and continuing obligations required were based on the assumption that the Parcel H1 property will be used for residential purposes, although this is in actuality not possible. The USDA, owner of this parcel and an approximate 2,000 acres that is contiguous with this parcel, will be using this parcel for either agricultural purposes or agricultural activities support.

Two monitoring wells are located on Parcel H1 that were installed to primarily monitor source areas in other areas of BAAP. These wells will remain for current and future monitoring of groundwater for contaminants from these other areas. These wells remain the responsibility of the Army until they are properly abandoned after DNR approval.

Continuing Obligations

The continuing obligations for this site are summarized below. Further details on actions required are found in the Closure Conditions section.

- Residual soil contamination may exist that would have to be properly managed should it be excavated or removed.

- One or more monitoring wells were approved to be kept for further monitoring other source areas. Annual inspections are required and the wells must be properly filled and sealed when monitoring has been completed.

The DNR fact sheet, "Continuing Obligations for Environmental Protection", RR-819, helps to explain a property owner's responsibility for continuing obligations on their property. The fact sheet may be obtained at http://dnr.wi.gov/files/PDF/pubs/rr/RR819.pdf.

GIS Registry

This site will be included on the Bureau for Remediation and Redevelopment Tracking System (BRRTS on the Web) at http://dnr.wi.gov/topic/Brownfields/rrsm.html, to provide public notice of a continuing obligation. The site can also be viewed on the Remediation and Redevelopment Sites Map (RRSM), a map view, under the Geographic Information System (GIS) Registry layer, at the same web address.

DNR approval prior to well construction or reconstruction is required for all sites shown on the GIS Registry, in accordance with s. NR 812.09 (4) (w), Wis. Adm. Code. This requirement applies to private drinking water wells and high capacity wells. To obtain approval, complete and submit Form 3300-254 to the DNR Drinking and Groundwater program's regional water supply specialist. This form can be obtained on-line at http://dnr.wi.gov/topic/wells/documents/3300254.pdf.

All site information is also on file at the SCR DNR office at 3911 Fish Hatchery Road, Fitchburg, WI. This letter and information that was submitted with your closure request application can be found as a PDF in BRRTS on the Web.

Closure Conditions

Compliance with the requirements of this letter is a responsibility to which the Army and any subsequent property owners must adhere. If these requirements are not followed, the DNR may take enforcement action under s. 292.11, Wisconsin Statutes to ensure compliance with the specified requirements, limitations or other conditions related to the property.

Please send written notifications in accordance with the following requirements to:

Department of Natural Resources
Attn: Remediation and Redevelopment Program Environmental Program Associate
3911 Fish Hatchery Road
Fitchburg, WI 53711

Residual Soil Contamination (ch. NR 718, or ch. 289, Stats.; chs. 500 to 536, Wis. Adm. Code)
All current and future owners and occupants of the property need to be aware that excavation of any contaminated soil may pose an inhalation or other direct contact hazard and as a result special precautions may need to be taken to prevent a direct contact health threat to humans.

Continued Monitoring Approved
Your request for continued monitoring of the two monitoring wells located in Parcel H1, PBM8911 and LOM-9101, is approved. These wells, used primarily to monitor other areas of the BAAP facility, are shown on Figure B.3.d. that is included in the revised final submittal received by the Department on June 10, 2014. In the future, sampling results must be submitted to the DNR within 30 days of receipt of the results. An annual inspection of these wells is required to verify the integrity of the monitoring well construction, starting one year after the date of this letter. The inspection log shall be maintained on site, and be made available to the DNR upon request.

You may be held liable for any problems associated with the monitoring wells if they create a conduit for contaminants to enter groundwater. Once monitoring of these wells ends, the Army or its agent is required to notify the DNR, to properly fill and seal each well, and to submit the required documentation to the DNR.

In Closing

Please be aware that the case may be reopened pursuant to s. NR 727.13, Wis. Adm. Code, for any of the following situations:

- if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety, or welfare or to the environment,
- if the property owner does not comply with the conditions of closure, with any deed restrictions applied to the property, or with a certificate of completion issued under s. 292.15, Wis. Stats, or
- if a property owner fails to maintain or comply with a continuing obligation (imposed under this closure approval letter).

The DNR appreciates your efforts to restore the environment at this site. If you have any questions regarding this closure decision or anything outlined in this letter, please contact Hank Kuehling at 608.275.3286 or at Harlan.Kuehling@wisconsin.gov.

Sincerely,

Hank Kuehling

Hank Kuehling, P.G.
Remediation & Redevelopment Program LTE Hydrogeologist

Attachment: Figure B.3.d – Groundwater Monitoring Well Location Map, Parcel H1

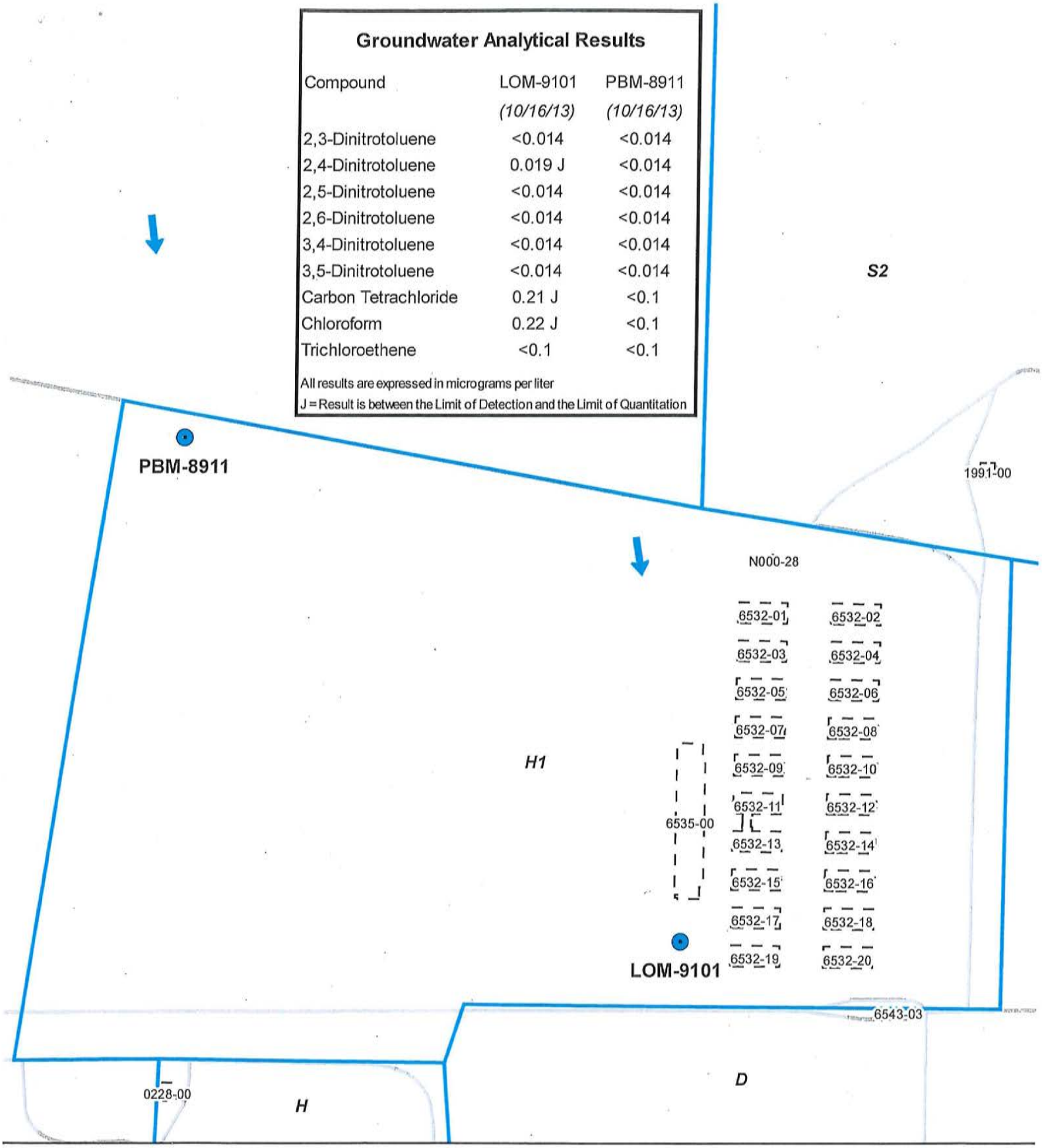
c (via e-mail): Mike Sitton – U.S. Army
Clair Ruenger – BTS, Inc.
Laura Olah - CSWAB

Groundwater Analytical Results

Compound	LOM-9101	PBM-8911
	(10/16/13)	*(10/16/13)*
2,3-Dinitrotoluene	<0.014	<0.014
2,4-Dinitrotoluene	0.019 J	<0.014
2,5-Dinitrotoluene	<0.014	<0.014
2,6-Dinitrotoluene	<0.014	<0.014
3,4-Dinitrotoluene	<0.014	<0.014
3,5-Dinitrotoluene	<0.014	<0.014
Carbon Tetrachloride	0.21 J	<0.1
Chloroform	0.22 J	<0.1
Trichloroethene	<0.1	<0.1

All results are expressed in micrograms per liter

J = Result is between the Limit of Detection and the Limit of Quantitation



Legend

- Monitoring Well
- Groundwater Flow Direction
- Former Building Footprint
- 1700-11 Account #
- U3 Parcel
- Parcel Boundary

Figure B.3.d

Groundwater Monitoring Well Location Map
Parcel H1 - Wisconsin Department of
Natural Resources Closure Request
Badger Army Ammunition Plant

1 inch = 200 feet

Feet

BTS BADGER TECHNICAL SERVICES

D:\GIS_Projects\WDNR Closure Request\

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

SUBMIT AS UNBOUND PACKAGE IN THE ORDER SHOWN

Notice: Pursuant to ch. 292, Wis. Stats., and chs. NR 726 and 746, Wis. Adm. Code, this form is required to be completed for case closure requests. The closure of a case means that the Department of Natural Resources (DNR) has determined that no further response is required at that time based on the information that has been submitted to the DNR. All sections of this form must be completed unless otherwise directed by the Department. Incomplete forms will be considered "administratively incomplete" and processing of the request will stop until required information is provided. Any section of the form not relevant to the case closure request must be fully filled out or explained on a separate page and attached to the relevant section of this form. DNR will consider your request administratively complete when the form and all sections are completed, all attachments are included, and the applicable fees required under ch. NR 749, Wis. Adm. Code, are included, and sent to the proper destinations. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Site Information

BRRTS No.	Parcel ID No. H1		
BRRTS Activity (Site) Name: BAAP Parcel H1	WTM Coordinates X: 540,622	Y: 319,934	
Street Address: S7560 US Highway 12	City: North Freedom	State: WI	ZIP Code: 53951

Responsible Party (RP) Name: United States Army

Company Name: -

Street Address: S7560 US Highway 12	City: North Freedom	State: WI	ZIP Code: 53951
Phone Number: (608) 643-3361	Email: joan.m.kenney.civ@mail.mil		

☒ Check here if the RP is the owner of the source property.

Environmental Consultant Name: Clair Ruenger

Consulting Firm: Badger Technical Services, LLC - BAAP

Street Address: S7560 US Highway 12	City: North Freedom	State: WI	ZIP Code: 53951
Phone Number: (608) 643-3361	Email: clair.ruenger@specpro-inc.com		
Acres Ready For Use: 29.6	Voluntary Party Liability Exemption Site? ○ Yes ◉ No		

Fees and Mailing of Closure Request

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

1. **Send a copy of page one** of this form and the applicable ch. NR 749, Wis. Adm. Code, fee(s) to the DNR regional Environmental Program Associate at **http://dnr.wi.gov/topic/Brownfields/Contact.html**. Check all fees that apply:

   ☐ $1,050 Closure Fee

   ☐ $300 Database Fee for Soil

   ☐ $350 Database Fee for Groundwater or Other Condition (MW Not Abandoned)

   Total Amount of Payment $ Closure and GIS Registry fees paid by Army as part of grant to WDNR

2. **Send one paper copy and one e-copy on compact disk of the entire closure package** to the Regional Project Manager assigned to your site. Submit as *unbound, separate documents* in the order and with the titles prescribed by this form. For electronic document submittal requirements, see **http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf.**

Site Summary

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

1. General Site Information and Site History

A. **Site Location**: Describe the physical location of the site, both generally and specific to its immediate surroundings.
Located in the west-central portion of BAAP, Parcel H1 is open prairie grassland and is surrounded by same.

B. **Prior and current site usage**: Specifically describe the current and historic occupancy and types of use.
Parcel H1 was referred to as Upper Gate 16. The area contained a bus station, parking lot, and twenty employee change houses. In post-production time, the former parking lot was used to stage scrap metal prior to treatment in the Decontamination Oven. The area is scheduled for property transfer to the USDA.

C. Describe how and when site contamination was discovered.
Contaminants were identified during the 2007 building/account post-demolition operations and 2011 sewer removal and remedial sampling investigation activities.

D. Describe the type(s) and source(s) or suspected source(s) of contamination.
BNAs, PCBs, and/or metals resulting from former propellant manufacturing operations and building/account-related materials.

E. Other relevant site description information (or enter Not Applicable).
Not Applicable.

F. List BRRTS activity site name and number for all other BRRTS activities at this property, including closed cases.
There are no other BRRTS activities for this parcel.

G. List BRRTS activity/site name(s) and number(s) for all properties immediately adjacent to this site, and those impacted by contamination from this site.
BAAP 1949 Pit (0257549746 and 0257526298) and BAAP Trap Range (0257549199).

H. **Current zoning** (e.g. industrial, commercial, residential) for the site and for neighboring properties, and how verified (Provide documentation in Attachment G).
The site is zoned "governmental-agricultural conservation".

2. General Site Conditions

A. Soil/Geology

i. Describe soil type(s) and relevant physical properties, thickness of soil column across the site, vertical and lateral variations in soil types.
Soil - medium brown silty sands, sandy silts, and sandy clay. Geology - unconsolidated glacial sediments consisting of outwash sands and interlayered sand/gravel, with some interbedded till underlain by sandstone bedrock at 280 feet.

ii. Describe the composition, location and lateral extent, and depth of fill or waste deposits on the site.
Remedial excavations ranged from 1.5 to 3.0 feet below grade and were backfilled to grade. The area does not contain waste deposits.

iii. Depth to bedrock, bedrock type, and whether or not it was encountered during the investigation.
280 feet to Cambrian sandstone, not encountered during investigations/remediations.

iv. Describe the nature and locations of current surface cover(s) across the site (e.g. natural vegetation, landscaped areas, gravel, hard surfaces, and buildings).
Natural vegetation.

B. Groundwater

i. **Discuss depth to groundwater and piezometric elevations**. Describe and explain depth variations, and whether free product affects measurement or water table elevation. Describe the stratigraphic unit(s) where water table was found or which were measured for piezometric levels.
Monitoring wells PBM-8911 and LOM-9101 are the only wells in Parcel H1. These wells are screened within the unconsolidated sand/gravel. The groundwater elevation was 777.35 msl in PBM-8911 on October 16, 2013.

ii. Discuss groundwater flow direction(s), shallow and deep. Describe and explain flow variations, including fracture flow if present.
Groundwater flow direction is to the south.

iii. Discuss groundwater flow characteristics: hydraulic conductivity, flow rate and permeability, or state why this information was not obtained.

The average flow velocity and hydraulic conductivity are 0.72 ft/day and 4x10E-2 cm/sec, respectively.

iv. Identify and describe locations/distance of potable and/or municipal Wells within 1200 feet of the site.

There are no potable or municipal wells within 1,200 feet of the parcel.

3. Site Investigation Summary

A. General

i. Provide a brief summary of the site investigation history. Reference previous submittals by name and date. Describe site investigation activities undertaken since the last submittal for this project and attach the appropriate documentation in Attachment C, if not previously provided.

2007 Post-demo investigation/remedial action, 2011 sewer removal investigation, and 2013 Upper Gate 16 North investigation/remedial action. See 2014 BTS Parcel H1 - WDNR Case Closure Report (pages 1 to 4).

ii. Identify whether contamination extends beyond the source property boundary, describe the off-site media (e.g., soil, groundwater, etc.) impacted, and the vertical and horizontal extent of off-site impacts.

Soil contamination did no extend beyond the Parcel H1 boundary. Groundwater is not impacted by surficial soil contamination.

iii. Identify any structural impediments to the completion of site investigation and/or remediation and whether these impediments are on the source property or off the source property. Identify the type and location of any structural impediment (e.g., structure) that also serves as the performance standard barrier for protection of the direct contact or the groundwater pathway.

Structural impediments were not encountered during the investigation/remediation activities and are not being used as an engineering control.

B. Soil

i. Describe degree and extent of **soil contamination** at and from this site. Relate this to known or suspected sources and known or potential receptors/migration pathways.

Approximately 13,500 cubic yards of soil were removed in the Upper Gate 16 North parking lot area (scrap metal storage area). The source of the suspected contamination was propellant residue on metal scrap staged in this area prior to thermal treatment in the Decon Oven. See Figure 2 of the 2014 BTS Parcel H1 - WDNR Case Closure Report. Groundwater (a potential receptor) was not impacted by shallow soil from this parcel.

ii. Describe the level and types of **soil contaminants** found in the upper four feet of the soil column.

Arsenic at 10.6 mg/kg and PCB-1260 at 3.96 mg/kg. All soil contamination within the upper four feet has been removed.

iii. Identify the ch. NR 720, Wis. Adm. Code, method used to establish the soil cleanup standards for this site. This includes a soil performance standard established in accordance with s. NR 720.08, a Residual Contaminant Level (RCL) established in accordance with s. NR 720.10 that is protective of groundwater quality, or an RCL established in accordance with s. NR 720.12 that is protective of human health from direct contact with contaminated soil. Identify the land use classification that was used to establish cleanup standards. Provide a copy of the supporting calculations/ information in Attachment C.

Soil cleanup objectives are presented in Table 1 of the 2014 BTS Parcel H1 - WDNR Case Closure Report.

C. Groundwater

i. Describe degree and extent of groundwater contamination at or from this site. Relate this to known or suspected sources and known or potential receptors/migration pathways. Specifically address any potential or existing impacts to water supply wells or interception with building foundation drain systems.

The source of the groundwater contamination in Parcel H1 is likely due to up-gradient dispersion/diffusion from the Propellant Burning Ground (located in Parcel H to the south).

ii. Describe the presence of free product at the site, including the thickness, depth, and locations.

Not Applicable.

D. Vapor

i. Describe how the vapor migration pathway was assessed, including locations where vapor or indoor air samples were collected. If the vapor pathway was not assessed, explain reasons why.

The vapor pathway was not assessed due to localized, low-level, non-volatile contaminants, human occupancy is greater than 2,500 feet away, and the absence of structures/basements in Parcel H1.

ii. Identify the applicable DNR action levels and the land use classification used to establish them. Describe where the DNR action levels were reached or exceeded (e.g., sub slab, indoor air or both).
Not Applicable.

E. Surface Water and Sediment

i. Identify whether surface water and/or sediment was assessed and describe the impacts found. If this pathway was not assessed, explain why.
No surface water and/or sediment is present in the parcel.

ii. Identify any surface water and/or sediment action levels used to assess the impacts for this pathway and how these were derived. Describe where the DNR action levels were reached or exceeded.
Not Applicable.

4. Remedial Actions Implemented and Residual Levels at Closure

A. General: Provide a brief summary of the remedial action history. List previous remedial action report submittals by name and date. Identify remedial actions undertaken since the last submittal for this project and provide the appropriate documentation in Attachment C.

Excavation and on-site landfill disposal of localized, low-level impacts from post-demolition work was conducted in 2007. Potentially-impacted soil was characterized and remediated in 2013. See the 2014 Parcel H1 - WDNR Closure Report (pages 2 to 4).

B. Describe any immediate or interim actions taken at the site under ch NR 708, Wis. Adm. Code.
Not Applicable.

C. Describe the *active* remedial actions taken at the site, including: type of remedial system(s) used for each media impacted; the size and location of any excavation or in-situ treatment; the effectiveness of the systems to address the contaminated media and substances; operational history of the systems; and summarize the performance of the active remedial actions. Provide any system performance documentation in Attachment A.7.

Excavation and on-site landfill disposal of localized, low-level impacts from post-demolition work was conducted in 2007. Potentially-impacted soil was characterized and remediated in 2013. See the 2014 Parcel H1 - WDNR Closure Report (pages 2 to 4).

D. Provide a discussion of the nature, degree and extent of residual contamination that will remain at the site or on off-site affected properties after case closure.

There are no residual soil impacts on the parcel. See the 2014 Parcel H1 - WDNR Closure Report (pages 2 to 4). There are no groundwater impacts associated with Parcel H1.

E. Describe the remaining soil contamination within four feet of ground surface (direct contact zone) that attains or exceeds Residual Contaminant Levels established under s. NR 720. 12 , the ch. NR720, Wis. Adm. Code, for protection of human health from direct contact.

All direct contact zone soil exceeding a remedial objective have been removed.

F. Describe the remaining soil contamination in the vadose zone that attains or exceeds the soil standard(s) for the groundwater pathway.
Not Applicable.

G. Describe how the residual contamination will be addressed, including but not limited to details concerning: covers, engineering controls or other barrier features; use of natural attenuation of groundwater; and vapor mitigation systems or measures.
Not Applicable.

H. If using natural attenuation as a groundwater remedy, describe how the data collected supports the conclusion that natural attenuation is effective in reducing contaminant mass and concentration, (e.g. stable or receding groundwater plume).
There are no known impacts to groundwater from the shallow soil contamination in this parcel.

I. Identify how all exposure pathways were removed and/or adequately addressed by immediate and/or remedial action(s) described above in paragraphs, B, C, D, E and F.
Source removal (soil excavation) of impacted soil limits potential migration of residual contaminants.

J. Identify any system hardware anticipated to be left in place after site closure, and explain the reasons why it will remain.
Not Applicable (two monitoring wells will remain as part of the site-wide groundwater monitoring network).

K. Identify the need for a ch. NR 140, Wis. Adm. Code, groundwater Preventive Action Limit (PAL) or Enforcement Standard (ES) exemption, and identify the affected monitoring points and applicable substances.
Monitoring wells LOM-9101 has PAL exceedances of 2,4-DNT, carbon tetrachloride, and chloroform.

L. If a DNR action level for vapor intrusion was exceeded (for indoor air, sub slab, or both) describe where it was exceeded and how the pathway was addressed.
Not Applicable.

M. Describe the surface water and/or sediment contaminant concentrations and areas after remediation. If a DNR action level was exceeded, describe where it was exceeded and how the pathway was addressed.
Not Applicable.

5. Continuing Obligations: Situations where a maintenance plan(s) and inclusion on DNR's GIS Registry are required.

Directions: Check all that apply to this case closure request:

	This scenario Applies to this Case Closure		Case Closure Scenario: Maintenance Plans and GIS Registry	Maintenance Plan (s) Required in Attachment D	GIS Registry Listing
	A. On-Site	B. Off-Site			
i.	☐	☐	Engineering Control/Barrier for Direct Contact	✓	✓
ii.	☐	☐	Engineering Control/Barrier for Groundwater Infiltration	✓	✓
iii.	☐	☐	Vapor Mitigation - post closure passive system	✓	✓
iv.	☐	☐	Vapor Mitigation - post closure active system	✓	✓
v.	☒	☒	None of the above scenarios apply to this case closure	NA	NA

6. Continuing Obligations: Situations where inclusion on DNR's GIS Registry is required.

Directions: Check all that apply to this case closure request:

	This scenario Applies to this Case Closure		Case Closure Scenario: GIS Registry Only	GIS Registry Listing
	A. On-Site	B. Off-Site		
i.	☐	☐	Residual soil contamination exceeds ch. NR 720 generic or site-specific RCLs	✓
ii.	☐	☐	Sites with groundwater contamination equal to or greater than the ch. NR 140, enforcement standards (ES)	✓
iii.	☒	☐	Monitoring wells: lost, transferred or remaining in use	✓
iv.	☐	☐	Structural Impediment (not as a performance standard)	✓
v.	☐	☐	Residual soil contamination remaining at ch. NR 720 Industrial Use levels	✓
vi.	☐	☐	Vapor intrusion may be future, post-closure issue if building use or land use changes	✓
vii.	☐	☒	None of the above scenarios apply to this case closure	NA

7. Underground Storage Tanks

A. Were any tanks, piping or other associated tank system components removed as part of the investigation or remedial action? ○ Yes ◉ No

B. Do any upgraded tanks meeting the requirements of ch. SPS 310, Wis. Adm. Code, exist on the property? ○ Yes ◉ No

C. If the answer to question 7b is yes, is the leak detection system currently being monitored? ○ Yes ○ No

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form.All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

General directions for Data Tables:

- Use bold and italics font on information of importance on tables and figures. Use **bold font** for ch. NR 140, Wis. Adm. Code, groundwater enforcement standard (ES) attainments or exceedances, and *italicized font* for ch. NR 140, Wis. Adm. Code, groundwater preventive action limit (PAL) standard attainments or exceedances.
- Do not use shading or highlighting on the analytical tables.
- Include on Data Tables the level of detection for results which are below the detection level (i.e. do not just list as no detect (ND)).
- Include the units on data tables.
- Summaries of all data must include information collected by previous consultants.
- Do not submit lab data sheets unless these have not been submitted in a previous report. Tabulate all data required in s. NR 716.15 (3)(c), Wis. Adm. Code, in the format required in s. NR 716.15(4)(e), Wis. Adm. Code.
- Include in Attachment A all of the following tables, in the order prescribed below, with the specific Closure Form titles noted on the separate attachments (e.g., Title: A.1. Groundwater Analytical Table; A.2. Pre-remedial Soil Analytical Table, etc).
- For required documents, each table (e.g., A.1., A.2., etc.,) should be a separate PDF.

A. Data Tables

A.1. **Groundwater Analytical Table(s):** Table(s) showing the analytical results and collection dates, for all groundwater sampling points e.g. monitoring wells, temporary wells, sumps, extraction wells, any potable wells and any other wells, extraction wells and any potable wells for which samples have been collected.

A.2. **Pre-remedial Soil Analytical Table(s):** Table(s) showing the soil analytical results and collection dates - prior to conducting the interim and/or remedial action. Indicate if sample was collected above or below the all-time low water table (unsaturated verses saturated).

A.3. **Post-remedial Soil Analytical Table(s):** Table(s) showing the post-remedial action soil analytical results and collection dates. Indicate if sample was collected above or below the all-time low water table (unsaturated verses saturated).

A.4. **Pre and Post Remaining Soil Contamination Soil Analytical Table(s):** Table(s) showing only the pre and post remedial action soil analytical results that exceed a Residual Contaminate Level (RCL) or a Site-Specific Residual Level (SSRCL).

A.5. **Vapor Analytical Table**: Table(s) showing type(s) of samples, sample collection methods, analytical method, sample results, date of sample collection, time period for sample collection, method and results of leak detection, and date, method and results of communication testing.

A.6. **Other Media of Concern (e.g., sediment or surface water)**: Table(s) showing type(s) of sample, sample collection method, analytical method, sample results, date of sample collection, time period for sample collection, method and results sampling.

A.7. **Water Level Elevations:** Table(s) showing all water level elevation measurements and dates from all monitoring wells. If present, free product should be noted on the table.

A.8. **Other:** This attachment should include: 1) any available tabulated natural attenuation data; 2) data tables pertaining to engineered remedial systems that document operational history, demonstrate system performance and effectiveness, and display emissions data; and (3) any other data tables relevant to case closure not otherwise noted above. If this section is not applicable, please explain the reasons why.

Maps and Figures (Attachment B)

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

General Directions for all Maps and Figures:

- If any map or figure is not relevant to the case closure request, you must fully explain the reason(s) why and attach that explanation (properly labeled with the map/ figure title) in Attachment B.
- Provide on paper no larger than 11 x 17 inches, unless otherwise directed by the Department. Maps and figures may be submitted in a larger electronic size than 11x17 inches, in a portable document format (pdf) readable by the Adobe Acrobat Reader. However, those larger-size documents must be legible when printed.
- Prepare visual aids, including maps, plans, drawings, fence diagrams, tables and photographs according to the applicable portions of ss. NR 716.15(4), 726.09(2) and 726.11(3), (5) and (6), Wis Adm. Code.
- Do not use shading or highlights on any of the analytical tables.
- Include all sample locations.
- Contour lines should be clearly labeled and defined.
- Include in Attachment B all of the following maps and figures, in the order prescribed below, with the specific Closure Form titles noted on the separate attachments (e.g., Title: B.1. Location Map; B.2. Detailed Site Map, etc).
- For the electronic copies that are required, each map (e.g., B.1.a., B.2.a, etc.,) should be a separate PDF.

B.1. Location Maps

B.1.a. **Location Map:** A map outlining all properties within the contaminated site boundaries on a U.S.G.S. topographic map or plat map in sufficient detail to permit easy location of all impacted and/or adjacent parcels. If groundwater standards are exceeded, include the location of all potable wells, including municipal wells, within 1200 feet of the area of contamination.

B.1.b. **Detailed Site Map:** A map that shows all relevant features (buildings, roads, current ground surface cover, individual property boundaries for on-site and applicable off-site properties, contaminant sources, utility lines, monitoring wells and potable wells) within the contaminated area. This map is to show the location of all contaminated public streets, and highway and railroad rights-of-way in relation to the source property and in relation to the boundaries of groundwater contamination exceeding a ch. NR 140 Enforcement Standard (ES), and/or in relation to the boundaries of soil contamination exceeding a Residual Contaminant Level (RCL) established in accordance with the provisions contained in s. NR 720.10 or s. NR 720.12, Wis. Adm. Code.

B.1.c. **RR Site Map:** From RR Sites Map (http://dnrmaps.wi.gov/sl/?Viewer=RR Sites) attach a map depicting the source property, and all open and closed BRRTS sites within a half-mile radius or less of the property.

B.2. Soil Figures

B.2.a. **Pre-remedial Soil Contamination:** Figure(s) showing the sample location of all pre-remedial, unsaturated contaminated soil and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeded a Residual Contaminant Level (RCL) established in accordance with the provisions contained in s. NR 720.10 or s. NR 720.12, Wis. Adm. Code.

B.2.b. **Post-remedial Soil Contamination :** Figure(s) showing the sample location of all post-remedial, unsaturated contaminated soil and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeds a Residual Contaminant Level (RCL) established in accordance with the provisions contained in s. NR 720.10 or s. NR 720.12, Wis. Adm. Code. A separate contour line should be used to indicate the extent of residual direct contact exceedances.

B.2.c. **Pre/Post Remaining Soil Contamination:** Figure(s) showing the only location of all pre and post remedial residual soil sample location(s) where unsaturated contaminated soil remains after remediation and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeds a Residual Contaminate Level (RCL) established in accordance with the provisions contained in s. NR 720.10 or s. NR 720.12, Wis. Adm. Code. A separate contour line should be used to indicate the extent of residual direct contact exceedances.

B.3. Groundwater Figures

B.3.a. **Geologic Cross-Section Figure(s):** One or more cross-section diagrams showing soil types and correlations across the site, water table and piezometric elevations, and locations and elevations of geologic rock units, if encountered. Display on one or more figures all of the following:

- Source location(s) and vertical extent of residual soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL).
- Source location(s) and lateral and vertical extent if groundwater contamination exceeds a ch. NR 140 Enforcement Standard (ES)
- Surface features, including buildings and basements, and show surface elevation changes.
- Any areas of active remediation within the cross section path, such as excavations or treatment zones.
- Include a map displaying the cross-section location(s), if they are not displayed on the Detailed Site Map (Map B.1b)

B.3.b. **Groundwater Isoconcentration:** Figure(s) showing the horizontal extent of the post-remedial groundwater contamination exceeding a ch. NR 140, Wis. Adm. Code, Preventive Action Limit (PAL) and/or an Enforcement Standard (ES). Indicate the date and direction of groundwater flow based on the most recent sampling data.

B.3.c. **Groundwater Flow Direction:** Figure(s) representing groundwater movement at the site. If the flow direction varies by more than 20° over the history of the site, submit two groundwater flow maps showing the maximum variation in flow direction.

B.3.d. **Monitoring Wells:** Figure(s) showing all monitoring wells, with well identification number. Clearly designate any wells that: (1) are proposed to be abandoned; (2) cannot be located; (3) are being transferred; (4) will be retained for further sampling, or (5) have been previously abandoned.

B.4. Vapor Maps and Other Media

B.4.a. **Vapor Intrusion Map:** Map(s) showing all locations and results for samples taken to investigate the vapor intrusion pathway, in relation to remaining soil and groundwater contamination, including sub-slab, indoor air, soil vapor, ambient air, and communication testing. Show locations and footprints of affected structures and utility corridors, and/or where residual contamination poses a future risk of vapor intrusion.

B.4.b. **Other media of concern (e.g., sediment or surface water)**: Map(s) showing all sampling locations and results for other media investigation. Include the date of sample collection and identify where any standards are exceeded.

B.4.c. **Other:** Include any other relevant maps and figures not otherwise noted above. (This section may remain blank)

Documentation of Remedial Action (Attachment C)

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the

relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

General Directions:

- Include in Attachment C all of the following documentation, in the order prescribed below, with the specific Closure Form titles noted on the separate attachments (e.g., Title: C.1. Site Investigation Documentation; C.2. Investigative Waste, etc).
- If the documentation requested below is "not applicable" to the site-specific circumstances, include a brief explanation to support that conclusion.
- If the documentation requested below has already been submitted to the Department, please note the title and date of the report for that particular document requested.

C.1. **Site investigation documentation,** that has not otherwise been previously submitted.

C.2. **Investigative waste** disposal documentation.

C.3. **Provide a description of the methodology used along with all supporting documentation if the Residual Contaminant Levels are different than those contained in the Department's RCL Spreadsheet available at: http://dnr.wi.gov/topic/Brownfields/Professionals.html.**

C.4. **Construction documentation** or as-built report for any constructed remedial action or portion of, or interim action specified in s. NR 724.02(1), Wis. Adm. Code.

C.5. **Decommissioning of Remedial Systems.** Include plans to properly abandon any systems or equipment upon receiving conditional closure.

C.6. **Photos.** For sites or facilities with a cover or other performance standard, a structural impediment or a vapor mitigation system. Include one or more photographs documenting the condition and extent of the feature at the time of the closure request. Pertinent features should be visible and discernible. Photographs must be labeled with the site name, the features shown, location and the date on which the photograph was taken.

C.7. **Other**. Include any other relevant documentation not otherwise noted above. (This section may remain blank)

Maintenance Plan(s) and Photographs (Attachment D)

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

When one or more "maintenance plans" are required for a site closure, include in each maintenance plan all required information listed below, and attach the plan(s) in Attachment D. The following "model" maintenance plans can be located at: (1) Maintenance plan for a engineering control or cover: http://dnr.wi.gov/topic/Brownfields/documents/maintenance-plan.pdf; and (2) Maintenance plan for vapor intrusion: http://dnr.wi.gov/topic/Brownfields/documents/appendix5_606.pdf.

D.1. **Location map(s)** which show(s): (1) the feature that requires maintenance; (2) the location of the feature(s) that require(s) maintenance - on and off the source property; (3) the extent of the structure or feature(s) to be maintained, in relation to other structures or features on the site; (4) the extent and type of residual contamination; and (5) and all property boundaries.

D.2. **Brief descriptions** of the type, depth and location of residual contamination.

D.3. **Description of maintenance action(s)** required for maximizing effectiveness of the engineered control, vapor mitigation system, feature or other action for which maintenance is required.

D.4. **Inspection log**, to be maintained on site, or at a location specified in the maintenance plan or approval letter.

D.5. **Contact information,** including the name, address and phone number of the individual or facility who will be conducting the maintenance.

D.6 Photographs

D.6.a. For site or facilities with a cover or other performance standard, a structural impediment or a vapor mitigation system, include one or more photographs documenting the condition and extent of the feature at the time of the closure request. Pertinent features shall be visible and discernible.

D.6.b. Photographs shall be submitted with a title related to the site name and location, and the date on which it was taken.

Monitoring Well Information (Attachment E)

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

General Directions:

Attach monitoring well construction and development forms (DNR FORM 4400-113 A and B: http://dnr.wi.gov/topic/groundwater/documents/forms/4400_113_1_2.pdf) for all wells that will remain in-use, be transferred to another party or that could not be located. A figure of these wells should be included in Attachment B.3.d.

Select One:

○ No monitoring wells were required as part of this response action.

○ All monitoring wells have been located and will be properly abandoned upon the DNR granting conditional closure to the site

◉ ***Select One or More:***

☐ Not all monitoring wells can be located, despite good faith efforts. Attachment E must include description of efforts made to locate the "lost" wells.

☐ One or more wells will be transferred to another owner upon case closure being granted. Attachment E should include documentation identifying the name, address and email for the new owner(s).

☒ One or more wells will remain in use at the site after this closure. Attachment E must include documentation as to the reason(s) the well(s) will remain in use.

Notifications to Owners of Impacted Properties (Attachment F)

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

General Directions:

- State law requires that the responsible party provide a 30-day, written advance notice (i.e., a letter) to certain persons prior to applying for case closure. This requirement applies if: (1) the person conducting the response action does not own the source property; (2) the contamination has migrated onto another property; and/or (3) one or more monitoring wells will not be abandoned.
- Use of Form 4400-286, Notification of Residual Contamination and Continuing Obligations, is required under ch. NR 725 for notifying property owners and right-of-way holders about residual contamination affecting their properties, and of continuing obligations which may be imposed. This form can be downloaded at http://dnr.wi.gov/files/PDF/forms/4400/4400-286.pdf.

Check all that apply to the site-specific circumstances of this case closure:

	A. Impacted Source Property and Owner is not Conducting Cleanup	B. Impacted Right of Way	C. Impacted Off-Site Property Owner	Impacted Property Notification Situations: Ch. NR 726 Appendix A Letter
1.	☐	☐	☐	Residual groundwater contamination exceeds Ch. NR 140 Wis. Administrative Code enforcement standards.
2.	☐	☐	☐	Residual soil contamination that attains or exceeds standards is present after the remedial action is complete, and must be properly managed should it be excavated or removed.
3.	☐	☐	☐	An engineered cover or a soil barrier (e.g. pavement) must be maintained over contaminated soil for direct contact or groundwater infiltration concerns.
4.	☐	☐	☐	Industrial land use soil standards were used for the clean-up standard.
5.	☐	☐	☐	A vapor mitigation system (or other specific vapor protection) must be operated and maintained.
6.	☐	☐	☐	Vapor assessment needed if use changes.
7.	☐	☐	☐	Structural impediment.
8.	☐	☐	☐	Lost, transferred or open monitoring wells.
9.	☒	☒	☒	Not Applicable.

If any of the previous boxes in rows 1 thru 8 were checked, include the following as part of Attachment F:

- FORM 4400-246;
- Copy of each letter sent, 30 days or more prior to requesting closure; and
- Proof of receipt for each letter.
- For this site closure, _____ (number) property (ies) has/have been impacted, the owners have been notified, and copies of the letters and receipts are included in Attachment F.

Source Legal Documents (Attachment G)

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form.All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

Include all of the following documents, in this order, in Attachment G:

G.1. **Deeds - Source Property and Other Impacted Properties:** The most recent deed with legal descriptions clearly labeled for (1) the **Source Property** (where the contamination originated) and (2) all **off-source** (off-site) properties where letters were required to be sent per the ch. NR 700, Wis. Adm. Code, rule series (e.g., off-site cover maintenance required, lost monitoring well, off-site cover property impacts to groundwater exceeding the ch. NR 140, Wis. Adm. Code.

Note: *If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.*

G.2. ***Certified Survey Map:*** *A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map.* (Lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).

G.3. **Verification of Zoning**: Documentation (e.g., official zoning map or letter from municipality) of the property's or properties' current zoning status.

G.4. **Signed Statement:** A statement signed by the Responsible Party (RP), which states that he or she believes that the attached legal description(s) accurately describe(s) the correct contaminated property or properties.

Signatures and Findings for Closure Determination

If any section is not relevant to the case closure request, you must fully explain the reasons why and attach that explanation to the relevant section of the form. All information submitted shall be legible. Providing illegible information may result in a submittal being considered incomplete until corrected.

Check the correct box for this case closure request, and have either a professional engineer or a hydrogeologist, as defined in ch. NR 712, Wis. Adm. Code, sign this document.

☐ A response action(s) for this site addresses groundwater contamination (including natural attenuation remedies).

☒ The response action(s) for this site addresses media other than groundwater.

Engineering Certification

I _____hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this case closure request has been prepared by me or prepared under my supervision in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this case closure request is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code. Specifically, with respect to compliance with the rules, in my professional opinion a site investigation has been conducted in accordance with ch. NR 716, Wis. Adm. Code, and all necessary remedial actions have been completed in accordance with chs. NR 140, NR 718, NR 720, NR 722, NR 724 and NR 726, Wis. Adm. Codes."

Printed Name	Title

Signature	Date	P.E. Stamp and Number

Hydrogeologist Certification

I Clair Ruenger hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this case closure request is correct and the document was prepared by me or prepared by me or prepared under my supervision and, in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code. Specifically, with respect to compliance with the rules, in my professional opinion a site investigation has been conducted in accordance with ch. NR 716, Wis. Adm. Code, and all necessary remedial actions have been completed in accordance with chs. NR 140, NR 718, NR 720, NR 722, NR 724 and NR 726, Wis. Adm. Codes."

Clair Ruenger, P.G.	Environmental Technical Services Manager, BTS - BAAP
Printed Name	Title
Clair E. Ruenger	28 April 2014
Signature	Date

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
PBM 8911				**LOM 9101**			
19-Jun-89	1,1,1-Trichloroethane	<	5	07-Nov-91	1,1,1-Trichloroethane	<	4.1
19-Jun-89	1,1,2,2-Tetrachloroethane	<	5	07-Nov-91	1,1,2,2-Tetrachloroethane	<	4.7
19-Jun-89	1,1,2-Trichloroethane	<	5	07-Nov-91	1,1,2-Trichloroethane	<	0.63
19-Jun-89	1,1-Dichloroethane	<	5	07-Nov-91	1,1-Dichloroethane	<	1.1
19-Jun-89	1,1-Dichloroethylene	<	5	07-Nov-91	1,1-Dichloroethylene	<	1.4
19-Jun-89	1,2-Dichlorobenzene	<	100	07-Nov-91	1,2,3-Trichlorobenzene	<	4
19-Jun-89	1,2-dichloroethane	<	5	07-Nov-91	1,2,4-Trichlorobenzene	<	3
19-Jun-89	1,2-Dichloroethene	<	5	07-Nov-91	1,2-Dichlorobenzene	<	9.7
19-Jun-89	1,2-Dichloropropane	<	5	07-Nov-91	1,2-Dichlorobenzene	<	10
19-Jun-89	1,3-Dichlorobenzene	<	100	07-Nov-91	1,2-dichloroethane	<	7.6
19-Jun-89	2,4-Dinitrotoluene	<	10	07-Nov-91	1,2-Dichloroethene	<	1.1
19-Jun-89	2,6-Dinitrotoluene	<	10	07-Nov-91	1,2-Dichloropropane	<	2.8
19-Jun-89	2-Chloroethylvinyl Ether	<	10	07-Nov-91	1,3-Dichlorobenzene	<	9
19-Jun-89	Alkalinity As Caco3		280	07-Nov-91	1,3-Dichlorobenzene	<	9.2
19-Jun-89	Benzene By Gc-ms	<	5	07-Nov-91	1,3-Dichloropropene	<	3.8
19-Jun-89	Bromodichloromethane	<	5	07-Nov-91	2,4,5-Trichlorophenol	<	60
19-Jun-89	Bromomethane	<	10	07-Nov-91	2,4,6-Trichlorophenol	<	10
19-Jun-89	Cadmium	<	10	07-Nov-91	2,4-Dichlorophenol	<	10
19-Jun-89	Carbon Tetrachloride	<	5	07-Nov-91	2,4-Dimethylphenol	<	10
19-Jun-89	Chloride		32	07-Nov-91	2,4-Dinitrophenol	<	60
19-Jun-89	Chloroethane	<	10	07-Nov-91	2,4-Dinitrotoluene	<	1.16
19-Jun-89	Chloroform	<	5	07-Nov-91	2,4-Dinitrotoluene	<	6
19-Jun-89	Chloromethane	<	10	07-Nov-91	2,6-Dinitrotoluene	<	7
19-Jun-89	Chromium	<	10	07-Nov-91	2,6-Dinitrotoluene	<	1.11
19-Jun-89	Cis-1,3-Dichloropropene	<	5	07-Nov-91	2-Chloroethylvinyl Ether	<	82
19-Jun-89	Dibromochloromethane	<	5	07-Nov-91	2-Chloronapthalene	<	10
19-Jun-89	Di-n-propylnitrosamine	<	10	07-Nov-91	2-Chlorophenol	<	10
19-Jun-89	Ethylbenzene	<	5	07-Nov-91	2-Hexanone	<	10
19-Jun-89	Hardness, Total, As Caco3		360	07-Nov-91	2-Methylnapthalene	<	10
19-Jun-89	Lead	<	100	07-Nov-91	2-Methylphenol	<	10
19-Jun-89	Mercury	<	0.2	07-Nov-91	2-Nitroaniline	<	60
19-Jun-89	Methylene Chloride	<	5	07-Nov-91	2-Nitrophenol	<	10
19-Jun-89	Monochlorobenzene	<	5	07-Nov-91	3,3-Dichlorobenzidine	<	7
19-Jun-89	Nitrite Plus Nitrate, Tot		6.8	07-Nov-91	3-Nitroaniline	<	60
19-Jun-89	N-nitrosodimethylamine	<	10	07-Nov-91	4,6-Dinitro-o-cresol	<	60
19-Jun-89	N-nitrosodiphenylamine	<	10	07-Nov-91	4-Bromophenyl Phenyl Ether	<	10
19-Jun-89	P-Dichlorobenzene	<	100	07-Nov-91	4-Chlorophenyl Phenyl Ether	<	10
19-Jun-89	Sulfate As SO4		29	07-Nov-91	4-Methyl-2-Pentanone	<	10
19-Jun-89	Tetrachloroethylene	<	5	07-Nov-91	4-nitroaniline	<	60
19-Jun-89	Toluene By Gc-ms	<	5	07-Nov-91	4-Nitrophenol	<	60
19-Jun-89	Trans-1,3-Dichloropropene	<	5	07-Nov-91	Acenapthene	<	20
19-Jun-89	Tribromomethane	<	5	07-Nov-91	Acenapthylene	<	20
19-Jun-89	Trichloroethylene	<	5	07-Nov-91	Acetone	<	10
19-Jun-89	Trichlorotrifluoroethane	<	10	07-Nov-91	Acid, Acetic	<	0.01
19-Jun-89	Vinyl Chloride	<	10	07-Nov-91	Aldrin	<	10
28-Sep-89	1,1,1-Trichloroethane	<	5	07-Nov-91	Alkalinity, Carbonate		289
28-Sep-89	1,1,2,2-Tetrachloroethane	<	5	07-Nov-91	Aluminum, Dissolved	<	820
28-Sep-89	1,1,2-Trichloroethane	<	5	07-Nov-91	Anthracene	<	20
28-Sep-89	1,1-Dichloroethane	<	5	07-Nov-91	Antimony	<	51.2
28-Sep-89	1,1-Dichloroethylene	<	5	07-Nov-91	Arsenic	<	3.09
28-Sep-89	1,2-Dichlorobenzene	<	100	07-Nov-91	Barium		68
28-Sep-89	1,2-dichloroethane	<	5	07-Nov-91	Benzene By Gc-ms	<	2.4
28-Sep-89	1,2-Dichloroethene	<	5	07-Nov-91	Benzo(a)anthracene	<	20
28-Sep-89	1,2-Dichloropropane	<	5	07-Nov-91	Benzo(a)pyrene	<	10
28-Sep-89	1,3-Dichlorobenzene	<	100	07-Nov-91	Benzo(b)fluoranthene	<	30
28-Sep-89	2,4-Dinitrotoluene	<	10	07-Nov-91	Benzo(g,h,i)perylene	<	8
28-Sep-89	2,6-Dinitrotoluene	<	10	07-Nov-91	Benzo(k)fluoranthene	<	20

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
28-Sep-89	2-Chloroethylvinyl Ether	<	10	07-Nov-91	Benzoic Acid	<	60
28-Sep-89	Alkalinity As Caco3		320	07-Nov-91	Benzyl Alcohol	<	10
28-Sep-89	Benzene By Gc-ms	<	5	07-Nov-91	Beryllium	<	0.34
28-Sep-89	Bromodichloromethane	<	5	07-Nov-91	Bhc-alpha	<	7
28-Sep-89	Bromomethane	<	10	07-Nov-91	Bhc-beta	<	5
28-Sep-89	Cadmium		10	07-Nov-91	Bhc-delta	<	7
28-Sep-89	Carbon Tetrachloride	<	5	07-Nov-91	Bis(2-chloroethoxy)methane	<	10
28-Sep-89	Chloride		33	07-Nov-91	Bis(2-chloroethyl) ether	<	9
28-Sep-89	Chloroethane	<	10	07-Nov-91	Bis(2-chloroisopropyl)ether	<	10
28-Sep-89	Chloroform	<	5	07-Nov-91	Bis(2-ethylhexyl)phthalate		50
28-Sep-89	Chloromethane	<	10	07-Nov-91	Bromodichloromethane	<	7.9
28-Sep-89	Chromium		40	07-Nov-91	Bromomethane	<	10
28-Sep-89	Cis-1,3-Dichloropropene	<	5	07-Nov-91	Butylbenzylphthalate	<	10
28-Sep-89	Dibromochloromethane	<	5	07-Nov-91	Cadmium	<	2.67
28-Sep-89	Di-n-propylnitrosamine	<	10	07-Nov-91	Carbon Disulfide	<	5
28-Sep-89	Ethylbenzene	<	5	07-Nov-91	Carbon Tetrachloride		2.2
28-Sep-89	Hardness, Total, As Caco3		680	07-Nov-91	Chlordane	<	30
28-Sep-89	Lead	<	100	07-Nov-91	Chloride		23
28-Sep-89	Mercury	<	0.2	07-Nov-91	Chloroethane	<	2.1
28-Sep-89	Methylene Chloride	<	5	07-Nov-91	Chloroform		1.4
28-Sep-89	Monochlorobenzene	<	5	07-Nov-91	Chloromethane	<	1.6
28-Sep-89	Nitrite Plus Nitrate, Tot		4.3	07-Nov-91	Chromium		11.1
28-Sep-89	N-nitrosodimethylamine	<	10	07-Nov-91	Chrysene	<	20
28-Sep-89	N-nitrosodiphenylamine	<	10	07-Nov-91	Cis-1,3-Dichloropropene	<	5
28-Sep-89	P-Dichlorobenzene	<	100	07-Nov-91	Copper, Total		5.22
28-Sep-89	Sulfate As SO4		25	07-Nov-91	Dibenzo(a,h)anthracene	<	8
28-Sep-89	Tetrachloroethylene	<	5	07-Nov-91	Dibenzofuran	<	10
28-Sep-89	Toluene By Gc-ms	<	5	07-Nov-91	Dibromochloromethane	<	6.5
28-Sep-89	Trans-1,3-Dichloropropene	<	5	07-Nov-91	Dieldrin	<	10
28-Sep-89	Tribromomethane	<	5	07-Nov-91	Diethyl Phthalate	<	10
28-Sep-89	Trichloroethylene	<	5	07-Nov-91	Dimethyl Phthalate	<	10
28-Sep-89	Trichlorotrifluoroethane	<	10	07-Nov-91	Di-n-butyl Phthalate	<	10
28-Sep-89	Vinyl Chloride	<	10	07-Nov-91	Di-n-octyl Phthalate	<	20
12-Mar-90	Alkalinity As Caco3		309	07-Nov-91	Dithiane	<	0.008
12-Mar-90	Cadmium	<	10	07-Nov-91	Endosulfan I	<	30
12-Mar-90	Chloride		25	07-Nov-91	Endosulfan Ii	<	7
12-Mar-90	Chromium	<	10	07-Nov-91	Endosulfan Sulfate	<	7
12-Mar-90	Hardness, Total, As Caco3		416	07-Nov-91	Endrin Aldehyde	<	7
12-Mar-90	Lead	<	2	07-Nov-91	Endrin Ketone	<	7
12-Mar-90	Mercury	<	0.2	07-Nov-91	Ethylbenzene	<	9.3
12-Mar-90	Nitrite Plus Nitrate, Tot		8	07-Nov-91	Fluoranthene	<	20
12-Mar-90	Sulfate As SO4		37	07-Nov-91	Fluorene	<	10
13-Mar-90	1,1,1-Trichloroethane	<	5	07-Nov-91	Gamma-BHC	<	6
13-Mar-90	1,1,2,2-Tetrachloroethane	<	5	07-Nov-91	Hardness, Total, As Caco3		370
13-Mar-90	1,1,2-Trichloroethane	<	5	07-Nov-91	Heptachlor	<	7
13-Mar-90	1,1-Dichloroethane	<	5	07-Nov-91	Heptachlor Epoxide	<	8
13-Mar-90	1,1-Dichloroethylene	<	5	07-Nov-91	Hexachlorobenzene	<	9
13-Mar-90	1,2-Dichlorobenzene	<	100	07-Nov-91	Hexachlorobutadiene	<	20
13-Mar-90	1,2-dichloroethane	<	5	07-Nov-91	Hexachlorocyclopentadiene	<	10
13-Mar-90	1,2-Dichloroethene	<	5	07-Nov-91	Hexachloroethane	<	6
13-Mar-90	1,2-Dichloropropane	<	5	07-Nov-91	Indeno(1,2,3-c,d)pyrene	<	8
13-Mar-90	1,3-Dichlorobenzene	<	100	07-Nov-91	Iron, Dissolved		0.037
13-Mar-90	2-Chloroethylvinyl Ether	<	10	07-Nov-91	Isophorone	<	10
13-Mar-90	Benzene By Gc-ms	<	5	07-Nov-91	Lead	<	4.74
13-Mar-90	Bromodichloromethane	<	5	07-Nov-91	Magnesium, Dissolved		48
13-Mar-90	Bromomethane	<	10	07-Nov-91	Malathion	<	0.008
13-Mar-90	Carbon Tetrachloride	<	5	07-Nov-91	Manganese		12.6
13-Mar-90	Chloroethane	<	10	07-Nov-91	Mercury	<	0.57
13-Mar-90	Chloroform	<	5	07-Nov-91	Methoxychlor	<	30

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
13-Mar-90	Chloromethane	<	10	07-Nov-91	Methylene Chloride		3.9
13-Mar-90	Cis-1,3-Dichloropropene	<	5	07-Nov-91	Methylethylketone	<	10
13-Mar-90	Dibromochloromethane	<	5	07-Nov-91	Monochlorobenzene	<	1.4
13-Mar-90	Di-n-propylnitrosamine	<	10	07-Nov-91	M-Xylene	<	2
13-Mar-90	Ethylbenzene	<	5	07-Nov-91	Naphthalene	<	20
13-Mar-90	Methylene Chloride	<	5	07-Nov-91	Nickel	<	8.76
13-Mar-90	Monochlorobenzene	<	5	07-Nov-91	Nitrite Plus Nitrate, Diss		4.9
13-Mar-90	N-nitrosodiphenylamine	<	10	07-Nov-91	Nitrobenzene	<	10
13-Mar-90	P-Dichlorobenzene	<	100	07-Nov-91	N-nitrosodiphenylamine	<	10
13-Mar-90	Tetrachloroethylene	<	5	07-Nov-91	N-nitrosodiphenylamine	<	0.9
13-Mar-90	Toluene By Gc-ms	<	5	07-Nov-91	O-Xylene	<	2
13-Mar-90	Trans-1,3-Dichloropropene	<	5	07-Nov-91	Parathion	<	5
13-Mar-90	Tribromomethane	<	5	07-Nov-91	P-chloroaniline	<	10
13-Mar-90	Trichloroethylene	<	5	07-Nov-91	P-Chlorophenylmethyl Sulfone	<	0.04
13-Mar-90	Trichlorotrifluoroethane	<	10	07-Nov-91	P-Cresol	<	10
13-Mar-90	Vinyl Chloride	<	10	07-Nov-91	P-Dichlorobenzene	<	5
13-Jun-90	Alkalinity As Caco3		293	07-Nov-91	P-Dichlorobenzene	<	8.1
13-Jun-90	Cadmium	<	10	07-Nov-91	Pentachlorophenol	<	60
13-Jun-90	Chloride		26	07-Nov-91	Phenanthrene	<	20
13-Jun-90	Chromium		2	07-Nov-91	Phenol	<	10
13-Jun-90	Hardness, Total, As Caco3		628	07-Nov-91	Potassium, Dissolved		1.27
13-Jun-90	Lead	<	2	07-Nov-91	Pyrene	<	20
13-Jun-90	Mercury	<	0.2	07-Nov-91	Selenium	<	4.1
13-Jun-90	Nitrite Plus Nitrate, Tot		6.8	07-Nov-91	Silver	<	0.32
13-Jun-90	Sulfate As SO4		22	07-Nov-91	Sodium	<	15
14-Jun-90	1,1,1-Trichloroethane	<	5	07-Nov-91	Styrene	<	5
14-Jun-90	1,1,2,2-Tetrachloroethane	<	5	07-Nov-91	Tetrachloroethylene	<	0.5
14-Jun-90	1,1,2-Trichloroethane	<	5	07-Nov-91	Thallium	<	114
14-Jun-90	1,1-Dichloroethane	<	5	07-Nov-91	Toluene By Gc-ms	<	8.7
14-Jun-90	1,1-Dichloroethylene	<	5	07-Nov-91	Total Dissolved Solids		491
14-Jun-90	1,2-Dichlorobenzene	<	100	07-Nov-91	Trans-1,3-Dichloropropene	<	5
14-Jun-90	1,2-dichloroethane	<	5	07-Nov-91	Tribromomethane	<	8.2
14-Jun-90	1,2-Dichloroethene	<	5	07-Nov-91	Trichloroethylene	<	0.5
14-Jun-90	1,2-Dichloropropane	<	5	07-Nov-91	Vanadium	<	4
14-Jun-90	1,3-Dichlorobenzene	<	100	07-Nov-91	Vinyl Chloride	<	0.5
14-Jun-90	2-Chloroethylvinyl Ether	<	10	07-Nov-91	Zinc	<	19.4
14-Jun-90	Benzene By Gc-ms	<	5	22-Apr-92	1,1,1-Trichloroethane	<	4.1
14-Jun-90	Bromodichloromethane	<	5	22-Apr-92	1,1,2,2-Tetrachloroethane	<	4.7
14-Jun-90	Bromomethane	<	10	22-Apr-92	1,1,2-Trichloroethane	<	0.63
14-Jun-90	Carbon Tetrachloride	<	5	22-Apr-92	1,1-Dichloroethane	<	1.1
14-Jun-90	Chloroethane	<	10	22-Apr-92	1,1-Dichloroethylene	<	1.4
14-Jun-90	Chloroform	<	5	22-Apr-92	1,2,3-Trichlorobenzene	<	3.6
14-Jun-90	Chloromethane	<	10	22-Apr-92	1,2,4-Trichlorobenzene	<	2.8
14-Jun-90	Cis-1,3-Dichloropropene	<	5	22-Apr-92	1,2-Dichlorobenzene	<	9.7
14-Jun-90	Dibromochloromethane	<	5	22-Apr-92	1,2-Dichlorobenzene	<	10
14-Jun-90	Di-n-propylnitrosamine	<	10	22-Apr-92	1,2-dichloroethane	<	7.6
14-Jun-90	Ethylbenzene	<	5	22-Apr-92	1,2-Dichloroethene	<	1.1
14-Jun-90	Methylene Chloride	<	5	22-Apr-92	1,2-Dichloropropane	<	2.8
14-Jun-90	Monochlorobenzene	<	5	22-Apr-92	1,3-Dichlorobenzene	<	8.5
14-Jun-90	N-nitrosodimethylamine	<	10	22-Apr-92	1,3-Dichlorobenzene	<	9.2
14-Jun-90	N-nitrosodiphenylamine	<	10	22-Apr-92	1,3-Dichloropropene	<	3.8
14-Jun-90	P-Dichlorobenzene	<	100	22-Apr-92	2,4,5-Trichlorophenol	<	50
14-Jun-90	Tetrachloroethylene	<	5	22-Apr-92	2,4,6-Trichlorophenol	<	10
14-Jun-90	Toluene By Gc-ms	<	5	22-Apr-92	2,4-Dichlorophenol	<	10
14-Jun-90	Trans-1,3-Dichloropropene	<	5	22-Apr-92	2,4-Dimethylphenol	<	10
14-Jun-90	Tribromomethane	<	5	22-Apr-92	2,4-Dinitrophenol	<	50
14-Jun-90	Trichloroethylene	<	5	22-Apr-92	2,4-Dinitrotoluene	<	1.16
14-Jun-90	Trichlorotrifluoroethane	<	10	22-Apr-92	2,4-Dinitrotoluene	<	5.5
14-Jun-90	Vinyl Chloride	<	10	22-Apr-92	2,6-Dinitrotoluene	<	1.11

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
06-Sep-90	1,1,1-Trichloroethane	<	5	22-Apr-92	2,6-Dinitrotoluene	<	6.6
06-Sep-90	1,1,2,2-Tetrachloroethane	<	5	22-Apr-92	2-Chloroethylvinyl Ether	<	82
06-Sep-90	1,1,2-Trichloroethane	<	5	22-Apr-92	2-Chloronapthalene	<	9.6
06-Sep-90	1,1-Dichloroethane	<	5	22-Apr-92	2-Chlorophenol	<	10
06-Sep-90	1,1-Dichloroethylene	<	5	22-Apr-92	2-Hexanone	<	10
06-Sep-90	1,2-Dichlorobenzene	<	100	22-Apr-92	2-Methylnapthalene	<	10
06-Sep-90	1,2-dichloroethane	<	5	22-Apr-92	2-Methylphenol	<	10
06-Sep-90	1,2-Dichloroethene	<	5	22-Apr-92	2-Nitroaniline	<	50
06-Sep-90	1,2-Dichloropropane	<	5	22-Apr-92	2-Nitrophenol	<	10
06-Sep-90	1,3-Dichlorobenzene	<	100	22-Apr-92	3,3-Dichlorobenzidine	<	6
06-Sep-90	2-Chloroethylvinyl Ether	<	10	22-Apr-92	3-Nitroaniline	<	50
06-Sep-90	Alkalinity As Caco3		287	22-Apr-92	4,6-Dinitro-o-cresol	<	50
06-Sep-90	Benzene By Gc-ms	<	5	22-Apr-92	4-Bromophenyl Phenyl Ether	<	10
06-Sep-90	Bromodichloromethane	<	5	22-Apr-92	4-Chlorophenyl Phenyl Ether	<	10
06-Sep-90	Bromomethane	<	10	22-Apr-92	4-Methyl-2-Pentanone	<	10
06-Sep-90	Cadmium	<	10	22-Apr-92	4-nitroaniline	<	50
06-Sep-90	Carbon Tetrachloride	<	5	22-Apr-92	4-Nitrophenol	<	50
06-Sep-90	Chloride		22	22-Apr-92	Acenapthene	<	14
06-Sep-90	Chloroethane	<	10	22-Apr-92	Acenapthylene	<	19
06-Sep-90	Chloroform	<	5	22-Apr-92	Acetone	<	10
06-Sep-90	Chloromethane	<	10	22-Apr-92	Acid, Acetic	<	0.01
06-Sep-90	Chromium		1	22-Apr-92	Aldrin	<	12
06-Sep-90	Cis-1,3-Dichloropropene	<	5	22-Apr-92	Alkalinity, Carbonate		296
06-Sep-90	Dibromochloromethane	<	5	22-Apr-92	Aluminum, Dissolved	<	250
06-Sep-90	Di-n-propylnitrosamine	<	10	22-Apr-92	Anthracene	<	20
06-Sep-90	Ethylbenzene	<	5	22-Apr-92	Antimony	<	51.2
06-Sep-90	Hardness, Total, As Caco3		529	22-Apr-92	Arsenic	<	3.09
06-Sep-90	Lead	<	2	22-Apr-92	Barium		37.4
06-Sep-90	Mercury	<	0.2	22-Apr-92	Benzene By Gc-ms	<	2.4
06-Sep-90	Methylene Chloride	<	5	22-Apr-92	Benzo(a)anthracene	<	14
06-Sep-90	Monochlorobenzene	<	5	22-Apr-92	Benzo(a)pyrene	<	10
06-Sep-90	Nitrite Plus Nitrate, Tot		6.3	22-Apr-92	Benzo(b)fluoranthene	<	23
06-Sep-90	N-nitrosodimethylamine	<	10	22-Apr-92	Benzo(g,h,i)perylene	<	7.1
06-Sep-90	N-nitrosodiphenylamine	<	10	22-Apr-92	Benzo(k)fluoranthene	<	21
06-Sep-90	P-Dichlorobenzene	<	100	22-Apr-92	Benzoic Acid	<	50
06-Sep-90	Sulfate As SO4		26	22-Apr-92	Benzyl Alcohol	<	10
06-Sep-90	Tetrachloroethylene	<	5	22-Apr-92	Beryllium	<	0.34
06-Sep-90	Toluene By Gc-ms	<	5	22-Apr-92	Bhc-alpha	<	6.8
06-Sep-90	Trans-1,3-Dichloropropene	<	5	22-Apr-92	Bhc-beta	<	4.9
06-Sep-90	Tribromomethane	<	5	22-Apr-92	Bhc-delta	<	6.4
06-Sep-90	Trichloroethylene	<	5	22-Apr-92	Bis(2-chloroethoxy)methane	<	10
06-Sep-90	Trichlorotrifluoroethane	<	10	22-Apr-92	Bis(2-chloroethyl) ether	<	8.1
06-Sep-90	Vinyl Chloride	<	10	22-Apr-92	Bis(2-chloroisopropyl)ether	<	10
26-Dec-90	1,1,1-Trichloroethane	<	5	22-Apr-92	Bis(2-ethylhexyl)phthalate		61
26-Dec-90	1,1,2,2-Tetrachloroethane	<	5	22-Apr-92	Bromodichloromethane	<	7.9
26-Dec-90	1,1,2-Trichloroethane	<	5	22-Apr-92	Bromomethane	<	10
26-Dec-90	1,1-Dichloroethane	<	5	22-Apr-92	Butylbenzylphthalate	<	10
26-Dec-90	1,1-Dichloroethylene	<	5	22-Apr-92	Cadmium	<	2.67
26-Dec-90	1,2-Dichlorobenzene	<	100	22-Apr-92	Carbon Disulfide	<	5
26-Dec-90	1,2-dichloroethane	<	5	22-Apr-92	Carbon Tetrachloride		2.9
26-Dec-90	1,2-Dichloroethene	<	5	22-Apr-92	Chlordane	<	30
26-Dec-90	1,2-Dichloropropane	<	5	22-Apr-92	Chloride		24
26-Dec-90	1,3-Dichlorobenzene	<	100	22-Apr-92	Chloroethane	<	2.1
26-Dec-90	2-Chloroethylvinyl Ether	<	10	22-Apr-92	Chloroform		0.5
26-Dec-90	Alkalinity As Caco3		314	22-Apr-92	Chloromethane	<	1.6
26-Dec-90	Benzene By Gc-ms	<	5	22-Apr-92	Chromium	<	4.47
26-Dec-90	Bromodichloromethane	<	5	22-Apr-92	Chrysene	<	15
26-Dec-90	Bromomethane	<	10	22-Apr-92	Cis-1,3-Dichloropropene	<	5
26-Dec-90	Cadmium	<	10	22-Apr-92	Copper, Total		4.58

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
26-Dec-90	Carbon Tetrachloride	<	5	22-Apr-92	Dibenzo(a,h)anthracene	<	7.5
26-Dec-90	Chloride		17	22-Apr-92	Dibenzofuran	<	10
26-Dec-90	Chloroethane	<	10	22-Apr-92	Dibromochloromethane	<	6.5
26-Dec-90	Chloroform	<	5	22-Apr-92	Dieldrin	<	11
26-Dec-90	Chloromethane	<	10	22-Apr-92	Diethyl Phthalate	<	10
26-Dec-90	Chromium	<	1	22-Apr-92	Dimethyl Phthalate	<	10
26-Dec-90	Cis-1,3-Dichloropropene	<	5	22-Apr-92	Di-n-butyl Phthalate	<	10
26-Dec-90	Dibromochloromethane	<	5	22-Apr-92	Di-n-octyl Phthalate	<	15
26-Dec-90	Di-n-propylnitrosamine	<	10	22-Apr-92	Dithiane	<	0.0077
26-Dec-90	Ethylbenzene	<	5	22-Apr-92	Endosulfan I	<	30
26-Dec-90	Hardness, Total, As Caco3		1337	22-Apr-92	Endosulfan Ii	<	6
26-Dec-90	Lead	<	2	22-Apr-92	Endosulfan Sulfate	<	6
26-Dec-90	Mercury	<	0.2	22-Apr-92	Endrin Aldehyde	<	6.6
26-Dec-90	Methylene Chloride	<	5	22-Apr-92	Endrin Ketone	<	6
26-Dec-90	Monochlorobenzene	<	5	22-Apr-92	Ethylbenzene	<	9.3
26-Dec-90	Nitrite Plus Nitrate, Tot		6.7	22-Apr-92	Fluoranthene	<	20
26-Dec-90	N-nitrosodimethylamine	<	10	22-Apr-92	Fluorene	<	10
26-Dec-90	N-nitrosodiphenylamine	<	10	22-Apr-92	Gamma-BHC	<	5.8
26-Dec-90	P-Dichlorobenzene	<	100	22-Apr-92	Hardness, Total, As Caco3		367
26-Dec-90	Sulfate As SO4		31	22-Apr-92	Heptachlor	<	6.2
26-Dec-90	Tetrachloroethylene	<	5	22-Apr-92	Heptachlor Epoxide	<	7.2
26-Dec-90	Toluene By Gc-ms	<	5	22-Apr-92	Hexachlorobenzene	<	8.3
26-Dec-90	Trans-1,3-Dichloropropene	<	5	22-Apr-92	Hexachlorobutadiene	<	18
26-Dec-90	Tribromomethane	<	5	22-Apr-92	Hexachlorocyclopentadiene	<	10
26-Dec-90	Trichloroethylene	<	5	22-Apr-92	Hexachloroethane	<	5.1
26-Dec-90	Trichlorotrifluoroethane	<	10	22-Apr-92	Indeno(1,2,3-c,d)pyrene	<	7.2
26-Dec-90	Vinyl Chloride	<	10	22-Apr-92	Iron, Dissolved	<	0.0246
23-Mar-91	1,1,1-Trichloroethane	<	5	22-Apr-92	Isophorone	<	10
23-Mar-91	1,1,2,2-Tetrachloroethane	<	5	22-Apr-92	Lead	<	4.74
23-Mar-91	1,1,2-Trichloroethane	<	5	22-Apr-92	Magnesium, Dissolved		45
23-Mar-91	1,1-Dichloroethane	<	5	22-Apr-92	Malathion	<	0.0073
23-Mar-91	1,1-Dichloroethylene	<	5	22-Apr-92	Manganese	<	6.88
23-Mar-91	1,2-Dichlorobenzene	<	100	22-Apr-92	Mercury	<	0.57
23-Mar-91	1,2-dichloroethane	<	5	22-Apr-92	Methoxychlor	<	30
23-Mar-91	1,2-Dichloroethene	<	5	22-Apr-92	Methylene Chloride		5.1
23-Mar-91	1,2-Dichloropropane	<	5	22-Apr-92	Methylethylketone	<	10
23-Mar-91	1,3-Dichlorobenzene	<	100	22-Apr-92	Monochlorobenzene	<	1.4
23-Mar-91	2,4-Dinitrotoluene	<	5	22-Apr-92	M-Xylene	<	5
23-Mar-91	2,6-Dinitrotoluene	<	5	22-Apr-92	Naphthalene	<	17
23-Mar-91	2-Chloroethylvinyl Ether	<	10	22-Apr-92	Nickel	<	8.76
23-Mar-91	Alkalinity As Caco3		296	22-Apr-92	Nitrite Plus Nitrate, Diss		4.9
23-Mar-91	Benzene By Gc-ms	<	5	22-Apr-92	Nitrobenzene	<	10
23-Mar-91	Bromodichloromethane	<	5	22-Apr-92	N-nitrosodiphenylamine	<	0.9
23-Mar-91	Bromomethane	<	10	22-Apr-92	N-nitrosodiphenylamine	<	10
23-Mar-91	Cadmium	<	1	22-Apr-92	O-Xylene	<	5
23-Mar-91	Carbon Tetrachloride	<	5	22-Apr-92	Parathion	<	4.7
23-Mar-91	Chloride		20	22-Apr-92	P-chloroaniline	<	10
23-Mar-91	Chloroethane	<	10	22-Apr-92	P-Chlorophenylmethyl Sulfone	<	0.038
23-Mar-91	Chloroform	<	5	22-Apr-92	P-Cresol	<	10
23-Mar-91	Chloromethane	<	10	22-Apr-92	P-Dichlorobenzene	<	4.4
23-Mar-91	Chromium	<	1	22-Apr-92	P-Dichlorobenzene	<	8.1
23-Mar-91	Cis-1,3-Dichloropropene	<	5	22-Apr-92	Pentachlorophenol	<	50
23-Mar-91	Dibromochloromethane	<	5	22-Apr-92	Phenanthrene	<	22
23-Mar-91	Di-n-propylnitrosamine	<	10	22-Apr-92	Phenol	<	10
23-Mar-91	Ethylbenzene	<	5	22-Apr-92	Potassium, Dissolved		1.48
23-Mar-91	Hardness, Total, As Caco3		953	22-Apr-92	Pyrene	<	17
23-Mar-91	Lead	<	2	22-Apr-92	Selenium	<	3.09
23-Mar-91	Mercury	<	0.2	22-Apr-92	Silver	<	26.8
23-Mar-91	Methylene Chloride		5.4	22-Apr-92	Sodium		12

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
23-Mar-91	Monochlorobenzene	<	5	22-Apr-92	Styrene	<	5
23-Mar-91	Nitrite Plus Nitrate, Tot		6.5	22-Apr-92	Sulfate As SO4		47
23-Mar-91	N-nitrosodimethylamine	<	10	22-Apr-92	Tetrachloroethylene	<	0.5
23-Mar-91	N-nitrosodiphenylamine	<	10	22-Apr-92	Thallium	<	7.5
23-Mar-91	P-Dichlorobenzene	<	100	22-Apr-92	Toluene By Gc-ms	<	8.7
23-Mar-91	Sulfate As SO4		53	22-Apr-92	Total Dissolved Solids		405
23-Mar-91	Tetrachloroethylene	<	5	22-Apr-92	Trans-1,3-Dichloropropene	<	5
23-Mar-91	Toluene By Gc-ms	<	5	22-Apr-92	Tribromomethane	<	8.2
23-Mar-91	Trans-1,3-Dichloropropene	<	5	22-Apr-92	Trichloroethylene	<	0.5
23-Mar-91	Tribromomethane	<	5	22-Apr-92	Vanadium		15.4
23-Mar-91	Trichloroethylene	<	5	22-Apr-92	Vinyl Chloride	<	0.5
23-Mar-91	Trichlorotrifluoroethane	<	10	22-Apr-92	Zinc	<	19.4
23-Mar-91	Vinyl Chloride	<	10	16-Jun-92	1,1,1-Trichloroethane	<	5
20-Jun-91	1,1,1-Trichloroethane	<	5	16-Jun-92	1,1,2,2-Tetrachloroethane	<	5
20-Jun-91	1,1,2,2-Tetrachloroethane	<	5	16-Jun-92	1,1,2-Trichloroethane	<	5
20-Jun-91	1,1,2-Trichloroethane	<	5	16-Jun-92	1,1-Dichloroethane	<	5
20-Jun-91	1,1-Dichloroethane	<	5	16-Jun-92	1,1-Dichloroethylene	<	5
20-Jun-91	1,1-Dichloroethylene	<	5	16-Jun-92	1,2,4-Trichlorobenzene	<	10
20-Jun-91	1,2-Dichlorobenzene	<	100	16-Jun-92	1,2-Dichlorobenzene	<	100
20-Jun-91	1,2-dichloroethane	<	5	16-Jun-92	1,2-dichloroethane	<	5
20-Jun-91	1,2-Dichloroethene	<	5	16-Jun-92	1,2-Dichloroethene	<	5
20-Jun-91	1,2-Dichloropropane	<	5	16-Jun-92	1,2-Dichloropropane	<	5
20-Jun-91	1,3-Dichlorobenzene	<	100	16-Jun-92	1,3-Dichlorobenzene	<	100
20-Jun-91	2,4-Dinitrotoluene	<	5	16-Jun-92	2,4,6-Trichlorophenol	<	10
20-Jun-91	2,6-Dinitrotoluene	<	5	16-Jun-92	2,4-Dichlorophenol	<	10
20-Jun-91	2-Chloroethylvinyl Ether	<	10	16-Jun-92	2,4-Dimethylphenol	<	10
20-Jun-91	Alkalinity As Caco3		282	16-Jun-92	2,4-Dinitrophenol	<	50
20-Jun-91	Benzene By Gc-ms	<	5	16-Jun-92	2,4-Dinitrotoluene	<	5
20-Jun-91	Bromodichloromethane	<	5	16-Jun-92	2,4-Dinitrotoluene	<	10
20-Jun-91	Bromomethane	<	10	16-Jun-92	2,6-Dinitrotoluene	<	5
20-Jun-91	Cadmium	<	1	16-Jun-92	2,6-Dinitrotoluene	<	10
20-Jun-91	Carbon Tetrachloride	<	5	16-Jun-92	2-Chloroethylvinyl Ether	<	10
20-Jun-91	Chloride		14	16-Jun-92	2-Chloronapthalene	<	10
20-Jun-91	Chloroethane	<	10	16-Jun-92	2-Chlorophenol	<	10
20-Jun-91	Chloroform	<	5	16-Jun-92	2-Nitrophenol	<	10
20-Jun-91	Chloromethane	<	10	16-Jun-92	3,3-Dichlorobenzidine	<	20
20-Jun-91	Chromium	<	1	16-Jun-92	4,6-Dinitro-o-cresol	<	50
20-Jun-91	Cis-1,3-Dichloropropene	<	5	16-Jun-92	4-Bromophenyl Phenyl Ether	<	10
20-Jun-91	Dibromochloromethane	<	5	16-Jun-92	4-Chlorophenyl Phenyl Ether	<	10
20-Jun-91	Di-n-propylnitrosamine	<	10	16-Jun-92	4-Nitrophenol	<	50
20-Jun-91	Ethylbenzene	<	5	16-Jun-92	Acenapthene	<	10
20-Jun-91	Hardness, Total, As Caco3		364	16-Jun-92	Acenapthylene	<	10
20-Jun-91	Lead	<	2	16-Jun-92	Alkalinity As Caco3		307
20-Jun-91	Mercury	<	0.2	16-Jun-92	Aluminum, Dissolved	<	10
20-Jun-91	Methylene Chloride	<	5	16-Jun-92	Aluminum, Total		1021
20-Jun-91	Monochlorobenzene	<	5	16-Jun-92	Anthracene	<	10
20-Jun-91	Nitrite Plus Nitrate, Tot		5.8	16-Jun-92	Antimony	<	30
20-Jun-91	N-nitrosodimethylamine	<	10	16-Jun-92	Antimony, Total	<	30
20-Jun-91	N-nitrosodiphenylamine	<	10	16-Jun-92	Arsenic	<	10
20-Jun-91	P-Dichlorobenzene	<	100	16-Jun-92	Arsenic, Total	<	10
20-Jun-91	Sulfate As SO4		22	16-Jun-92	Barium		75
20-Jun-91	Tetrachloroethylene	<	5	16-Jun-92	Barium, Total		106
20-Jun-91	Toluene By Gc-ms	<	5	16-Jun-92	Benzene By Gc-ms	<	5
20-Jun-91	Trans-1,3-Dichloropropene	<	5	16-Jun-92	Benzidine	<	50
20-Jun-91	Tribromomethane	<	5	16-Jun-92	Benzo(a)anthracene	<	10
20-Jun-91	Trichloroethylene	<	5	16-Jun-92	Benzo(a)pyrene	<	10
20-Jun-91	Trichlorotrifluoroethane	<	10	16-Jun-92	Benzo(b)fluoranthene	<	10
20-Jun-91	Vinyl Chloride	<	10	16-Jun-92	Benzo(g,h,i)perylene	<	10
23-Sep-91	1,1,1-Trichloroethane	<	5	16-Jun-92	Benzo(k)fluoranthene	<	10

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
23-Sep-91	1,1,2,2-Tetrachloroethane	<	5	16-Jun-92	Beryllium	<	5
23-Sep-91	1,1,2-Trichloroethane	<	5	16-Jun-92	Beryllium, Total	<	5
23-Sep-91	1,1-Dichloroethane	<	5	16-Jun-92	Bis(2-chloroethoxy)methane	<	10
23-Sep-91	1,1-Dichloroethylene	<	5	16-Jun-92	Bis(2-chloroethyl) ether	<	10
23-Sep-91	1,2-Dichlorobenzene	<	100	16-Jun-92	Bis(2-chloroisopropyl)ether	<	10
23-Sep-91	1,2-dichloroethane	<	5	16-Jun-92	Bis(2-ethylhexyl)phthalate		190
23-Sep-91	1,2-Dichloroethene	<	5	16-Jun-92	Bromodichloromethane	<	5
23-Sep-91	1,2-Dichloropropane	<	5	16-Jun-92	Bromomethane	<	10
23-Sep-91	1,3-Dichlorobenzene	<	100	16-Jun-92	Butylbenzylphthalate	<	10
23-Sep-91	2,4-Dinitrotoluene	<	5	16-Jun-92	Cadmium	<	1
23-Sep-91	2,6-Dinitrotoluene	<	5	16-Jun-92	Cadmium, Total	<	1
23-Sep-91	2-Chloroethylvinyl Ether	<	10	16-Jun-92	Calcium		82
23-Sep-91	Alkalinity As Caco3		221	16-Jun-92	Calcium, Total		74.9
23-Sep-91	Benzene By Gc-ms	<	5	16-Jun-92	Carbon Tetrachloride	<	5
23-Sep-91	Bromodichloromethane	<	5	16-Jun-92	Chloride		20
23-Sep-91	Bromomethane	<	10	16-Jun-92	Chloroethane	<	10
23-Sep-91	Cadmium	<	1	16-Jun-92	Chloroform	<	5
23-Sep-91	Carbon Tetrachloride	<	5	16-Jun-92	Chloromethane	<	10
23-Sep-91	Chloride		13	16-Jun-92	Chromium	<	1
23-Sep-91	Chloroethane	<	10	16-Jun-92	Chromium, Total		3
23-Sep-91	Chloroform	<	5	16-Jun-92	Chrysene	<	10
23-Sep-91	Chloromethane	<	10	16-Jun-92	Cis-1,3-Dichloropropene	<	5
23-Sep-91	Chromium		2	16-Jun-92	Cobalt, Dissolved	<	10
23-Sep-91	Cis-1,3-Dichloropropene	<	5	16-Jun-92	Cobalt, Total	<	10
23-Sep-91	Dibromochloromethane	<	5	16-Jun-92	Copper	<	10
23-Sep-91	Di-n-propylnitrosamine	<	10	16-Jun-92	Copper, Total	<	10
23-Sep-91	Ethylbenzene	<	5	16-Jun-92	Dibenzo(a,h)anthracene	<	10
23-Sep-91	Hardness, Total, As Caco3		754	16-Jun-92	Dibromochloromethane	<	5
23-Sep-91	Lead	<	2	16-Jun-92	Diethyl Phthalate	<	10
23-Sep-91	Mercury	<	0.2	16-Jun-92	Dimethyl Phthalate	<	10
23-Sep-91	Methylene Chloride		5.6	16-Jun-92	Di-n-butyl Phthalate	<	10
23-Sep-91	Monochlorobenzene	<	5	16-Jun-92	Di-n-octyl Phthalate	<	10
23-Sep-91	Nitrite Plus Nitrate, Tot		4.8	16-Jun-92	Di-n-propylnitrosamine	<	10
23-Sep-91	N-nitrosodimethylamine	<	10	16-Jun-92	Ethylbenzene	<	5
23-Sep-91	N-nitrosodiphenylamine	<	10	16-Jun-92	Fluoranthene	<	10
23-Sep-91	P-Dichlorobenzene	<	100	16-Jun-92	Fluorene	<	10
23-Sep-91	Sulfate As SO4		22	16-Jun-92	Hardness, Total, As Caco3		329
23-Sep-91	Tetrachloroethylene	<	5	16-Jun-92	Hexachlorobenzene	<	10
23-Sep-91	Toluene By Gc-ms	<	5	16-Jun-92	Hexachlorobutadiene	<	10
23-Sep-91	Trans-1,3-Dichloropropene	<	5	16-Jun-92	Hexachlorocyclopentadiene	<	10
23-Sep-91	Tribromomethane	<	5	16-Jun-92	Hexachloroethane	<	10
23-Sep-91	Trichloroethylene	<	5	16-Jun-92	Indeno(1,2,3-c,d)pyrene	<	10
23-Sep-91	Trichlorotrifluoroethane	<	10	16-Jun-92	Iron, Dissolved	<	0.1
23-Sep-91	Vinyl Chloride	<	10	16-Jun-92	Iron, Total		0.9
06-Nov-91	1,1,1-Trichloroethane	<	4.1	16-Jun-92	Isophorone	<	10
06-Nov-91	1,1,2,2-Tetrachloroethane	<	4.7	16-Jun-92	Lead	<	2
06-Nov-91	1,1,2-Trichloroethane	<	0.63	16-Jun-92	Lead, Total		2
06-Nov-91	1,1-Dichloroethane	<	1.1	16-Jun-92	Magnesium, Dissolved		58.4
06-Nov-91	1,1-Dichloroethylene	<	1.4	16-Jun-92	Magnesium, Total		53
06-Nov-91	1,2-Dichlorobenzene	<	9.7	16-Jun-92	Manganese	<	10
06-Nov-91	1,2-dichloroethane	<	7.6	16-Jun-92	Manganese, Total		311
06-Nov-91	1,2-Dichloroethene	<	1.1	16-Jun-92	Mercury	<	0.2
06-Nov-91	1,2-Dichloropropane	<	2.8	16-Jun-92	Mercury, Total	<	0.2
06-Nov-91	1,3-Dichlorobenzene	<	9.2	16-Jun-92	Methylene Chloride	<	5
06-Nov-91	1,3-Dichloropropene	<	3.8	16-Jun-92	Monochlorobenzene	<	5
06-Nov-91	2,4-Dinitrotoluene	<	1.16	16-Jun-92	Naphthalene	<	10
06-Nov-91	2,6-Dinitrotoluene	<	1.11	16-Jun-92	Nickel	<	30
06-Nov-91	2-Chloroethylvinyl Ether	<	82	16-Jun-92	Nickel, Total	<	30
06-Nov-91	2-Hexanone	<	10	16-Jun-92	Nitrite Plus Nitrate, Tot		4.8

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
06-Nov-91	4-Methyl-2-Pentanone	<	10	16-Jun-92	Nitrobenzene	<	10
06-Nov-91	Acetone	<	10	16-Jun-92	N-nitrosodimethylamine	<	10
06-Nov-91	Acid, Acetic	<	0.01	16-Jun-92	N-nitrosodiphenylamine	<	10
06-Nov-91	Alkalinity, Carbonate		294	16-Jun-92	P-chloro-m-cresol	<	10
06-Nov-91	Benzene By Gc-ms	<	2.4	16-Jun-92	P-Dichlorobenzene	<	100
06-Nov-91	Bromodichloromethane	<	7.9	16-Jun-92	Pentachlorophenol	<	50
06-Nov-91	Bromomethane	<	10	16-Jun-92	Phenanthrene	<	10
06-Nov-91	Cadmium	<	5.3	16-Jun-92	Phenol	<	10
06-Nov-91	Carbon Disulfide	<	5	16-Jun-92	Potassium, Dissolved		1.7
06-Nov-91	Carbon Tetrachloride	<	3.7	16-Jun-92	Potassium, Total		1.8
06-Nov-91	Chloride		10	16-Jun-92	Pyrene	<	10
06-Nov-91	Chloroethane	<	2.1	16-Jun-92	Selenium	<	1
06-Nov-91	Chloroform	<	0.83	16-Jun-92	Selenium, Total	<	1
06-Nov-91	Chloromethane	<	1.6	16-Jun-92	Silver	<	10
06-Nov-91	Chromium	<	8.9	16-Jun-92	Silver, Total	<	10
06-Nov-91	Cis-1,3-Dichloropropene	<	5	16-Jun-92	Sodium		8.7
06-Nov-91	Dibromochloromethane	<	6.5	16-Jun-92	Sodium, Total		8.5
06-Nov-91	Ethylbenzene	<	9.3	16-Jun-92	Sulfate As SO4		44
06-Nov-91	Hardness, Total, As Caco3		314	16-Jun-92	Tetrachloroethylene	<	5
06-Nov-91	Lead		10.5	16-Jun-92	Thallium	<	2
06-Nov-91	Mercury	<	0.57	16-Jun-92	Thallium, Total	<	2
06-Nov-91	Methylene Chloride		4.1	16-Jun-92	Toluene By Gc-ms	<	5
06-Nov-91	Methylethylketone	<	10	16-Jun-92	Total Dissolved Solids		494
06-Nov-91	Monochlorobenzene	<	1.4	16-Jun-92	Trans-1,3-Dichloropropene	<	5
06-Nov-91	M-Xylene	<	2	16-Jun-92	Tribromomethane	<	5
06-Nov-91	Nitrite Plus Nitrate, Diss		6	16-Jun-92	Trichloroethylene	<	5
06-Nov-91	N-nitrosodiphenylamine	<	0.9	16-Jun-92	Trichlorotrifluoroethane	<	10
06-Nov-91	O-Xylene	<	2	16-Jun-92	Vanadium	<	5
06-Nov-91	P-Dichlorobenzene	<	8.1	16-Jun-92	Vanadium, Total	<	5
06-Nov-91	Styrene	<	5	16-Jun-92	Vinyl Chloride	<	10
06-Nov-91	Tetrachloroethylene	<	0.5	16-Jun-92	Zinc		28
06-Nov-91	Toluene By Gc-ms	<	8.7	16-Jun-92	Zinc, Total		32
06-Nov-91	Total Dissolved Solids		436	24-Sep-92	1,1,1-Trichloroethane	<	5
06-Nov-91	Trans-1,3-Dichloropropene	<	5	24-Sep-92	1,1,2,2-Tetrachloroethane	<	5
06-Nov-91	Tribromomethane	<	8.2	24-Sep-92	1,1,2-Trichloroethane	<	5
06-Nov-91	Trichloroethylene	<	0.5	24-Sep-92	1,1-Dichloroethane	<	5
06-Nov-91	Vinyl Chloride	<	0.5	24-Sep-92	1,1-Dichloroethylene	<	5
16-Dec-91	1,1,1-Trichloroethane	<	5	24-Sep-92	1,2,4-Trichlorobenzene	<	10
16-Dec-91	1,1,2,2-Tetrachloroethane	<	5	24-Sep-92	1,2-Dichlorobenzene	<	5
16-Dec-91	1,1,2-Trichloroethane	<	5	24-Sep-92	1,2-Dichlorobenzene	<	10
16-Dec-91	1,1-Dichloroethane	<	5	24-Sep-92	1,2-dichloroethane	<	5
16-Dec-91	1,1-Dichloroethylene	<	5	24-Sep-92	1,2-Dichloroethene	<	5
16-Dec-91	1,2-Dichlorobenzene	<	100	24-Sep-92	1,2-Dichloropropane	<	5
16-Dec-91	1,2-dichloroethane	<	5	24-Sep-92	1,3-Dichlorobenzene	<	10
16-Dec-91	1,2-Dichloroethene	<	5	24-Sep-92	1,3-Dichlorobenzene	<	5
16-Dec-91	1,2-Dichloropropane	<	5	24-Sep-92	2,4,6-Trichlorophenol	<	10
16-Dec-91	1,3-Dichlorobenzene	<	100	24-Sep-92	2,4-Dichlorophenol	<	10
16-Dec-91	2,4-Dinitrotoluene	<	5	24-Sep-92	2,4-Dimethylphenol	<	10
16-Dec-91	2,6-Dinitrotoluene	<	5	24-Sep-92	2,4-Dinitrophenol	<	20
16-Dec-91	2-Chloroethylvinyl Ether	<	10	24-Sep-92	2,4-Dinitrotoluene	<	0.05
16-Dec-91	Alkalinity As Caco3		322	24-Sep-92	2,6-Dinitrotoluene	<	0.05
16-Dec-91	Benzene By Gc-ms	<	5	24-Sep-92	2-Chloroethylvinyl Ether	<	10
16-Dec-91	Bromodichloromethane	<	5	24-Sep-92	2-Chloronapthalene	<	10
16-Dec-91	Bromomethane	<	10	24-Sep-92	2-Chlorophenol	<	10
16-Dec-91	Cadmium	<	1	24-Sep-92	2-Nitrophenol	<	10
16-Dec-91	Carbon Tetrachloride	<	5	24-Sep-92	3,3-Dichlorobenzidine	<	20
16-Dec-91	Chloride		12	24-Sep-92	4,6-Dinitro-o-cresol	<	20
16-Dec-91	Chloroethane	<	10	24-Sep-92	4-Bromophenyl Phenyl Ether	<	10
16-Dec-91	Chloroform	<	5	24-Sep-92	4-Chlorophenyl Phenyl Ether	<	10

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
16-Dec-91	Chloromethane	<	10	24-Sep-92	4-Nitrophenol	<	20
16-Dec-91	Chromium	<	1	24-Sep-92	Acenapthene	<	10
16-Dec-91	Cis-1,3-Dichloropropene	<	5	24-Sep-92	Acenapthylene	<	10
16-Dec-91	Dibromochloromethane	<	5	24-Sep-92	Acrolein	<	50
16-Dec-91	Di-n-propylnitrosamine	<	10	24-Sep-92	Acrylonitrile	<	70
16-Dec-91	Ethylbenzene	<	5	24-Sep-92	Alkalinity As Caco3		302
16-Dec-91	Hardness, Total, As Caco3		518	24-Sep-92	Aluminum, Dissolved		67
16-Dec-91	Lead	<	2	24-Sep-92	Aluminum, Total		24675
16-Dec-91	Mercury	<	0.2	24-Sep-92	Anthracene	<	10
16-Dec-91	Methylene Chloride	<	5	24-Sep-92	Antimony	<	10
16-Dec-91	Monochlorobenzene	<	5	24-Sep-92	Antimony, Total	<	10
16-Dec-91	Nitrite Plus Nitrate, Tot		6.7	24-Sep-92	Arsenic	<	10
16-Dec-91	N-nitrosodimethylamine	<	10	24-Sep-92	Arsenic, Total		15
16-Dec-91	N-nitrosodiphenylamine	<	10	24-Sep-92	Barium		36
16-Dec-91	P-Dichlorobenzene	<	100	24-Sep-92	Barium, Total		367
16-Dec-91	Sulfate As SO4		18	24-Sep-92	Benzene By Gc-ms	<	5
16-Dec-91	Tetrachloroethylene	<	5	24-Sep-92	Benzidine	<	20
16-Dec-91	Toluene By Gc-ms	<	5	24-Sep-92	Benzo(a)anthracene	<	10
16-Dec-91	Trans-1,3-Dichloropropene	<	5	24-Sep-92	Benzo(a)pyrene	<	10
16-Dec-91	Tribromomethane	<	5	24-Sep-92	Benzo(b)fluoranthene	<	10
16-Dec-91	Trichloroethylene	<	5	24-Sep-92	Benzo(g,h,i)perylene	<	10
16-Dec-91	Trichlorotrifluoroethane	<	10	24-Sep-92	Benzo(k)fluoranthene	<	10
16-Dec-91	Vinyl Chloride	<	10	24-Sep-92	Beryllium	<	5
19-Mar-92	1,1,1-Trichloroethane	<	5	24-Sep-92	Beryllium, Total	<	5
19-Mar-92	1,1,2,2-Tetrachloroethane	<	5	24-Sep-92	Bis(2-chloroethoxy)methane	<	10
19-Mar-92	1,1,2-Trichloroethane	<	5	24-Sep-92	Bis(2-chloroethyl) ether	<	10
19-Mar-92	1,1-Dichloroethane	<	5	24-Sep-92	Bis(2-chloroisopropyl)ether	<	10
19-Mar-92	1,1-Dichloroethylene	<	5	24-Sep-92	Bis(2-ethylhexyl)phthalate	<	10
19-Mar-92	1,2-Dichlorobenzene	<	100	24-Sep-92	Bromodichloromethane	<	5
19-Mar-92	1,2-dichloroethane	<	5	24-Sep-92	Bromomethane	<	10
19-Mar-92	1,2-Dichloroethene	<	5	24-Sep-92	Butylbenzylphthalate	<	10
19-Mar-92	1,2-Dichloropropane	<	5	24-Sep-92	Cadmium	<	1
19-Mar-92	1,3-Dichlorobenzene	<	100	24-Sep-92	Cadmium, Total		2
19-Mar-92	2,4-Dinitrotoluene	<	5	24-Sep-92	Calcium		73.7
19-Mar-92	2,6-Dinitrotoluene	<	5	24-Sep-92	Calcium, Total		88.9
19-Mar-92	2-Chloroethylvinyl Ether	<	10	24-Sep-92	Carbon Tetrachloride		4
19-Mar-92	Alkalinity As Caco3		300	24-Sep-92	Chloride		19
19-Mar-92	Benzene By Gc-ms	<	5	24-Sep-92	Chloroethane	<	10
19-Mar-92	Bromodichloromethane	<	5	24-Sep-92	Chloroform	<	5
19-Mar-92	Bromomethane	<	10	24-Sep-92	Chloromethane	<	10
19-Mar-92	Cadmium	<	1	24-Sep-92	Chromium	<	1
19-Mar-92	Carbon Tetrachloride	<	5	24-Sep-92	Chromium, Total		32
19-Mar-92	Chloride		8	24-Sep-92	Chrysene	<	10
19-Mar-92	Chloroethane	<	10	24-Sep-92	Cis-1,3-Dichloropropene	<	5
19-Mar-92	Chloroform	<	5	24-Sep-92	Cobalt, Dissolved	<	10
19-Mar-92	Chloromethane	<	10	24-Sep-92	Cobalt, Total		17
19-Mar-92	Chromium	<	1	24-Sep-92	Copper	<	10
19-Mar-92	Cis-1,3-Dichloropropene	<	5	24-Sep-92	Copper, Total		186
19-Mar-92	Dibromochloromethane	<	5	24-Sep-92	Dibenzo(a,h)anthracene	<	10
19-Mar-92	Di-n-propylnitrosamine	<	10	24-Sep-92	Dibromochloromethane	<	5
19-Mar-92	Ethylbenzene	<	5	24-Sep-92	Diethyl Phthalate	<	10
19-Mar-92	Hardness, Total, As Caco3		412	24-Sep-92	Dimethyl Phthalate	<	10
19-Mar-92	Lead	<	2	24-Sep-92	Di-n-butyl Phthalate	<	10
19-Mar-92	Mercury	<	0.2	24-Sep-92	Di-n-octyl Phthalate	<	10
19-Mar-92	Methylene Chloride	<	5	24-Sep-92	Di-n-propylnitrosamine	<	10
19-Mar-92	Monochlorobenzene	<	5	24-Sep-92	Ethylbenzene	<	5
19-Mar-92	Nitrite Plus Nitrate, Tot		5.6	24-Sep-92	Fluoranthene	<	10
19-Mar-92	N-nitrosodimethylamine	<	10	24-Sep-92	Fluorene	<	10
19-Mar-92	N-nitrosodiphenylamine	<	10	24-Sep-92	Fluorotrichloromethane	<	5

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
19-Mar-92	P-Dichlorobenzene	<	100	24-Sep-92	Hardness, Total, As Caco3		682
19-Mar-92	Sulfate As SO4		20	24-Sep-92	Hexachlorobenzene	<	10
19-Mar-92	Tetrachloroethylene	<	5	24-Sep-92	Hexachlorobutadiene	<	10
19-Mar-92	Toluene By Gc-ms	<	5	24-Sep-92	Hexachlorocyclopentadiene	<	10
19-Mar-92	Trans-1,3-Dichloropropene	<	5	24-Sep-92	Hexachloroethane	<	10
19-Mar-92	Tribromomethane	<	5	24-Sep-92	Indeno(1,2,3-c,d)pyrene	<	10
19-Mar-92	Trichloroethylene	<	5	24-Sep-92	Iron, Dissolved	<	0.1
19-Mar-92	Trichlorotrifluoroethane	<	10	24-Sep-92	Iron, Total		15.7
19-Mar-92	Vinyl Chloride	<	10	24-Sep-92	Isophorone	<	10
22-Apr-92	1,1,1-Trichloroethane	<	4.1	24-Sep-92	Lead	<	2
22-Apr-92	1,1,2,2-Tetrachloroethane	<	4.7	24-Sep-92	Lead, Total		47
22-Apr-92	1,1,2-Trichloroethane	<	0.63	24-Sep-92	Magnesium, Dissolved		40.4
22-Apr-92	1,1-Dichloroethane	<	1.1	24-Sep-92	Magnesium, Total		75
22-Apr-92	1,1-Dichloroethylene	<	1.4	24-Sep-92	Manganese	<	10
22-Apr-92	1,2-Dichlorobenzene	<	9.7	24-Sep-92	Manganese, Total		10880
22-Apr-92	1,2-dichloroethane	<	7.6	24-Sep-92	Mercury	<	0.2
22-Apr-92	1,2-Dichloroethene	<	1.1	24-Sep-92	Mercury, Total	<	0.2
22-Apr-92	1,2-Dichloropropane	<	2.8	24-Sep-92	Methylene Chloride	<	5
22-Apr-92	1,3-Dichlorobenzene	<	9.2	24-Sep-92	Monochlorobenzene	<	5
22-Apr-92	1,3-Dichloropropene	<	3.8	24-Sep-92	Naphthalene	<	10
22-Apr-92	2,4-Dinitrotoluene	<	1.16	24-Sep-92	Nickel	<	30
22-Apr-92	2,6-Dinitrotoluene	<	1.11	24-Sep-92	Nickel, Total		71
22-Apr-92	2-Chloroethylvinyl Ether	<	82	24-Sep-92	Nitrite Plus Nitrate, Tot		4.5
22-Apr-92	2-Hexanone	<	10	24-Sep-92	Nitrobenzene	<	10
22-Apr-92	4-Methyl-2-Pentanone	<	10	24-Sep-92	N-nitrosodimethylamine	<	10
22-Apr-92	Acetone	<	10	24-Sep-92	N-nitrosodiphenylamine	<	10
22-Apr-92	Acid, Acetic	<	0.01	24-Sep-92	P-chloro-m-cresol	<	10
22-Apr-92	Alkalinity, Carbonate		330	24-Sep-92	P-Dichlorobenzene	<	5
22-Apr-92	Benzene By Gc-ms	<	2.4	24-Sep-92	P-Dichlorobenzene	<	10
22-Apr-92	Bromodichloromethane	<	7.9	24-Sep-92	Pentachlorophenol	<	10
22-Apr-92	Bromomethane	<	10	24-Sep-92	Phenanthrene	<	10
22-Apr-92	Cadmium	<	2.67	24-Sep-92	Phenol	<	10
22-Apr-92	Carbon Disulfide	<	5	24-Sep-92	Potassium, Dissolved		1.2
22-Apr-92	Carbon Tetrachloride	<	3.7	24-Sep-92	Potassium, Total		4.7
22-Apr-92	Chloride		9.1	24-Sep-92	Pyrene	<	10
22-Apr-92	Chloroethane	<	2.1	24-Sep-92	Selenium	<	1
22-Apr-92	Chloroform		0.51	24-Sep-92	Selenium, Total	<	1
22-Apr-92	Chloromethane	<	1.6	24-Sep-92	Silver	<	10
22-Apr-92	Chromium	<	4.47	24-Sep-92	Silver, Total	<	10
22-Apr-92	Cis-1,3-Dichloropropene	<	5	24-Sep-92	Sodium		6.5
22-Apr-92	Dibromochloromethane	<	6.5	24-Sep-92	Sodium, Total		7.1
22-Apr-92	Ethylbenzene	<	9.3	24-Sep-92	Sulfate As SO4		43
22-Apr-92	Hardness, Total, As Caco3		314	24-Sep-92	Tetrachloroethylene	<	5
22-Apr-92	Lead	<	4.74	24-Sep-92	Thallium	<	2
22-Apr-92	Mercury	<	0.57	24-Sep-92	Thallium, Total		3
22-Apr-92	Methylene Chloride		8	24-Sep-92	Toluene By Gc-ms	<	5
22-Apr-92	Methylethylketone	<	10	24-Sep-92	Total Dissolved Solids		492
22-Apr-92	Monochlorobenzene	<	1.4	24-Sep-92	Trans-1,3-Dichloropropene	<	5
22-Apr-92	M-Xylene	<	5	24-Sep-92	Tribromomethane	<	5
22-Apr-92	Nitrite Plus Nitrate, Diss		5.6	24-Sep-92	Trichloroethylene	<	5
22-Apr-92	N-nitrosodiphenylamine	<	0.9	24-Sep-92	Vanadium	<	5
22-Apr-92	O-Xylene	<	5	24-Sep-92	Vanadium, Total		31
22-Apr-92	P-Dichlorobenzene	<	8.1	24-Sep-92	Vinyl Chloride	<	10
22-Apr-92	Styrene	<	5	24-Sep-92	Zinc	<	10
22-Apr-92	Sulfate As SO4		21	24-Sep-92	Zinc, Total		135
22-Apr-92	Tetrachloroethylene	<	0.5	10-Oct-06	2,3-Dinitrotoluene	<	0.005
22-Apr-92	Toluene By Gc-ms	<	8.7	10-Oct-06	2,4-Dinitrotoluene		0.031
22-Apr-92	Total Dissolved Solids		349	10-Oct-06	2,5-Dinitrotoluene	<	0.005
22-Apr-92	Trans-1,3-Dichloropropene	<	5	10-Oct-06	2,6-Dinitrotoluene		0.015

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
22-Apr-92	Tribromomethane	<	8.2	10-Oct-06	3,4-Dinitrotoluene	<	0.009
22-Apr-92	Trichloroethylene	<	0.5	10-Oct-06	3,5-Dinitrotoluene	<	0.004
22-Apr-92	Vinyl Chloride	<	0.5	23-Apr-07	2,3-Dinitrotoluene	<	0.005
16-Jun-92	1,1,1-Trichloroethane	<	5	23-Apr-07	2,4-Dinitrotoluene		0.035
16-Jun-92	1,1,2,2-Tetrachloroethane	<	5	23-Apr-07	2,5-Dinitrotoluene	<	0.004
16-Jun-92	1,1,2-Trichloroethane	<	5	23-Apr-07	2,6-Dinitrotoluene		0.015
16-Jun-92	1,1-Dichloroethane	<	5	23-Apr-07	3,4-Dinitrotoluene	<	0.006
16-Jun-92	1,1-Dichloroethylene	<	5	23-Apr-07	3,5-Dinitrotoluene	<	0.007
16-Jun-92	1,2-Dichlorobenzene	<	100	11-Sep-07	2,3-Dinitrotoluene	<	0.01
16-Jun-92	1,2-dichloroethane	<	5	11-Sep-07	2,4-Dinitrotoluene		0.028
16-Jun-92	1,2-Dichloroethene	<	5	11-Sep-07	2,4-Dinitrotoluene	<	0.01
16-Jun-92	1,2-Dichloropropane	<	5	11-Sep-07	2,5-Dinitrotoluene	<	0.01
16-Jun-92	1,3-Dichlorobenzene	<	100	11-Sep-07	2,6-Dinitrotoluene	<	0.022
16-Jun-92	2,4-Dinitrotoluene	<	5	11-Sep-07	2,6-Dinitrotoluene	<	0.01
16-Jun-92	2,6-Dinitrotoluene	<	5	11-Sep-07	3,4-Dinitrotoluene	<	0.016
16-Jun-92	2-Chloroethylvinyl Ether	<	10	11-Sep-07	3,5-Dinitrotoluene	<	0.01
16-Jun-92	Alkalinity As Caco3		304	11-Sep-07	Nitrobenzene	<	0.033
16-Jun-92	Benzene By Gc-ms	<	5	11-Sep-07	Nitroglycerine	<	0.045
16-Jun-92	Bromodichloromethane	<	5	02-Apr-08	2,3-Dinitrotoluene	<	0.01
16-Jun-92	Bromomethane	<	10	02-Apr-08	2,4-Dinitrotoluene		0.026
16-Jun-92	Cadmium	<	1	02-Apr-08	2,5-Dinitrotoluene	<	0.01
16-Jun-92	Cadmium, Total	<	1	02-Apr-08	2,6-Dinitrotoluene		0.015
16-Jun-92	Carbon Tetrachloride	<	5	02-Apr-08	3,4-Dinitrotoluene	<	0.016
16-Jun-92	Chloride		7	02-Apr-08	3,5-Dinitrotoluene	<	0.01
16-Jun-92	Chloroethane	<	10	29-Sep-08	2,3-Dinitrotoluene	<	0.006
16-Jun-92	Chloroform	<	5	29-Sep-08	2,4-Dinitrotoluene		0.029
16-Jun-92	Chloromethane	<	10	29-Sep-08	2,5-Dinitrotoluene	<	0.014
16-Jun-92	Chromium		1	29-Sep-08	2,6-Dinitrotoluene		0.017
16-Jun-92	Chromium, Total		10	29-Sep-08	3,4-Dinitrotoluene	<	0.011
16-Jun-92	Cis-1,3-Dichloropropene	<	5	29-Sep-08	3,5-Dinitrotoluene	<	0.009
16-Jun-92	Dibromochloromethane	<	5	29-Sep-09	1,1,1,2-Tetrachloroethane	<	0.15
16-Jun-92	Di-n-propylnitrosamine	<	10	29-Sep-09	1,1,1,2-Tetrachloroethane	<	0.15
16-Jun-92	Ethylbenzene	<	5	29-Sep-09	1,1,1-Trichloroethane		0.15
16-Jun-92	Hardness, Total, As Caco3		408	29-Sep-09	1,1,1-Trichloroethane	<	0.15
16-Jun-92	Lead	<	2	29-Sep-09	1,1,2,2-Tetrachloroethane	<	0.15
16-Jun-92	Lead, Total		13	29-Sep-09	1,1,2,2-Tetrachloroethane	<	0.15
16-Jun-92	Mercury	<	0.2	29-Sep-09	1,1,2-Trichloroethane	<	0.15
16-Jun-92	Mercury, Total	<	0.2	29-Sep-09	1,1,2-Trichloroethane	<	0.15
16-Jun-92	Methylene Chloride		8.8	29-Sep-09	1,1-Dichloroethane	<	0.15
16-Jun-92	Monochlorobenzene	<	5	29-Sep-09	1,1-Dichloroethane	<	0.15
16-Jun-92	Nitrite Plus Nitrate, Tot		5.3	29-Sep-09	1,1-Dichloroethylene	<	0.3
16-Jun-92	N-nitrosodimethylamine	<	10	29-Sep-09	1,1-Dichloroethylene	<	0.3
16-Jun-92	N-nitrosodiphenylamine	<	10	29-Sep-09	1,1-Dichloropropene	<	0.15
16-Jun-92	P-Dichlorobenzene	<	100	29-Sep-09	1,1-Dichloropropene	<	0.15
16-Jun-92	Sulfate As SO4		18	29-Sep-09	1,2,3-Trichlorobenzene	<	0.15
16-Jun-92	Tetrachloroethylene	<	5	29-Sep-09	1,2,3-Trichlorobenzene	<	0.15
16-Jun-92	Toluene By Gc-ms	<	5	29-Sep-09	1,2,3-Trichloropropane	<	0.15
16-Jun-92	Trans-1,3-Dichloropropene	<	5	29-Sep-09	1,2,3-Trichloropropane	<	0.15
16-Jun-92	Tribromomethane	<	5	29-Sep-09	1,2,4-Trichlorobenzene	<	0.15
16-Jun-92	Trichloroethylene	<	5	29-Sep-09	1,2,4-Trichlorobenzene	<	0.15
16-Jun-92	Trichlorotrifluoroethane	<	10	29-Sep-09	1,2,4-Trimethylbenzene	<	0.15
16-Jun-92	Vinyl Chloride	<	10	29-Sep-09	1,2,4-Trimethylbenzene	<	0.15
25-Sep-92	1,1,1-Trichloroethane	<	5	29-Sep-09	1,2-Dichlorobenzene	<	0.15
25-Sep-92	1,1,2,2-Tetrachloroethane	<	5	29-Sep-09	1,2-Dichlorobenzene	<	0.15
25-Sep-92	1,1,2-Trichloroethane	<	5	29-Sep-09	1,2-dichloroethane	<	0.15
25-Sep-92	1,1-Dichloroethane	<	5	29-Sep-09	1,2-dichloroethane	<	0.15
25-Sep-92	1,1-Dichloroethylene	<	5	29-Sep-09	1,2-Dichloroethene	<	0.15
25-Sep-92	1,2-Dichlorobenzene	<	5	29-Sep-09	1,2-Dichloroethene	<	0.15
25-Sep-92	1,2-dichloroethane	<	5	29-Sep-09	1,2-Dichloropropane	<	0.15

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
25-Sep-92	1,2-Dichloroethene	<	5	29-Sep-09	1,2-Dichloropropane	<	0.15
25-Sep-92	1,2-Dichloropropane	<	5	29-Sep-09	1,3,5-Trimethylbenzene	<	0.15
25-Sep-92	1,3-Dichlorobenzene	<	5	29-Sep-09	1,3,5-Trimethylbenzene	<	0.15
25-Sep-92	2,4-Dinitrotoluene	<	0.05	29-Sep-09	1,3-Dichlorobenzene	<	0.15
25-Sep-92	2,6-Dinitrotoluene	<	0.05	29-Sep-09	1,3-Dichlorobenzene	<	0.15
25-Sep-92	2-Chloroethylvinyl Ether	<	10	29-Sep-09	1,3-Dichloropropane	<	0.15
25-Sep-92	Acrolein	<	50	29-Sep-09	1,3-Dichloropropane	<	0.15
25-Sep-92	Acrylonitrile	<	70	29-Sep-09	2,2-Dichloropropane	<	0.3
25-Sep-92	Alkalinity As Caco3		302	29-Sep-09	2,2-Dichloropropane	<	0.3
25-Sep-92	Benzene By Gc-ms	<	5	29-Sep-09	2,3-Dinitrotoluene	<	0.012
25-Sep-92	Bromodichloromethane	<	5	29-Sep-09	2,3-Dinitrotoluene	<	0.012
25-Sep-92	Bromomethane	<	10	29-Sep-09	2,4-Dinitrotoluene		0.019
25-Sep-92	Cadmium	<	1	29-Sep-09	2,4-Dinitrotoluene		0.018
25-Sep-92	Cadmium, Total	<	1	29-Sep-09	2,5-Dinitrotoluene	<	0.013
25-Sep-92	Carbon Tetrachloride	<	5	29-Sep-09	2,5-Dinitrotoluene	<	0.013
25-Sep-92	Chloride		8	29-Sep-09	2,6-Dinitrotoluene	<	0.018
25-Sep-92	Chloroethane	<	10	29-Sep-09	2,6-Dinitrotoluene	<	0.018
25-Sep-92	Chloroform	<	5	29-Sep-09	3,4-Dinitrotoluene	<	0.031
25-Sep-92	Chloromethane		16	29-Sep-09	3,4-Dinitrotoluene	<	0.031
25-Sep-92	Chromium	<	1	29-Sep-09	3,5-Dinitrotoluene	<	0.015
25-Sep-92	Chromium, Total		8	29-Sep-09	3,5-Dinitrotoluene	<	0.015
25-Sep-92	Cis-1,3-Dichloropropene	<	5	29-Sep-09	Benzene By Gc-ms	<	0.15
25-Sep-92	Dibromochloromethane	<	5	29-Sep-09	Benzene By Gc-ms	<	0.15
25-Sep-92	Di-n-propylnitrosamine	<	10	29-Sep-09	Bromobenzene	<	0.15
25-Sep-92	Ethylbenzene	<	5	29-Sep-09	Bromobenzene	<	0.15
25-Sep-92	Fluorotrichloromethane	<	5	29-Sep-09	Bromochloromethane	<	0.15
25-Sep-92	Hardness, Total, As Caco3		380	29-Sep-09	Bromochloromethane	<	0.15
25-Sep-92	Lead	<	2	29-Sep-09	Bromodichloromethane	<	0.15
25-Sep-92	Lead, Total		5	29-Sep-09	Bromodichloromethane	<	0.15
25-Sep-92	Mercury	<	0.2	29-Sep-09	Bromomethane	<	0.3
25-Sep-92	Mercury, Total	<	0.2	29-Sep-09	Bromomethane	<	0.3
25-Sep-92	Methylene Chloride	<	5	29-Sep-09	Butylbenzene Sec	<	0.15
25-Sep-92	Monochlorobenzene	<	5	29-Sep-09	Butylbenzene Sec	<	0.15
25-Sep-92	Nitrite Plus Nitrate, Tot		6.3	29-Sep-09	Butylbenzene Tert	<	0.15
25-Sep-92	N-nitrosodimethylamine	<	10	29-Sep-09	Butylbenzene Tert	<	0.15
25-Sep-92	N-nitrosodiphenylamine	<	10	29-Sep-09	Carbon Tetrachloride		0.57
25-Sep-92	P-Dichlorobenzene	<	5	29-Sep-09	Carbon Tetrachloride		0.61
25-Sep-92	Sulfate As SO4		19	29-Sep-09	Chloroethane	<	0.3
25-Sep-92	Tetrachloroethylene	<	5	29-Sep-09	Chloroethane	<	0.3
25-Sep-92	Toluene By Gc-ms	<	5	29-Sep-09	Chloroform		0.62
25-Sep-92	Trans-1,3-Dichloropropene	<	5	29-Sep-09	Chloroform		0.6
25-Sep-92	Tribromomethane	<	5	29-Sep-09	Chloromethane	<	0.3
25-Sep-92	Trichloroethylene	<	5	29-Sep-09	Chloromethane	<	0.3
25-Sep-92	Vinyl Chloride	<	10	29-Sep-09	Cis-1,2-dichloroethylene	<	0.15
04-Oct-05	1,1,1,2-Tetrachloroethane	<	0.2	29-Sep-09	Cis-1,2-dichloroethylene	<	0.15
04-Oct-05	1,1,1-Trichloroethane	<	0.1	29-Sep-09	Cis-1,3-Dichloropropene	<	0.15
04-Oct-05	1,1,2,2-Tetrachloroethane	<	0.3	29-Sep-09	Cis-1,3-Dichloropropene	<	0.15
04-Oct-05	1,1,2-Trichloroethane	<	0.3	29-Sep-09	Dibromochloromethane	<	0.15
04-Oct-05	1,1-Dichloroethane	<	0.1	29-Sep-09	Dibromochloromethane	<	0.15
04-Oct-05	1,1-Dichloroethylene	<	0.1	29-Sep-09	Dibromomethane	<	0.15
04-Oct-05	1,1-Dichloropropene	<	0.08	29-Sep-09	Dibromomethane	<	0.15
04-Oct-05	1,2,3-Trichlorobenzene	<	0.2	29-Sep-09	Dichlorodifluoromethane	<	0.15
04-Oct-05	1,2,3-Trichloropropane	<	0.4	29-Sep-09	Dichlorodifluoromethane	<	0.15
04-Oct-05	1,2,4-Trichlorobenzene	<	0.2	29-Sep-09	Ethyl Ether	<	0.3
04-Oct-05	1,2,4-Trimethylbenzene	<	0.2	29-Sep-09	Ethyl Ether	<	0.3
04-Oct-05	1,2-Dichlorobenzene	<	0.3	29-Sep-09	Ethylbenzene	<	0.15
04-Oct-05	1,2-dichloroethane	<	0.1	29-Sep-09	Ethylbenzene	<	0.15
04-Oct-05	1,2-Dichloroethene	<	0.09	29-Sep-09	Fluorotrichloromethane	<	0.3
04-Oct-05	1,2-Dichloropropane	<	0.2	29-Sep-09	Fluorotrichloromethane	<	0.3

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
04-Oct-05	1,3,5-Trimethylbenzene	<	0.2	29-Sep-09	Hexachlorobutadiene	<	0.15
04-Oct-05	1,3-Dichlorobenzene	<	0.2	29-Sep-09	Hexachlorobutadiene	<	0.15
04-Oct-05	1,3-Dichloropropane	<	0.3	29-Sep-09	Isopropylbenzene	<	0.15
04-Oct-05	2,2-Dichloropropane	<	0.08	29-Sep-09	Isopropylbenzene	<	0.15
04-Oct-05	2,4-Dinitrotoluene	<	0.019	29-Sep-09	Isopropyltoluene	<	0.15
04-Oct-05	2,6-Dinitrotoluene	<	0.022	29-Sep-09	Isopropyltoluene	<	0.15
04-Oct-05	Benzene By Gc-ms	<	0.07	29-Sep-09	M,P-Xylene	<	0.3
04-Oct-05	Bromobenzene	<	0.2	29-Sep-09	M,P-Xylene	<	0.3
04-Oct-05	Bromochloromethane	<	0.2	29-Sep-09	Methylene Chloride	<	0.3
04-Oct-05	Bromodichloromethane	<	0.2	29-Sep-09	Methylene Chloride	<	0.3
04-Oct-05	Bromomethane	<	0.1	29-Sep-09	Monochlorobenzene	<	0.15
04-Oct-05	Butylbenzene Sec	<	0.1	29-Sep-09	Monochlorobenzene	<	0.15
04-Oct-05	Butylbenzene Tert	<	0.1	29-Sep-09	N-Butylbenzene	<	0.15
04-Oct-05	Carbon Tetrachloride	<	0.1	29-Sep-09	N-Butylbenzene	<	0.15
04-Oct-05	Chloroethane	<	0.1	29-Sep-09	N-propylbenzene	<	0.15
04-Oct-05	Chloroform		0.4	29-Sep-09	N-propylbenzene	<	0.15
04-Oct-05	Chloromethane	<	0.09	29-Sep-09	O-Chlorotoluene	<	0.15
04-Oct-05	Cis-1,2-dichloroethylene	<	0.1	29-Sep-09	O-Chlorotoluene	<	0.15
04-Oct-05	Cis-1,3-Dichloropropene	<	0.1	29-Sep-09	O-Xylene	<	0.15
04-Oct-05	Dibromochloromethane	<	0.2	29-Sep-09	O-Xylene	<	0.15
04-Oct-05	Dibromomethane	<	0.2	29-Sep-09	P-Chlorotoluene	<	0.15
04-Oct-05	Dichlorodifluoromethane	<	0.07	29-Sep-09	P-Chlorotoluene	<	0.15
04-Oct-05	Ethyl Ether	<	0.1	29-Sep-09	P-Dichlorobenzene	<	0.15
04-Oct-05	Ethylbenzene	<	0.2	29-Sep-09	P-Dichlorobenzene	<	0.15
04-Oct-05	Fluorotrichloromethane	<	0.1	29-Sep-09	Styrene	<	0.15
04-Oct-05	Hexachlorobutadiene	<	0.1	29-Sep-09	Styrene	<	0.15
04-Oct-05	Isopropylbenzene	<	0.2	29-Sep-09	Tetrachloroethylene	<	0.15
04-Oct-05	Isopropyltoluene	<	0.2	29-Sep-09	Tetrachloroethylene	<	0.15
04-Oct-05	M,P-Xylene	<	0.4	29-Sep-09	Toluene By Gc-ms	<	0.15
04-Oct-05	Methylene Chloride	<	0.1	29-Sep-09	Toluene By Gc-ms	<	0.15
04-Oct-05	Monochlorobenzene	<	0.2	29-Sep-09	Trans-1,3-Dichloropropene	<	0.15
04-Oct-05	N-Butylbenzene	<	0.1	29-Sep-09	Trans-1,3-Dichloropropene	<	0.15
04-Oct-05	N-propylbenzene	<	0.1	29-Sep-09	Tribromomethane	<	0.15
04-Oct-05	O-Chlorotoluene	<	0.2	29-Sep-09	Tribromomethane	<	0.15
04-Oct-05	O-Xylene	<	0.2	29-Sep-09	Trichloroethylene	<	0.15
04-Oct-05	P-Chlorotoluene	<	0.2	29-Sep-09	Trichloroethylene	<	0.15
04-Oct-05	P-Dichlorobenzene	<	0.3	29-Sep-09	Vinyl Chloride	<	0.3
04-Oct-05	Styrene	<	0.3	29-Sep-09	Vinyl Chloride	<	0.3
04-Oct-05	Tetrachloroethylene	<	0.2	16-Oct-13	1,1,1,2-Tetrachloroethane	<	0.1
04-Oct-05	Toluene By Gc-ms	<	0.1	16-Oct-13	1,1,1-Trichloroethane	<	0.1
04-Oct-05	Trans-1,3-Dichloropropene	<	0.2	16-Oct-13	1,1,2,2-Tetrachloroethane	<	0.1
04-Oct-05	Tribromomethane	<	0.4	16-Oct-13	1,1,2-Trichloroethane	<	0.1
04-Oct-05	Trichloroethylene	<	0.1	16-Oct-13	1,1-Dichloroethane	<	0.1
04-Oct-05	Vinyl Chloride	<	0.1	16-Oct-13	1,1-Dichloroethylene	<	0.1
10-Oct-06	2,3-Dinitrotoluene	<	0.005	16-Oct-13	1,1-Dichloropropene	<	0.1
10-Oct-06	2,4-Dinitrotoluene		0.016	16-Oct-13	1,2,3-Trichlorobenzene	<	0.1
10-Oct-06	2,5-Dinitrotoluene	<	0.005	16-Oct-13	1,2,3-Trichloropropane	<	0.1
10-Oct-06	2,6-Dinitrotoluene		0.009	16-Oct-13	1,2,4-Trichlorobenzene	<	0.1
10-Oct-06	3,4-Dinitrotoluene	<	0.009	16-Oct-13	1,2,4-Trimethylbenzene	<	0.1
10-Oct-06	3,5-Dinitrotoluene	<	0.004	16-Oct-13	1,2-Dichlorobenzene	<	0.1
23-Apr-07	2,3-Dinitrotoluene	<	0.005	16-Oct-13	1,2-dichloroethane	<	0.1
23-Apr-07	2,4-Dinitrotoluene		0.025	16-Oct-13	1,2-Dichloroethene	<	0.1
23-Apr-07	2,5-Dinitrotoluene	<	0.004	16-Oct-13	1,2-Dichloropropane	<	0.1
23-Apr-07	2,6-Dinitrotoluene		0.014	16-Oct-13	1,3,5-Trimethylbenzene	<	0.1
23-Apr-07	3,4-Dinitrotoluene	<	0.006	16-Oct-13	1,3-Dichlorobenzene	<	0.1
23-Apr-07	3,5-Dinitrotoluene	<	0.007	16-Oct-13	1,3-Dichloropropane	<	0.1
11-Sep-07	2,3-Dinitrotoluene	<	0.01	16-Oct-13	2,2-Dichloropropane	<	0.1
11-Sep-07	2,4-Dinitrotoluene		0.023	16-Oct-13	2,3-Dinitrotoluene	<	0.014
11-Sep-07	2,4-Dinitrotoluene	<	0.01	16-Oct-13	2,4-Dinitrotoluene		0.019

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
11-Sep-07	2,5-Dinitrotoluene	<	0.01	16-Oct-13	2,5-Dinitrotoluene	<	0.014
11-Sep-07	2,6-Dinitrotoluene	<	0.022	16-Oct-13	2,6-Dinitrotoluene	<	0.014
11-Sep-07	2,6-Dinitrotoluene	<	0.01	16-Oct-13	3,4-Dinitrotoluene	<	0.014
11-Sep-07	3,4-Dinitrotoluene	<	0.016	16-Oct-13	3,5-Dinitrotoluene	<	0.014
11-Sep-07	3,5-Dinitrotoluene	<	0.01	16-Oct-13	Benzene By Gc-ms	<	0.1
11-Sep-07	Nitrobenzene	<	0.033	16-Oct-13	Bromobenzene	<	0.1
11-Sep-07	Nitroglycerine	<	0.045	16-Oct-13	Bromochloromethane	<	0.1
02-Apr-08	2,3-Dinitrotoluene	<	0.01	16-Oct-13	Bromodichloromethane	<	0.1
02-Apr-08	2,4-Dinitrotoluene		0.019	16-Oct-13	Bromomethane	<	0.1
02-Apr-08	2,5-Dinitrotoluene	<	0.01	16-Oct-13	Butylbenzene Sec	<	0.1
02-Apr-08	2,6-Dinitrotoluene	<	0.01	16-Oct-13	Carbon Tetrachloride		0.21
02-Apr-08	3,4-Dinitrotoluene	<	0.016	16-Oct-13	Chloroethane	<	0.1
02-Apr-08	3,5-Dinitrotoluene	<	0.01	16-Oct-13	Chloroform		0.22
29-Sep-08	2,3-Dinitrotoluene	<	0.006	16-Oct-13	Chloromethane	<	0.1
29-Sep-08	2,4-Dinitrotoluene		0.012	16-Oct-13	Cis-1,2-dichloroethylene	<	0.1
29-Sep-08	2,5-Dinitrotoluene	<	0.014	16-Oct-13	Cis-1,3-Dichloropropene	<	0.1
29-Sep-08	2,6-Dinitrotoluene	<	0.007	16-Oct-13	Dibromochloromethane	<	0.1
29-Sep-08	3,4-Dinitrotoluene	<	0.011	16-Oct-13	Dibromomethane	<	0.1
29-Sep-08	3,5-Dinitrotoluene	<	0.009	16-Oct-13	Dichlorodifluoromethane	<	0.1
29-Sep-09	1,1,1,2-Tetrachloroethane	<	0.15	16-Oct-13	Dinitrotoluene, Total		0.019
29-Sep-09	1,1,1-Trichloroethane	<	0.15	16-Oct-13	Ethyl Ether	<	0.1
29-Sep-09	1,1,2,2-Tetrachloroethane	<	0.15	16-Oct-13	Ethylbenzene	<	0.1
29-Sep-09	1,1,2-Trichloroethane	<	0.15	16-Oct-13	Fluorotrichloromethane	<	0.1
29-Sep-09	1,1-Dichloroethane	<	0.15	16-Oct-13	Hexachlorobutadiene	<	0.1
29-Sep-09	1,1-Dichloroethylene	<	0.3	16-Oct-13	Isopropylbenzene	<	0.1
29-Sep-09	1,1-Dichloropropene	<	0.15	16-Oct-13	Isopropyltoluene	<	0.1
29-Sep-09	1,2,3-Trichlorobenzene	<	0.15	16-Oct-13	M,P-Xylene	<	0.2
29-Sep-09	1,2,3-Trichloropropane	<	0.15	16-Oct-13	Methylene Chloride	<	0.2
29-Sep-09	1,2,4-Trichlorobenzene	<	0.15	16-Oct-13	Monochlorobenzene	<	0.1
29-Sep-09	1,2,4-Trimethylbenzene	<	0.15	16-Oct-13	N-Butylbenzene	<	0.1
29-Sep-09	1,2-Dichlorobenzene	<	0.15	16-Oct-13	N-propylbenzene	<	0.1
29-Sep-09	1,2-dichloroethane	<	0.15	16-Oct-13	O-Chlorotoluene	<	0.1
29-Sep-09	1,2-Dichloroethene	<	0.15	16-Oct-13	O-Xylene	<	0.1
29-Sep-09	1,2-Dichloropropane	<	0.15	16-Oct-13	P-Chlorotoluene	<	0.1
29-Sep-09	1,3,5-Trimethylbenzene	<	0.15	16-Oct-13	P-Dichlorobenzene	<	0.1
29-Sep-09	1,3-Dichlorobenzene	<	0.15	16-Oct-13	Styrene	<	0.1
29-Sep-09	1,3-Dichloropropane	<	0.15	16-Oct-13	Tetrachloroethylene	<	0.1
29-Sep-09	2,2-Dichloropropane	<	0.3	16-Oct-13	Toluene By Gc-ms	<	0.1
29-Sep-09	2,3-Dinitrotoluene	<	0.012	16-Oct-13	Trans-1,3-Dichloropropene	<	0.1
29-Sep-09	2,4-Dinitrotoluene	<	0.014	16-Oct-13	Tribromomethane	<	0.1
29-Sep-09	2,5-Dinitrotoluene	<	0.013	16-Oct-13	Trichloroethylene	<	0.1
29-Sep-09	2,6-Dinitrotoluene	<	0.018	16-Oct-13	Vinyl Chloride	<	0.1
29-Sep-09	3,4-Dinitrotoluene	<	0.031				
29-Sep-09	3,5-Dinitrotoluene	<	0.015				
29-Sep-09	Benzene By Gc-ms	<	0.15				
29-Sep-09	Bromobenzene	<	0.15				
29-Sep-09	Bromochloromethane	<	0.15				
29-Sep-09	Bromodichloromethane	<	0.15				
29-Sep-09	Bromomethane	<	0.3				
29-Sep-09	Butylbenzene Sec	<	0.15				
29-Sep-09	Butylbenzene Tert	<	0.15				
29-Sep-09	Carbon Tetrachloride	<	0.15				
29-Sep-09	Chloroethane	<	0.3				
29-Sep-09	Chloroform	<	0.15				
29-Sep-09	Chloromethane	<	0.3				
29-Sep-09	Cis-1,2-dichloroethylene	<	0.15				
29-Sep-09	Cis-1,3-Dichloropropene	<	0.15				
29-Sep-09	Dibromochloromethane	<	0.15				
29-Sep-09	Dibromomethane	<	0.15				

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
29-Sep-09	Dichlorodifluoromethane	<	0.15				
29-Sep-09	Ethyl Ether	<	0.3				
29-Sep-09	Ethylbenzene	<	0.15				
29-Sep-09	Fluorotrichloromethane	<	0.3				
29-Sep-09	Hexachlorobutadiene	<	0.15				
29-Sep-09	Isopropylbenzene	<	0.15				
29-Sep-09	Isopropyltoluene	<	0.15				
29-Sep-09	M,P-Xylene	<	0.3				
29-Sep-09	Methylene Chloride	<	0.3				
29-Sep-09	Monochlorobenzene	<	0.15				
29-Sep-09	N-Butylbenzene	<	0.15				
29-Sep-09	N-propylbenzene	<	0.15				
29-Sep-09	O-Chlorotoluene	<	0.15				
29-Sep-09	O-Xylene	<	0.15				
29-Sep-09	P-Chlorotoluene	<	0.15				
29-Sep-09	P-Dichlorobenzene	<	0.15				
29-Sep-09	Styrene	<	0.15				
29-Sep-09	Tetrachloroethylene	<	0.15				
29-Sep-09	Toluene By Gc-ms	<	0.15				
29-Sep-09	Trans-1,3-Dichloropropene	<	0.15				
29-Sep-09	Tribromomethane	<	0.15				
29-Sep-09	Trichloroethylene	<	0.15				
29-Sep-09	Vinyl Chloride	<	0.3				
16-Oct-13	1,1,1,2-Tetrachloroethane	<	0.1				
16-Oct-13	1,1,1-Trichloroethane	<	0.1				
16-Oct-13	1,1,2,2-Tetrachloroethane	<	0.1				
16-Oct-13	1,1,2-Trichloroethane	<	0.1				
16-Oct-13	1,1-Dichloroethane	<	0.1				
16-Oct-13	1,1-Dichloroethylene	<	0.1				
16-Oct-13	1,1-Dichloropropene	<	0.1				
16-Oct-13	1,2,3-Trichlorobenzene	<	0.1				
16-Oct-13	1,2,3-Trichloropropane	<	0.1				
16-Oct-13	1,2,4-Trichlorobenzene	<	0.1				
16-Oct-13	1,2,4-Trimethylbenzene	<	0.1				
16-Oct-13	1,2-Dichlorobenzene	<	0.1				
16-Oct-13	1,2-dichloroethane	<	0.1				
16-Oct-13	1,2-Dichloroethene	<	0.1				
16-Oct-13	1,2-Dichloropropane	<	0.1				
16-Oct-13	1,3,5-Trimethylbenzene	<	0.1				
16-Oct-13	1,3-Dichlorobenzene	<	0.1				
16-Oct-13	1,3-Dichloropropane	<	0.1				
16-Oct-13	2,2-Dichloropropane	<	0.1				
16-Oct-13	2,3-Dinitrotoluene	<	0.014				
16-Oct-13	2,4-Dinitrotoluene	<	0.014				
16-Oct-13	2,5-Dinitrotoluene	<	0.014				
16-Oct-13	2,6-Dinitrotoluene	<	0.014				
16-Oct-13	3,4-Dinitrotoluene	<	0.014				
16-Oct-13	3,5-Dinitrotoluene	<	0.014				
16-Oct-13	Benzene By Gc-ms	<	0.1				
16-Oct-13	Bromobenzene	<	0.1				
16-Oct-13	Bromochloromethane	<	0.1				
16-Oct-13	Bromodichloromethane	<	0.1				
16-Oct-13	Bromomethane	<	0.1				
16-Oct-13	Butylbenzene Sec	<	0.1				
16-Oct-13	Carbon Tetrachloride	<	0.1				
16-Oct-13	Chloroethane	<	0.1				
16-Oct-13	Chloroform	<	0.1				
16-Oct-13	Chloromethane	<	0.1				
16-Oct-13	Cis-1,2-dichloroethylene	<	0.1				

Table A.1

Upper Gate 16 North - Groundwater Analytical Results

Parcel H1 - WDNR Closure Request

Badger Army Ammunition Plant

Date Sampled	Analyte	LOD Flag	Result (ug/l)	Date Sampled	Analyte	LOD Flag	Result (ug/l)
16-Oct-13	Cis-1,3-Dichloropropene	<	0.1				
16-Oct-13	Dibromochloromethane	<	0.1				
16-Oct-13	Dibromomethane	<	0.1				
16-Oct-13	Dichlorodifluoromethane	<	0.1				
16-Oct-13	Dinitrotoluene, Total	<	0.014				
16-Oct-13	Ethyl Ether	<	0.1				
16-Oct-13	Ethylbenzene	<	0.1				
16-Oct-13	Fluorotrichloromethane	<	0.1				
16-Oct-13	Hexachlorobutadiene	<	0.1				
16-Oct-13	Isopropylbenzene	<	0.1				
16-Oct-13	Isopropyltoluene	<	0.1				
16-Oct-13	M,P-Xylene	<	0.2				
16-Oct-13	Methylene Chloride	<	0.2				
16-Oct-13	Monochlorobenzene	<	0.1				
16-Oct-13	N-Butylbenzene	<	0.1				
16-Oct-13	N-propylbenzene	<	0.1				
16-Oct-13	O-Chlorotoluene	<	0.1				
16-Oct-13	O-Xylene	<	0.1				
16-Oct-13	P-Chlorotoluene	<	0.1				
16-Oct-13	P-Dichlorobenzene	<	0.1				
16-Oct-13	Styrene	<	0.1				
16-Oct-13	Tetrachloroethylene	<	0.1				
16-Oct-13	Toluene By Gc-ms	<	0.1				
16-Oct-13	Trans-1,3-Dichloropropene	<	0.1				
16-Oct-13	Tribromomethane	<	0.1				
16-Oct-13	Trichloroethylene	<	0.1				
16-Oct-13	Vinyl Chloride	<	0.1				

LOD - Limit of Detection
µg/l - micrograms per liter

Table A2

Upper Gate 16 North - Pre-Remedial (Removed) Soil Sample Results

Parcel H1 - Wisconsin Department of Natural Resources GIS Registry

Badger Army Ammunition Plant

Sample ID	Date	Depth (feet bgs)	Arsenic (mg/kg)	PCB-1260 (mg/kg)	2,4-DNT, TCLP (mg/l)	Lead, TCLP (mg/l)
0701-653210-01G	6/13/2007	0.5	1.8 (D,J)	**3.96** (D)	NA	NA
UP16N-2-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)	<0.02 (B,D)
UP16N-3-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)	<0.02 (B,D)
UP16N-4-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)	0.18 (B,D)
UP16N-5-0.5	5/1/2013	0.5	NA	NA	<0.0008 (SL)	<0.02 (B,D)
UP16N-6-0.5	5/1/2013	0.5	NA	NA	<0.0005	<0.02 (B,D)
UP16N-7-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)	<0.02 (B,D)
UP16N-8-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)	<0.02 (B,D)
UP16N-9-0.5	5/1/2013	0.5	NA	NA	<0.0008	<0.02 (D)
UP16N-10-0.5	5/1/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-13-0.5	5/1/2013	0.5	NA	NA	<0.0005	0.18 (D)
UP16N-14-0.5	5/1/2013	0.5	NA	NA	<0.0005	0.08 (D)
UP16N-15-0.5	5/1/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-16-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)	0.05 (D,J)
UP16N-17-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-18-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-19-0.5	5/2/2013	0.5	NA	NA	<0.0008	0.1 (D)
UP16N-20-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-21-0.5	5/2/2013	0.5	NA	NA	<0.0005	0.39 (D)
UP16N-22-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-23-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-24-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-25-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
UP16N-26-0.5	5/2/2013	0.5	NA	NA	0.003 (SL)	1.9 (D)
UP16N-28-0.5	5/2/2013	0.5	NA	NA	<0.0005	<0.02 (D)
Cleanup Objective or USEPA Toxicity Characteristic Maximum Level			**10**	**0.22**	**0.13**	**5**

See Table 1 of the 15 October 2007 *PWS #7072 - Post Demolition Sampling Results - Parcel H1 report* , for additional pre-remedial (removed) soil sample results.
bgs - below ground surface
mg/l - milligrams per liter
D - Elevated Limit of Detection (LOD) and Limit of Quantitation (LOQ) are due to dilution/volume of the sample.
J - Analytical result is between the LOD and LOQ.
SL - Surrogate recovery was below the lower control limit. Analytical results for this parameter should be considered estimates.
B - Analyte was detected in associated Method Blank.
USEPA - United States Environmental Protection Agency

Table A3

Upper Gate 16 North - Post-Remedial (Remaining) Soil Sample Results

Parcel H1 - Wisconsin Department of Natural Resources GIS Registry

Badger Army Ammunition Plant

Sample ID	Date	Depth (feet bgs)	Arsenic (mg/kg)	PCB-1260 (mg/kg)	2,4-DNT (mg/kg)	Lead (mg/kg)
0701-653210-03G	9/12/2007	0.5	NA	<0.0204	NA	NA
UP16N-1-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)*	<0.02 (B,D)*
UP16N-11-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)*	<0.02 (D)*
UP16N-12-0.5	5/1/2013	0.5	NA	NA	<0.0005 (SL)*	<0.02 (D)*
UP16N-27-0.5	5/2/2013	0.5	NA	NA	<0.0005*	0.02 (D,J)*
UG16N-A-0.5	6/3/2013	0.5	2.9	<0.013	<0.025	4.4
UG16N-B-0.5	6/3/2013	0.5	3.2	<0.014	<0.028	9.7
UG16N-C-1.5	6/3/2013	1.5	1.5	<0.013	<0.025	3.5
UG16N-D-0.5	6/3/2013	0.5	2.7	<0.013	<0.026	9.7
UG16N-E-0.5	6/3/2013	0.5	6.8	<0.013	<0.027	5.4
UG16N-F-1.5	6/3/2013	1.5	1.2	<0.013	<0.026	2.4
UG16N-G-0.5	6/3/2013	0.5	3.6	<0.013	<0.025	4.7
UG16N-H-1.5	6/3/2013	1.5	0.57	<0.013	<0.026	1.8
UG16N-I-0.5	6/3/2013	0.5	4.0	<0.013	<0.025	6.8
UG16N-J-1.5	6/3/2013	1.5	2.5	<0.013	<0.027	10.6
UG16N-K-0.5	6/3/2013	0.5	3.6	<0.013	<0.026	7.2
UG16N-L-1.5	6/3/2013	1.5	1.1	<0.013	<0.025	3.3
UG16N-M-0.5	6/3/2013	0.5	5.7	<0.014	<0.029	8.8
UG16N-N-1.5	6/3/2013	1.5	0.58	<0.013	<0.025	2.5
UG16N-O-0.5	6/3/2013	0.5	3.0	<0.013	<0.025	4.0
UG16N-P-1.5	6/3/2013	1.5	3.4	<0.013	<0.026	7.6
UG16N-Q-1.5	6/3/2013	1.5	2.6	<0.013	<0.025	5.3
UG16N-R-0.5	6/3/2013	0.5	3.5	<0.014	<0.027	6.5
UG16N-S-0.5	6/3/2013	0.5	3.2	<0.014	<0.027	8.8
UG16N-T-1.5	6/4/2013	1.5	0.59	<0.012	<0.025	1.7
UG16N-U-1.5	6/4/2013	1.5	1.1	<0.013	<0.025	5.6
UG16N-V-1.5	6/4/2013	1.5	0.59	<0.012	<0.025	1.9
UG16N-W-1.5	6/4/2013	1.5	2.0	<0.013	<0.027	4.4
UG16N-X-1.5	6/4/2013	1.5	0.75	<0.012	<0.025	2.1
UG16N-Y-1.5	6/4/2013	1.5	0.9	<0.013	<0.025	3.5
UG16N-Z-0.5	6/4/2013	0.5	2.8	<0.013	<0.026	6.6
UG16N-A1-0.5	6/4/2013	0.5	2.0	<0.015	0.061	21
UG16N-B1-1.5	6/4/2013	1.5	1.1	<0.013	<0.025	2.4
UG16N-C1-1.5	6/4/2013	1.5	1.4	<0.012	<0.025	7.1
UG16N-D1-1.5	6/4/2013	1.5	1.4	<0.013	<0.026	3.4
UG16N-E1-1.5	6/4/2013	1.5	0.8	<0.012	<0.025	1.7

Sample ID	Date	Depth (feet bgs)	Arsenic (mg/kg)	PCB-1260 (mg/kg)	2,4-DNT (mg/kg)	Lead (mg/kg)
UG16N-F1-1.5	6/4/2013	1.5	0.51	<0.013	<0.025	1.5
UG16N-G1-1.5	6/4/2013	1.5	0.65	<0.012	<0.025	2.0
UG16N-H1-1.5	6/4/2013	1.5	0.99	<0.012	<0.025	1.9
UG16N-I1-1.5	6/4/2013	1.5	1.0	<0.012	<0.025	2.0
UG16N-J1-1.5	6/4/2013	1.5	0.63	<0.012	<0.025	3.0
UG16N-K1-1.5	6/4/2013	1.5	0.65	<0.012	<0.025	2.0
UG16N-L1-1.5	6/4/2013	1.5	6.3	<0.014	<0.027	6.0
UG16N-M1-1.5	6/4/2013	1.5	0.93	<0.013	<0.026	3.2
UG16N-N1-1.5	6/4/2013	1.5	0.84	<0.012	<0.025	3.0
UG16N-O1-1.5	6/4/2013	1.5	0.67	<0.012	<0.025	1.7
UG16N-P1-1.5	6/4/2013	1.5	0.78	<0.012	<0.025	1.8
UG16N-Q1-0.5	6/4/2013	0.5	3.0	<0.014	<0.027	5.9
UG16N-R1-1.5	6/4/2013	1.5	1.9	<0.013	<0.026	4.4
UG16N-S1-1.5	6/4/2013	1.5	1.2	<0.013	<0.025	3.2
UG16N-T1-1.5	6/4/2013	1.5	2.0	<0.013	<0.025	5.3
UG16N-U1-1.5	6/4/2013	1.5	0.78	<0.012	<0.025	2.5
UG16N-V1-1.5	6/5/2013	1.5	0.81	<0.012	<0.025	1.9
UG16N-W1-0.5	6/5/2013	0.5	3.7	<0.014	<0.027	7.8
UG16N-X1-1.5	6/5/2013	1.5	0.65	<0.013	<0.026	1.5
UG16N-Y1-1.5	6/5/2013	1.5	1.1	<0.013	<0.026	2.8
UG16N-Z1-1.5	6/5/2013	1.5	0.54	<0.013	<0.025	1.4
UG16N-A2-1.5	6/5/2013	1.5	0.53	<0.013	<0.026	2.0
UG16N-B2-2.0	6/5/2013	2.0	0.67	<0.013	<0.026	2.0
UG16N-C2-2.0	6/5/2013	2.0	2.7	<0.014	<0.027	7.0
UG16N-D2-2.0	6/5/2013	2.0	<0.13	<0.013	<0.026	2.8
UG16N-E2-2.0	6/5/2013	2.0	1.8	<0.013	<0.026	5.9
UG16N-F2-3.0	6/5/2013	3.0	1.5	<0.013	<0.026	2.9
UG16N-G2-3.0	6/5/2013	3.0	0.66	<0.013	<0.026	1.8
UG16N-H2-2.0	6/5/2013	2.0	0.67	<0.013	<0.026	2.0
UG16N-I2-1.5	6/5/2013	1.5	1.7	<0.013	<0.026	6.7
UG16N-J2-1.5	6/5/2013	1.5	1.7	<0.013	<0.026	5.3
UG16N-K2-1.5	6/5/2013	1.5	0.92	<0.013	<0.026	2.5
UG16N-L2-1.5	6/5/2013	1.5	0.73	<0.013	<0.026	2.0
UG16N-M2-1.5	6/5/2013	1.5	0.71	<0.013	<0.026	2.2
UG16N-N2-1.5	6/5/2013	1.5	0.66	<0.013	<0.026	1.9
UG16N-O2-1.5	6/6/2013	1.5	0.83	<0.013	<0.025	2.2
UG16N-P2-0.5	6/6/2013	0.5	3.1	<0.015	<0.029	6.9
UG16N-Q2-0.5	6/6/2013	0.5	4.6	<0.015	<0.029	7.7
UG16N-R2-1.5	6/6/2013	1.5	1.1	<0.013	<0.026	2.6
UG16N-S2-1.5	6/6/2013	1.5	0.53	<0.013	<0.026	2.1
UG16N-T2-1.5	6/6/2013	1.5	1.1	<0.013	<0.026	3.8

Sample ID	Date	Depth (feet bgs)	Arsenic (mg/kg)	PCB-1260 (mg/kg)	2,4-DNT (mg/kg)	Lead (mg/kg)
UG16N-U2-1.5	6/6/2013	1.5	0.88	<0.013	<0.026	2.6
UG16N-V2-1.5	6/6/2013	1.5	1.1	<0.013	<0.027	2.8
UG16N-W2-1.5	6/6/2013	1.5	1.7	<0.013	<0.026	4.3
UG16N-X2-1.5	6/6/2013	1.5	2.0	<0.014	<0.028	4.9
UG16N-Y2-2.0	6/6/2013	2.0	0.87	<0.013	<0.026	2.2
UG16N-Z2-2.0	6/6/2013	2.0	0.87	<0.013	<0.026	2.2
UG16N-A3-1.5	6/6/2013	1.5	0.92	<0.013	<0.026	2.7
UG16N-B3-3.0	6/6/2013	3.0	1.5	<0.013	<0.025	4.1
UG16N-C3-0.5	6/6/2013	0.5	6.8	<0.015	<0.029	11.3
UG16N-D3-3.0	6/6/2013	3.0	1.7	<0.013	<0.026	3.8
UG16N-E3-0.5	6/6/2013	0.5	3.8	<0.014	<0.029	7.4
UG16N-F3-3.0	6/6/2013	3.0	0.93	<0.013	<0.025	2.1
UG16N-G3-1.5	6/6/2013	1.5	0.8	<0.013	<0.026	2.3
UG16N-H3-0.5	6/6/2013	0.5	3.9	<0.014	<0.028	8.3
UG16N-I3-2.0	6/6/2013	2.0	0.9	<0.013	<0.025	2.8
UG16N-J3-2.0	6/6/2013	2.0	0.8	<0.013	<0.025	2.0
UG16N-K3-0.5	6/6/2013	0.5	2.8	<0.014	<0.028	7.6
UG16N-L3-1.5	6/6/2013	1.5	0.86	<0.013	<0.026	2.0
UG16N-M3-1.5	6/6/2013	1.5	0.99	<0.013	<0.026	3.1
UG16N-N3-3.0	6/6/2013	3.0	0.77	<0.013	<0.026	2.4
UG16N-O3-0.5	6/6/2013	0.5	4.0	<0.014	<0.027	14.7
UG16N-P3-0.5	6/6/2013	0.5	7.0	<0.014	<0.028	8.2
UG16N-Q3-1.5	6/6/2013	1.5	1.7	<0.013	<0.026	3.4
UG16N-R3-1.5	6/6/2013	1.5	1.1	<0.013	<0.026	3.2
UG16N-S3-1.5	6/6/2013	1.5	0.73	<0.013	<0.026	1.9
UG16N-T3-0.5	6/6/2013	0.5	3.3	<0.013	<0.027	13.3
UG16N-U3-0.5	6/6/2013	0.5	0.8	<0.013	<0.026	2.2
Cleanup Objective			**10**	**0.22**	**1.6**	**50/250**

bgs - below ground surface
mg/l - milligrams per liter
D - Elevated Limit of Detection (LOD) and Limit of Quantitation (LOQ) are due to dilution/volume of the sample.
J - Analytical result is between the LOD and LOQ.
SL - Surrogate recovery was below the lower control limit. Analytical results for this parameter should be considered estimates.
B - Analyte was detected in associated Method Blank.
USEPA - United States Environmental Protection Agency
Cleanup Objectives are based on BAAAP Background, USEPA Residential Soil Screening Levels and Wis. Admin. Code NR 720 Table 1 values.
* Toxicity Characteristic Leaching Procedure (TCLP) result expressed in micrograms per liter.

Data Tables Not Relevant To Case Closure Request

A.4. Pre and Post-Remedial Residual Soil Contamination Analytical Table

There were no exceedances of Cleanup Objectives for the direct contact exposure pathway in Parcel H1.

Data Tables Not Relevant To Case Closure Request

A.5. Vapor Analytical Table

Vapor pathway was not assessed due to localized, low contaminant concentrations, human occupancy greater than 2,500 feet from residual contaminant location, and absence of structures/basements within property.

Data Tables Not Relevant To Case Closure Request

A.6. Other Media of Concern

No surface water is present at or adjacent to property.

Table A.7
Groundwater Elevation Data
Parcel H1 - WDNR Closure Request
Badger Army Ammunition Plant

PBM 8911		LOM 9101	
Date	Elevation	Date	Elevation
5/6/1989	777.76	NA	NA
6/19/1989	777.19	NA	NA
9/28/1989	776.59	NA	NA
3/12/1990	775.64	NA	NA
6/13/1990	774.99	NA	NA
9/6/1990	775.62	NA	NA
12/26/1990	774.32	NA	NA
3/23/1991	773.09	NA	NA
6/20/1991	774.14	NA	NA
9/23/1991	773.89	NA	NA
11/6/1991	773.99	11/7/1991	771.81
12/16/1991	772.84	NA	NA
3/19/1992	774.04	NA	NA
4/22/1992	774.09	4/22/1992	772.81
6/16/1992	774.23	6/16/1992	772.99
9/25/1992	774.19	9/24/1992	772.97
10/4/2005	776.84	NA	NA
10/10/2006	774.33	10/10/2006	773.18
4/4/2007	774.16	4/4/2007	772.99
9/11/2007	775	9/11/2007	773.76
4/2/2008	777.42	4/2/2008	776.05
9/29/2008	785.35	9/29/2008	783.72
9/29/2009	781.77	9/29/2009	780.31
10/16/2013	777.35	10/16/2013	776.01

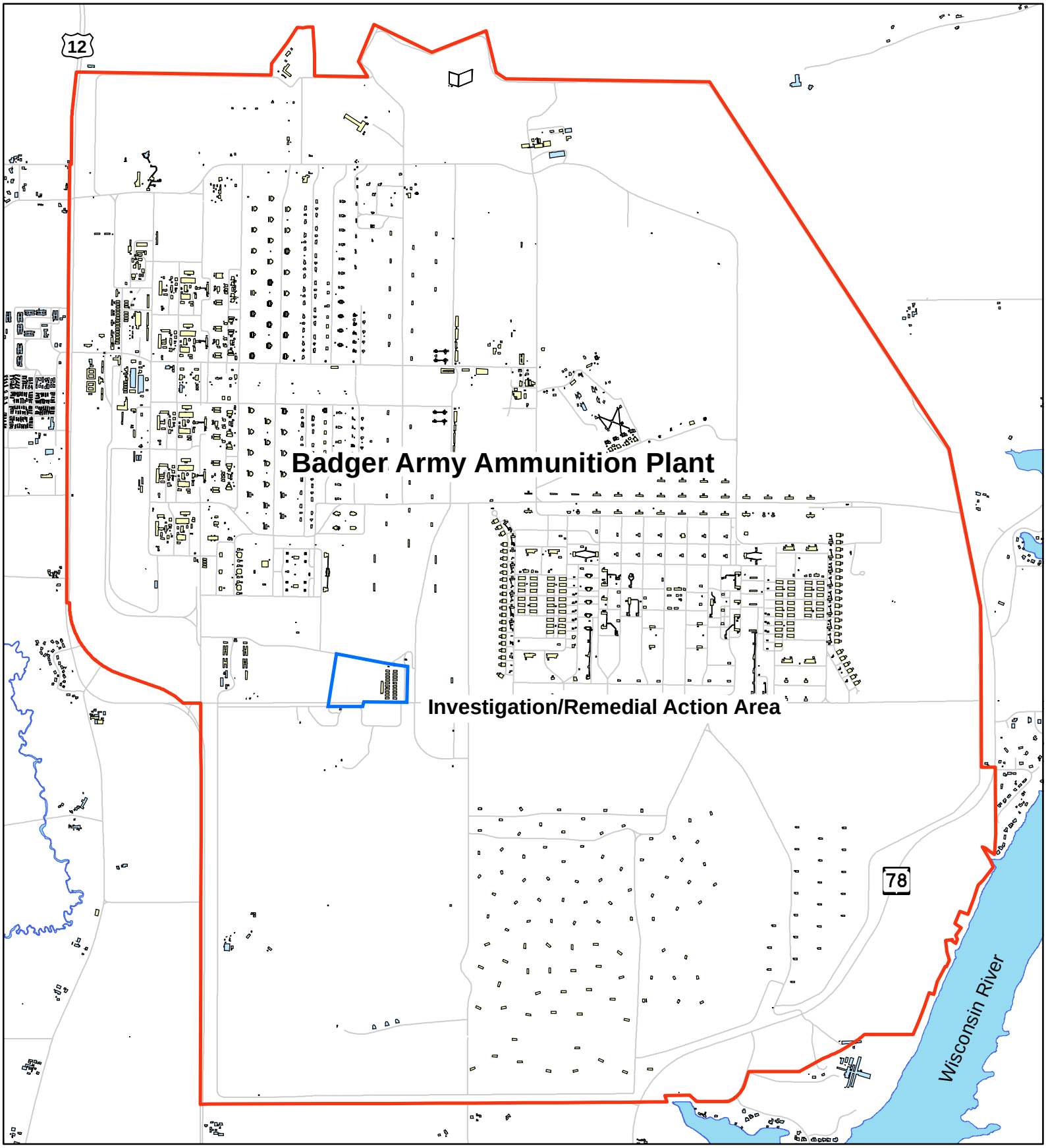
NA - Not available

Elevations are expressed in mean sea level (msl)

Data Tables Not Relevant To Case Closure Request

A.8. Other

No other remedial actions beyond the limited soil excavations have taken place on this parcel. Long term groundwater monitoring will continue for the entire site, including this parcel. There is currently no natural attenuation data being collected, and no additional remediation is anticipated.



Legend

- Badger Army Ammunition Plant Boundary
- Parcel H1 - Investigation /Remedial Action Area
- Paved Road
- Existing Building
- Former Building Footprint

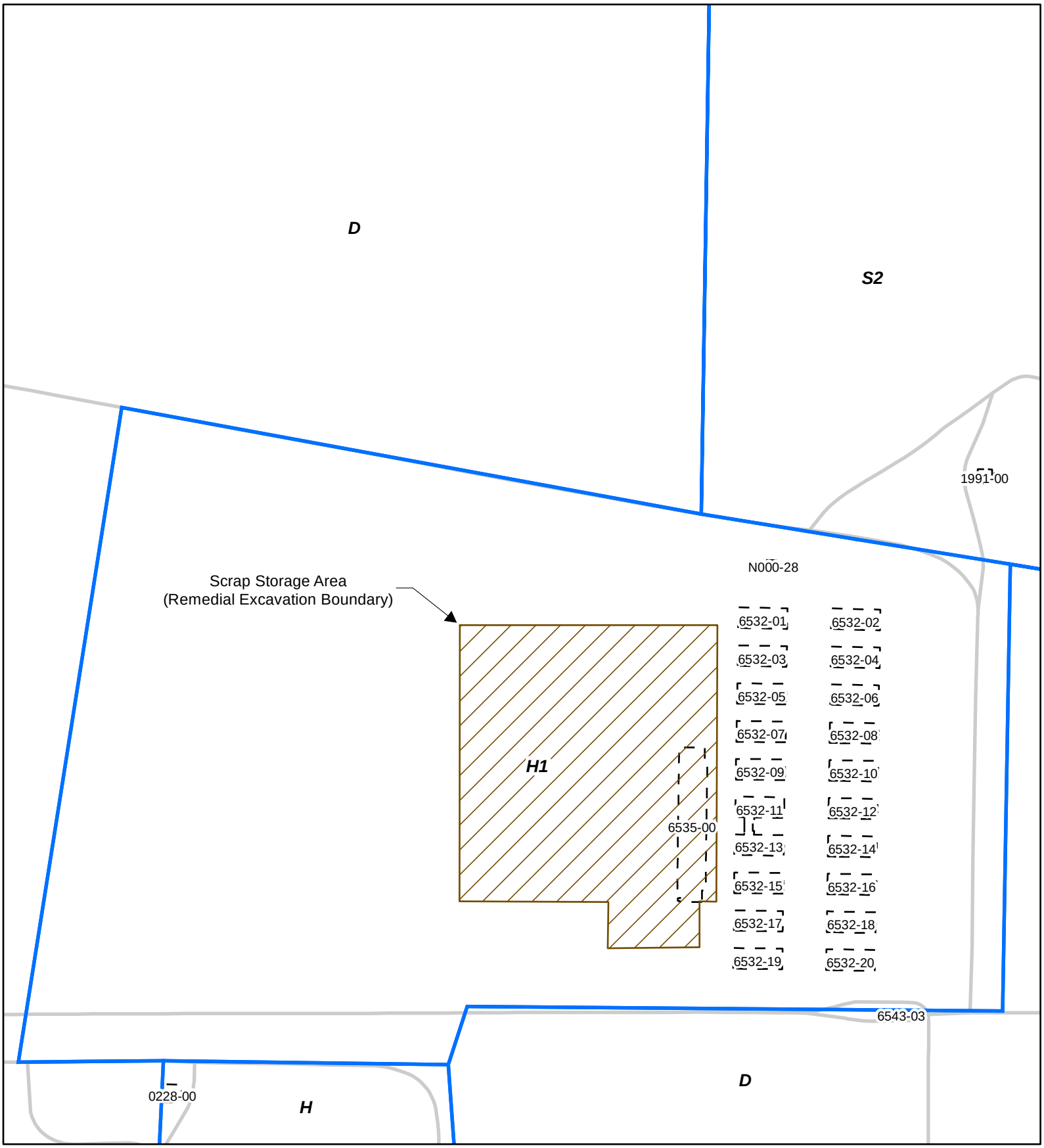
Figure B.1.a

Site Location Map
Parcel H1 - WDNR Closure Report
Badger Army Ammunition Plant

1 inch = 2,500 feet

0 3,500 7,000 Feet

D:\GIS_Projects\WDNR Closure Request\
H1\Figure 1 - Site Location Map



Legend

- Former Building Footprint
- 1700-11 Account #
- U3 Parcel
- Parcel Boundary
- Paved Road

Figure B.1.b

Detailed Site Map
Parcel H1 - Wisconsin Department of Natural Resources Closure Request
Badger Army Ammunition Plant

1 inch = 200 feet

0 300 600 Feet

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D:\GIS_Projects\WDNR Closure Request\H1\Figure 4 - MWs

Figure B.1.c
RR Site Map

Legend

- Open Site (ongoing cleanup)
- Open Site Boundary
- Closed Site (completed cleanup)
- Closed Site Boundary
- Airport
- 2010 Air Photos (WROC)
- Cities
- Villages

0.4 0 0.21 0.4 Miles

NAD_1983_HARN_Wisconsin_TM

1: 13,022

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Note: Not all sites are mapped.

Notes

Figure B.2.a

Legend

- Post-Demolition Sample Location
- Waste Characterization Sample Location
- Remedial Excavation Boundary
- Former Building Footprint
- 0240-00 Account #

Pre-Remedial (Removed) Soil Sample Location Map
Upper Gate 16 North Storage Area
Parcel H1-WDNR Case Closure Report
Badger Army Ammunition Plant

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1 inch = 50 feet

0 30 60 120 Feet

D:\GIS_Projects\WDNR Closure Request\
H1\GIS\B2a Pre-Remedial Soil Sample Locs.mxd

Legend

- Post-Demolition Sample Location
- Waste Characterization Sample Location
- Remedial Action Sample Location
- Remedial Excavation Boundary
- Former Building Footprint
- 0240-00 Account #

Figure B.2.b

Post-Remedial (Remaining)
Soil Sample Location Map
Upper Gate 16 North Storage Area
Parcel H1-WDNR Case Closure Report
Badger Army Ammunition Plant

1 inch = 50 feet

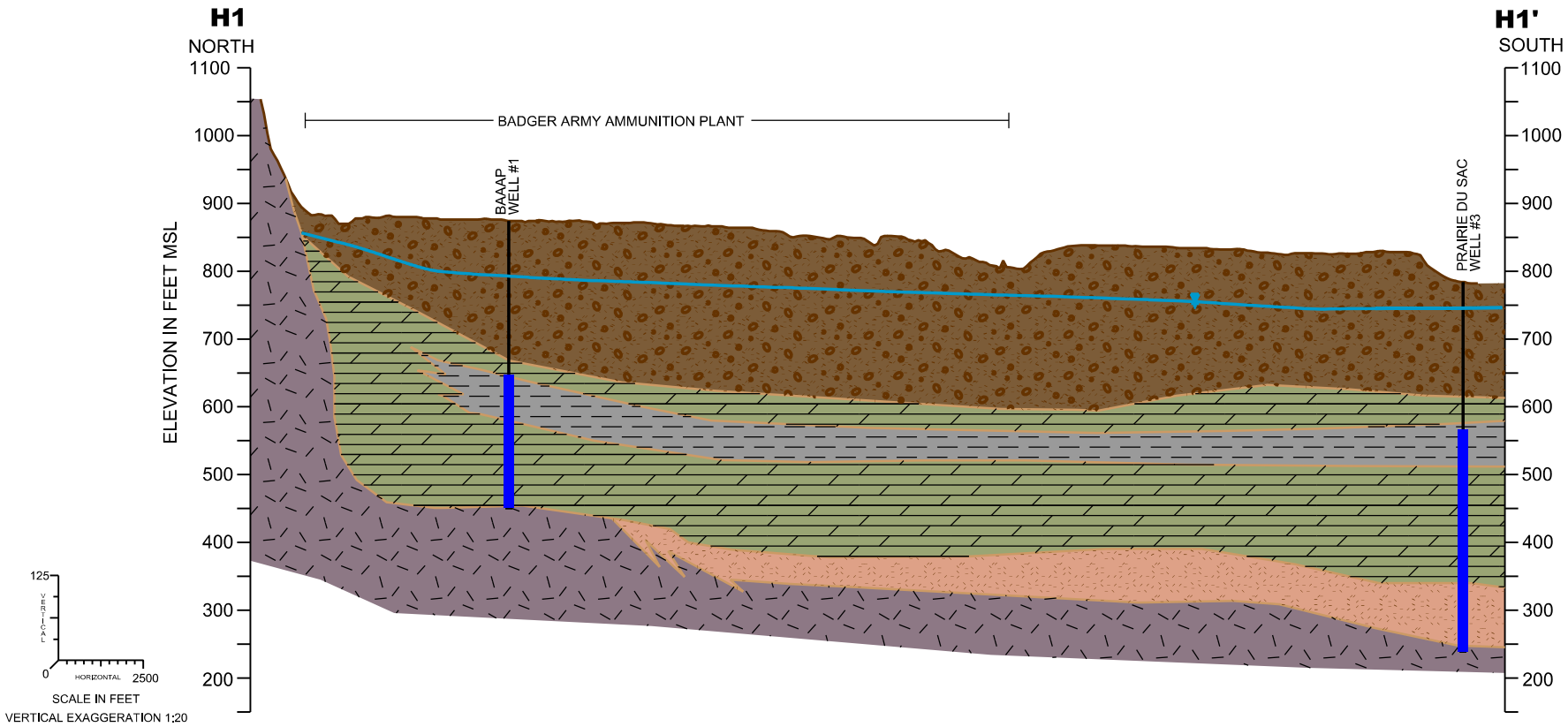
0 30 60 120 Feet

D:\GIS_Projects\WDNR Closure Request\
H1\GIS\B2b Post-Remedial Soil Sample Locs.mxd

Figures Not Relevant To Case Closure Request

B.2.c Pre/Post Remaining Soil Contamination

There were no areas of impacted soil remaining above the remedial objectives. See the *2014 Parcel H1 – Wisconsin Department of Natural Resources Closure Report* provided on the enclosed CD.



LEGEND

- BAAAP WELL #1 — WELL DESIGNATION; SUFFIXES REFER TO WATER TABLE WELL (A) AND PIEZOMETER (B,C,D &E)
- GROUND SURFACE
- WATER TABLE ELEVATION
- DRINKING WATER WELL SCREEN
- BOTTOM OF EXPLORATION

GEOLOGIC DESCRIPTIONS:

- SAND AND GRAVEL, AQUIFER
- EAU CLAIRE FORMATION, AQUITARD/AQUIFER (SHALE, DOLOMITE, SILTSTONE, SANDSTONE)
- EAU CLAIRE FORMATION, AQUITARD (SHALE)
- MT. SIMON FORMATION, AQUIFER (SANDSTONE)
- BARABOO FORMATION, AQUITARD (QUARTZITE)

NOTES:
ADAPTED FROM GOTKOWITZ AND OTHERS (2005), HYDROGEOLOGY AND SIMULATION OF GROUNDWATER FLOW IN SAUK COUNTY, WISCONSIN

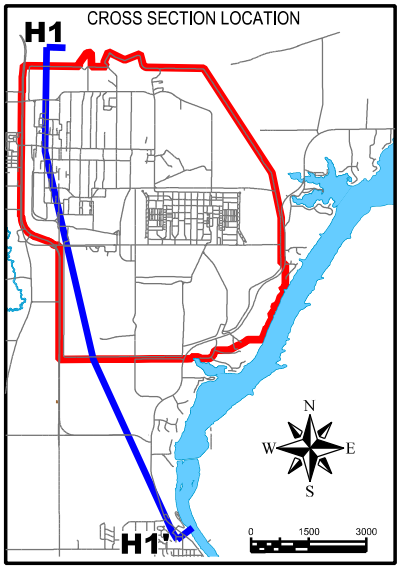


Figure B.3.a
Parcel H1-WDNR Closure Request

FIGURE 4

GENERALIZED GEOLOGIC CROSS SECTION NORTH-SOUTH

ALTERNATIVE FEASIBILITY STUDY
BADGER ARMY AMMUNITION PLANT

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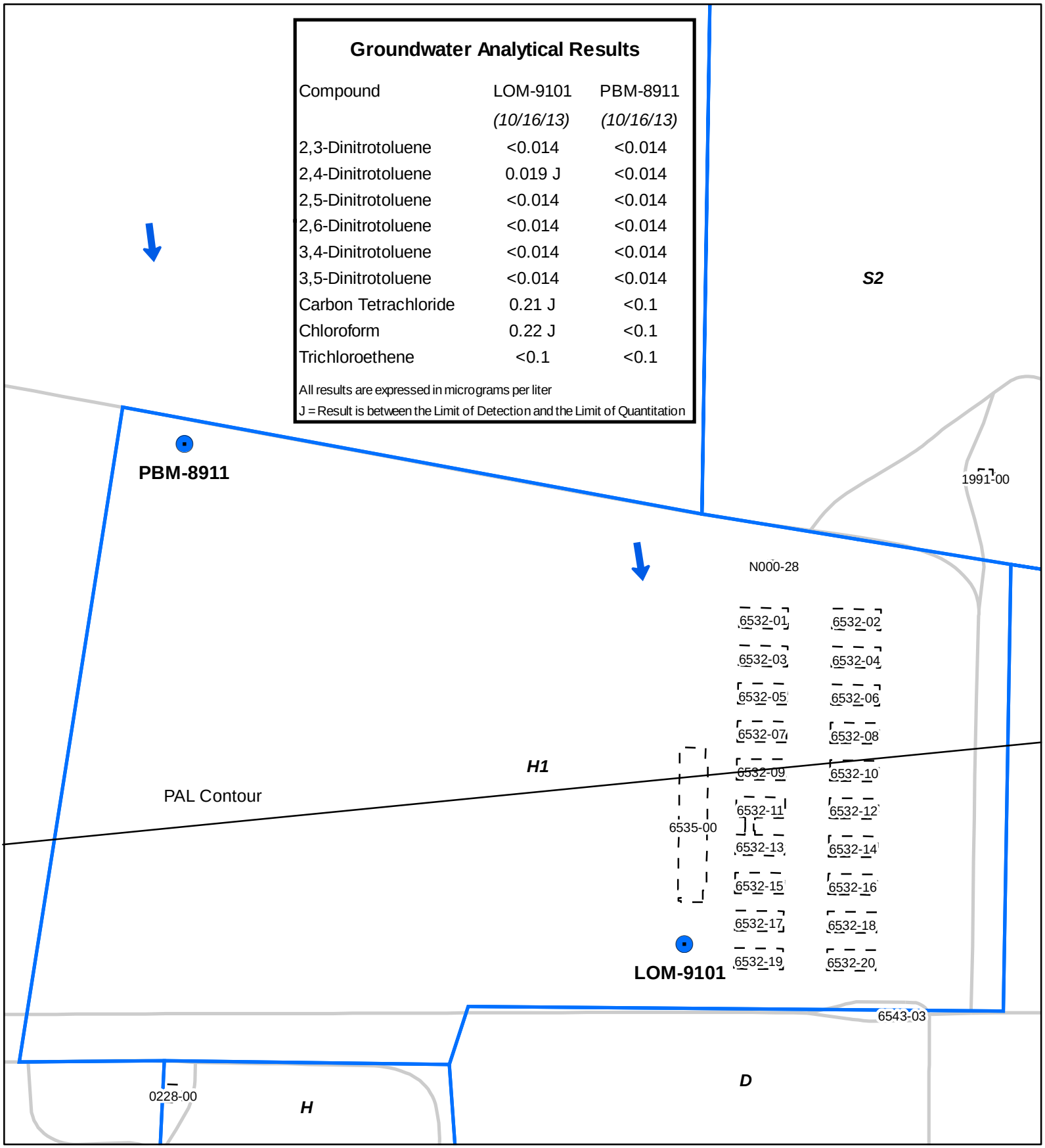
Groundwater Analytical Results

Compound	LOM-9101	PBM-8911
	(10/16/13)	*(10/16/13)*
2,3-Dinitrotoluene	<0.014	<0.014
2,4-Dinitrotoluene	0.019 J	<0.014
2,5-Dinitrotoluene	<0.014	<0.014
2,6-Dinitrotoluene	<0.014	<0.014
3,4-Dinitrotoluene	<0.014	<0.014
3,5-Dinitrotoluene	<0.014	<0.014
Carbon Tetrachloride	0.21 J	<0.1
Chloroform	0.22 J	<0.1
Trichloroethene	<0.1	<0.1

All results are expressed in micrograms per liter

J = Result is between the Limit of Detection and the Limit of Quantitation



Legend

- Monitoring Well
- Groundwater Flow Direction
- Former Building Footprint
- *1700-11* Account #
- *U3* Parcel
- Parcel Boundary
- Paved Road

Figure B.3.b

Groundwater Isoconcentration Map
Parcel H1 - Wisconsin Department of
Natural Resources Closure Request
Badger Army Ammunition Plant

1 inch = 200 feet

0 300 600 Feet

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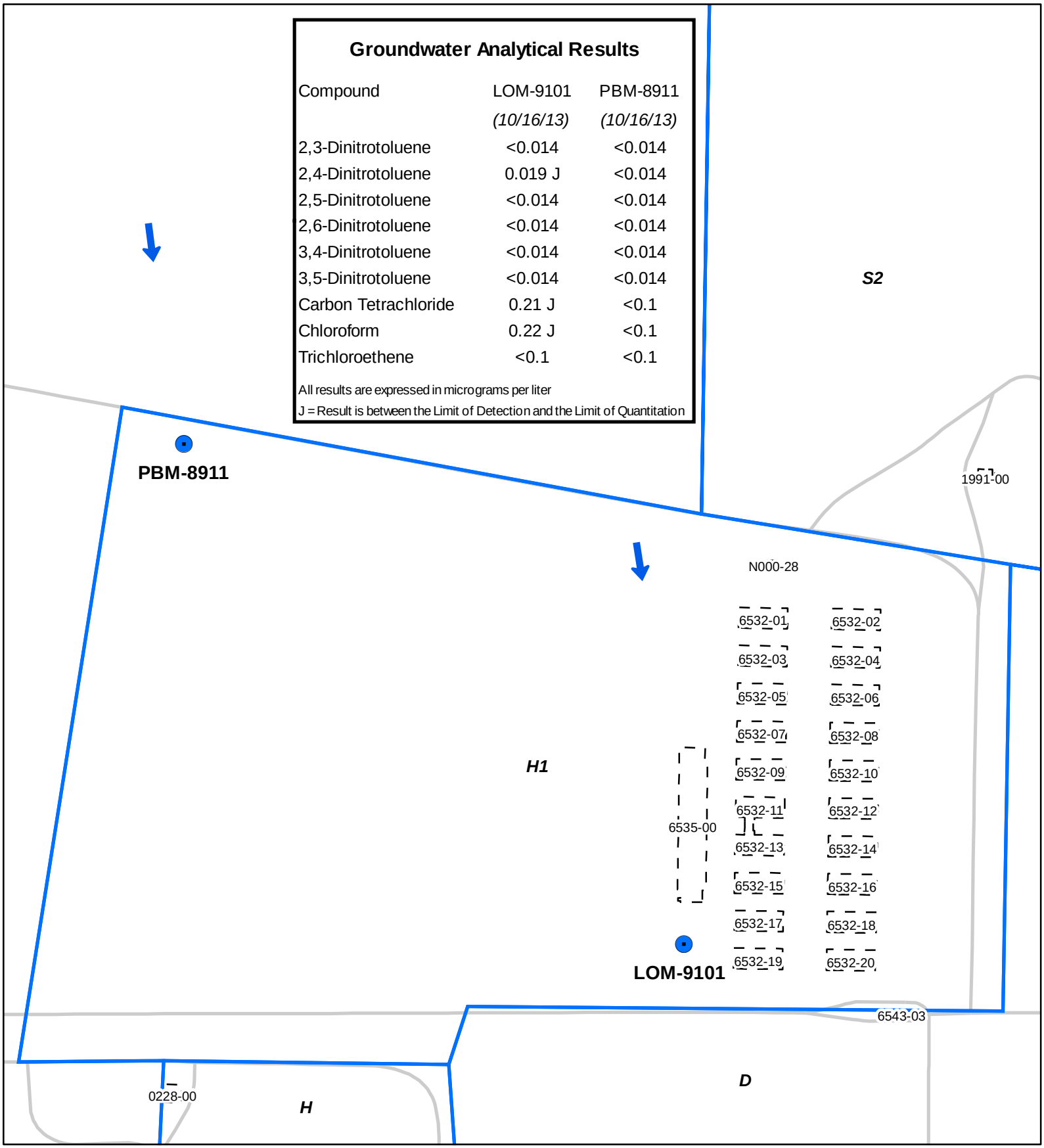
D:\GIS_Projects\WDNR Closure Request\H1\GIS\B3b GW Isoconcentration Map.mxd

Groundwater Analytical Results

Compound	LOM-9101	PBM-8911
	(10/16/13)	*(10/16/13)*
2,3-Dinitrotoluene	<0.014	<0.014
2,4-Dinitrotoluene	0.019 J	<0.014
2,5-Dinitrotoluene	<0.014	<0.014
2,6-Dinitrotoluene	<0.014	<0.014
3,4-Dinitrotoluene	<0.014	<0.014
3,5-Dinitrotoluene	<0.014	<0.014
Carbon Tetrachloride	0.21 J	<0.1
Chloroform	0.22 J	<0.1
Trichloroethene	<0.1	<0.1

All results are expressed in micrograms per liter

J = Result is between the Limit of Detection and the Limit of Quantitation



Legend

- Monitoring Well
- Groundwater Flow Direction
- Former Building Footprint
- *1700-11* Account #
- *U3* Parcel
- Parcel Boundary
- Paved Road

Figure B.3.c

Groundwater Flow Direction Map
Parcel H1 - Wisconsin Department of Natural Resources Closure Request
Badger Army Ammunition Plant

1 inch = 200 feet

0 300 600 Feet

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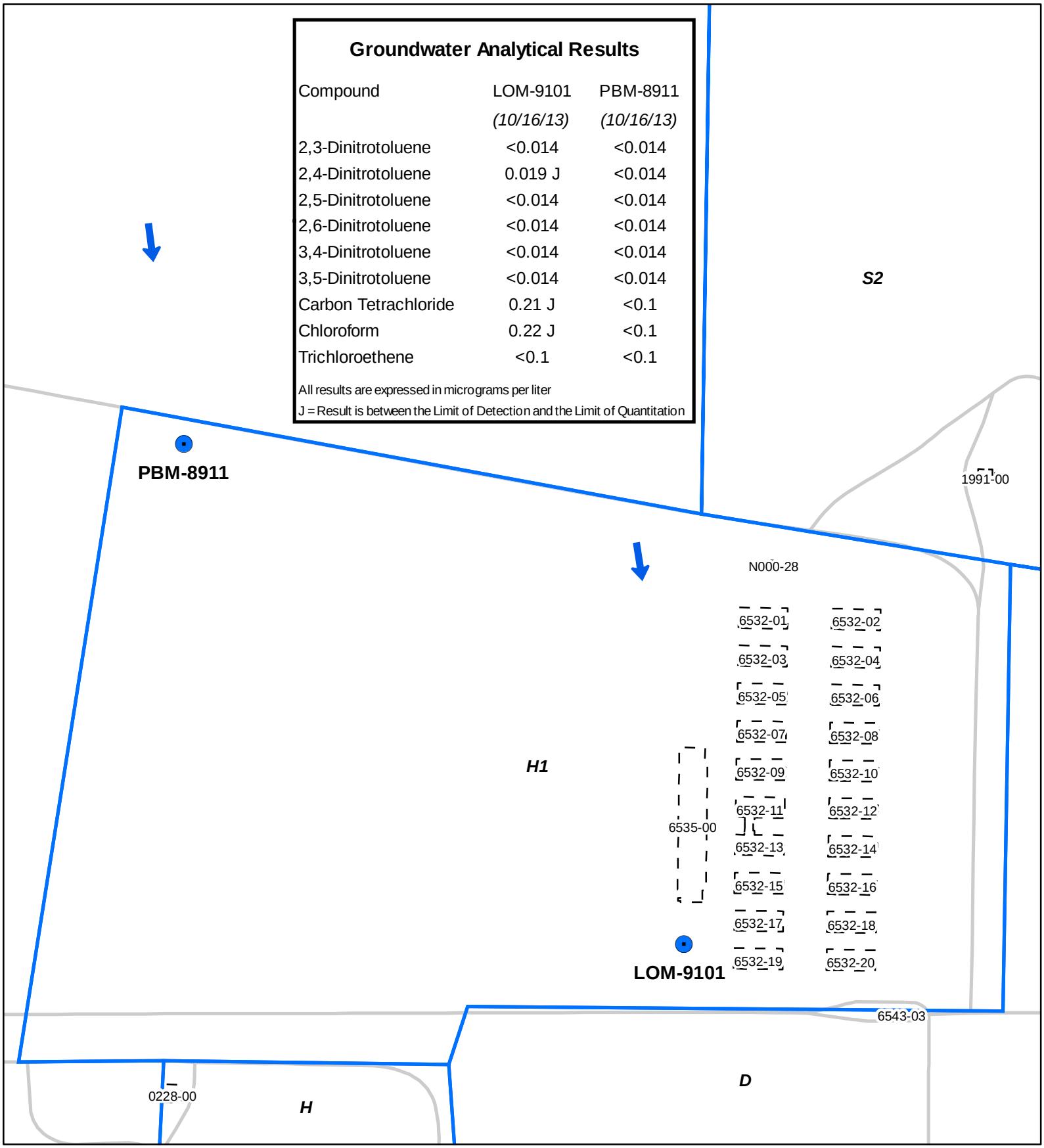
D:\GIS_Projects\WDNR Closure Request\H1\GIS\B3c GW Flow Direction Map.mxd

Groundwater Analytical Results

Compound	LOM-9101	PBM-8911
	(10/16/13)	*(10/16/13)*
2,3-Dinitrotoluene	<0.014	<0.014
2,4-Dinitrotoluene	0.019 J	<0.014
2,5-Dinitrotoluene	<0.014	<0.014
2,6-Dinitrotoluene	<0.014	<0.014
3,4-Dinitrotoluene	<0.014	<0.014
3,5-Dinitrotoluene	<0.014	<0.014
Carbon Tetrachloride	0.21 J	<0.1
Chloroform	0.22 J	<0.1
Trichloroethene	<0.1	<0.1

All results are expressed in micrograms per liter

J = Result is between the Limit of Detection and the Limit of Quantitation



Legend

- Monitoring Well
- Groundwater Flow Direction
- Former Building Footprint
- *1700-11* Account #
- *U3* Parcel
- Parcel Boundary
- Paved Road

Figure B.3.d

Groundwater Monitoring Well Location Map
Parcel H1 - Wisconsin Department of
Natural Resources Closure Request
Badger Army Ammunition Plant

1 inch = 200 feet

0 300 600 Feet

BTS BADGER TECHNICAL SERVICES

D:\GIS_Projects\WDNR Closure Request\
H1\GIS\B3d GW Monitoring Well Loc Map.mxd

Figures Not Relevant To Case Closure Request

B.4a. Vapor Intrusion Map

Vapor pathway not assessed due to localized, low contaminant concentrations, human occupancy greater than 2,500 feet from residual contaminants, absence of structures/basements within property.

Figures Not Relevant To Case Closure Request

B.4b. Other Media of Concern

No surface water or sediment is associated with this parcel.

Figures Not Relevant To Case Closure Request

B.4.c Other

No other remedial actions beyond the soil excavations have taken place on this parcel. Long term groundwater monitoring will continue for the entire site, including wells located within Parcel H1. Currently, there is no natural attenuation data available. No additional remediation is anticipated.

Documentation of Remedial Action (Attachment C)

DISCLAIMER

Documents contained in Attachment C of the Case Closure – GIS Registry (Form 4400-202) are not included in the electronic version (GIS Registry Packet) available on RR Sites Map to limit file size.

For information on how to obtain a copy or to review the file, please contact the Remediation & Redevelopment (RR) Environmental Program Associate (EPA) at dnr.wi.gov/topic/Brownfields/Contact.html

WISCONSIN
DEPT. OF NATURAL RESOURCES

Maintenance Plan Not Relevant To Case Closure Request

D.1. Location map(s)

Maintenance plan not required for closure.

Maintenance Plan Not Relevant To Case Closure Request

D.2. NR720.19 Analysis

Maintenance plan not required for closure.

Maintenance Plan Not Relevant To Case Closure Request

D.3. Description of maintenance action(s)

Maintenance plan not required for closure.

Maintenance Plan Not Relevant To Case Closure Request

D.4. Inspection log

Maintenance plan not required for closure.

Maintenance Plan Not Relevant To Case Closure Request

D.5. Contact Information

Maintenance plan not required for closure.

Monitoring Well Information

Monitoring wells PBM-8911 and LOM-9101 will remain in use at the site as they may be used as part of BAAPs on-going groundwater monitoring program.

State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION
Form 4400-113A
8-89

Facility/Project Name: R. Iager Army Ammunition Plant
License, Permit or Monitoring Number: _____

Grid Location: 4,803,527.2 m ☒ N. ☐ S.; 277,261.9 m ☒ E. ☐ W.

Well Name: PBM-89-11
Wis. Unique Well Number: _____ DNR Well Number: _____

Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12

Section Location: ____ 1/4 of ____ 1/4 of Section ____, T ____ N, R ____ ☐ E ☐ W

Date Well Installed: 03/07/89 (m m / d d / y y)

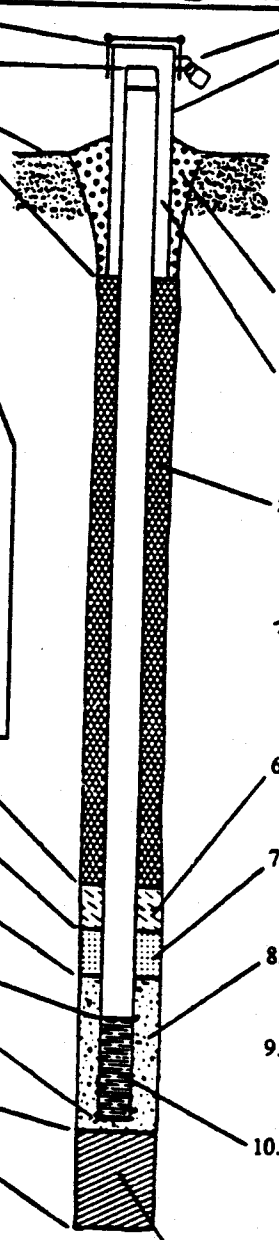
Distance Well Is From Waste/Source Boundary: NA ft.

Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known

Well Installed By: (Person's Name and Firm) John Snowden / E.C. Jordan Co.

Is Well A Point of Enforcement Std. Application? ☐ Yes ☒ No

A. Protective pipe, top elevation: 884.99 ft. MSL
B. Well casing, top elevation: 884.41 ft. MSL
C. Land surface elevation: 881.6 ft. MSL
D. Surface seal, bottom: ____ ft. MSL or ____ ft.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
   a. Inside diameter: 6.0 in
   b. Length: 2.0 ft.
   c. Material: Steel ☒ 04; Other ☐ __
   d. Additional protection? ☒ Yes ☐ No
   If yes, describe: 4 backing Posts
3. Surface seal: Bentonite ☐ 30; Concrete ☐ 01; Other ☒ __
   Grout
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☐; Other ☒ __
   Grout
5. Annular space seal: Granular Bentonite ☐ 33
   ____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35
   ____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
   5 % Bentonite ..... Bentonite-cement grout ☒ 50
   ≈ 210 gal ~~ft³~~ volume added for any of the above
   How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08
6. Bentonite seal: Bentonite granules ☐ 33
   ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite pellets ☒ 32; Other ☐ __
7. Fine sand material: Manufacturer, product name and mesh size
   NA
   Volume added NA ft³
8. Filter pack material: Manufacturer, product name and mesh size
   Red Flint, Silica Filter Sand
   Volume added ≈ 3.2 ft³
9. Well casing: Flush threaded PVC schedule 40 ☐ 23; Flush threaded PVC schedule 80 ☒ 24; Other ☐ __
10. Screen material: Schedule 80 PVC
    Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ __
    Manufacturer: Timco
    Slot size: 0.010 in.
    Slotted length: 20.0 ft.
11. Backfill material (below filter pack): None ☐; Other ☒
    Natural Cave

12. USCS classification of soil near screen: ☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ __
15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
    Describe _____
17. Source of water (attach analysis): PW #2

E. Bentonite seal, top: 804.6 ft. MSL or 77.0 ft.
F. Fine sand, top: NA ft. MSL or NA ft.
G. Filter pack, top: 799.6 ft. MSL or 82.0 ft.
H. Well screen, top: 790.6 ft. MSL or 91.0 ft.
Well screen, bottom: 770.6 ft. MSL or 111.0 ft.
Filter pack, bottom: 770.6 ft. MSL or 111.0 ft.
J. Borehole, bottom: 751.6 ft. MSL or 130.0 ft.
Borehole, diameter: 9.5 in.
O.D. well casing: 4.5 in.
I.D. well casing: 4.0 in.

I certify that the information on this form is true and correct to the best of my knowledge.
Signature: [signature] Firm: E.C. Jordan Co.

Please complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation.
NOTE: Shaded areas are for DNR use only. See instructions for more information.

ABB Environmental Services, Inc.

MONITORING WELL CONSTRUCTION FOR:

Facility/Project Name: BADGER AAP

Facility License, Permit or Monitoring Number: _____

Grid Location: _____ ft. ☐ N. ☐ S. / _____ ft. ☐ E. ☐ W.

Well Name: LOM-91-01 #661

Wis. Unique Well Number: _____ UNK. Well Number: _____

Type of Well: Water Table Observation Well ☐ 11; Piezometer ☐ 12

Section Location: SE 1/4 of SW 1/4 of Section 11; T 10 N, R 6 ☒ E ☐ W

Date Well Installed: 10/10/91 (mm/dd/yy)

Distance Well Is From Waste/Source Boundary: NA ft.

Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☒ Not Known

Well Installed By: (Person's Name and Firm) G. RODRIGUEZ, LAYNE

Is Well A Point of Enforcement Std. Application? ☐ Yes ☒ No

A. Protective pipe, top elevation: 917.72 ft. MSL

B. Well casing, top elevation: 917.51 ft. MSL

C. Land surface elevation: 915.5 ft. MSL

D. Surface seal, bottom: _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen: ☐ GP ☐ GM ☐ GC ☒ GW ☐ SW ☐ SP ☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐ Bedrock

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ DUAL WALL

15. Drilling fluid used: Water ☒ 02; Air ☒ 01; Drilling Mud ☐ 03; None ☐ 99

Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis): PRODUCTION PUMP 2

E. Bentonite seal, top: 790.5 ft. MSL or 125.0 ft.

F. Fine sand, top: N/A ft. MSL or _____ ft.

G. Filter pack, top: 783.5 ft. MSL or 132.0 ft.

H. Well screen, top: 775.8 ft. MSL or 139.7 ft.

I. Well screen, bottom: 765.8 ft. MSL or 149.7 ft.

J. Filter pack, bottom: 764.5 ft. MSL or 151.0 ft.

K. Borehole, bottom: 764.5 ft. MSL or 151.0 ft.

L. Borehole, diameter: 09.0 in.

M. O.D. well casing: 04.00 in.

N. I.D. well casing: 3.75 in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
   a. Inside diameter: 06.0 in.
   b. Length: 06.0 ft.
   c. Material: Steel ☒ 02; Other ☐ __
   d. Additional protection? ☒ Yes ☐ No
   If yes, describe: BUMPER POSTS

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ __

4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☒; Other ☐ __

5. Annular space seal: Granular Bentonite ☐ 33; ____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35; ____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31; 10 % Bentonite ..... Bentonite-cement grout ☒ 50; 150 Ft³ volume added for any of the above

   How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 03

6. Bentonite seal: Bentonite granules ☐ 33; ☒ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☒ 32; ~~Bentonite Powder~~ Other ☐ __

7. Fine sand material: Manufacturer, product name and mesh size: NONE

   Volume added _____ ft³

8. Filter pack material: Manufacturer, product name and mesh size: COLORADO SILICA SAND

   Volume added 20 ft³

9. Well casing: Flush threaded PVC schedule 40 ☐ 23; Flush threaded PVC schedule 80 ☒ 24; Other ☐ __

10. Screen material: PVC SCH 80

    Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ __

    Manufacturer: MONOFLEX

    Slot size: 0.010 in.

    Slotted length: 06.0 ft.

11. Backfill material (below filter pack): None ☒; Other ☐ __

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: ABB-ES

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B 8-89

Facility/Project Name	Well Name
BADGER ARMY AMUNITION PLANT	PBM-89-11
License, Permit or Monitoring Number: _____	Wis. Unique Well Number: _____ DNR Well Number: _____

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method

surged with bailer and bailed	☐	4 1
surged with bailer and pumped	☐	6 1
surged with block and bailed	☐	4 2
surged with block and pumped	☐	6 2
surged with block, bailed and pumped	☐	7 0
compressed air	☐	2 0
bailed only	☐	1 0
pumped only	☒	5 1
pumped slowly	☐	5 0
Other _____	☐	____

3. Time spent developing well 330 min.

4. Depth of well (from top of well casisng) 113.__ ft.

5. Inside diameter of well 4.0 in.

6. Volume of water in filter pack and well casing 50.__ gal.

7. Volume of water removed from well 1650.__ gal.

8. Volume of water added (if any) 300.__ gal.

9. Source of water added DRILLING PROCESS

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	106.73 ft.	106.69 ft.
Date	03/22/89 (mm dd yy)	03/23/89 (mm dd yy)
Time	9:00 ☒ a.m. ☐ p.m.	10:00 ☒ a.m. ☐ p.m.
12. Sediment in well bottom	__.__ inches	__.__ inches
13. Water clarity	Clear ☒ 10 Turbid ☐ 15 (Describe)	Clear ☐ 20 Turbid ☐ 25 (Describe)

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

Additional comments on development:

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: R DAVID DINSMORE	Signature: William Dyck
Firm: C E ENVIRONMENTAL	Firm: C E ENVIRONMENTAL

NOTE: Shaded areas are for DNR use only. See instructions for more information.

ABB Environmental Services, Inc.

MONITORING WELL DEVELOPMENT FORM

Facility/Project Name: BAAP - USATHAMA

Well Name: LOM-91-01

License, Permit or Monitoring Number: _____

Wis. Unique Well Number: _____ DNR Well Number: _____

1. Can this well be purged dry? ☐ Yes ☑ No

2. Well development method

surged with bailer and bailed	☐	4 1
surged with bailer and pumped	☐	6 1
surged with block and bailed	☐	4 2
surged with block and pumped	☐	6 2
surged with block, bailed and pumped	☐	7 0
compressed air	☐	2 0
bailed only	☐	1 0
pumped only (w/ surging)	☑	5 1
pumped slowly	☐	5 0
Other _____	☐	

3. Time spent developing well: 193 min.

*4. Depth of well (from top of well casisng): 152.__ ft.

5. Inside diameter of well: __.28 ~~in~~ ft

6. Volume of water in filter pack and well casing: 12.2 gal.

7. Volume of water removed from well: 62.0 gal.

8. Volume of water added (if any): __0.0 gal.

9. Source of water added: none

10. Analysis performed on water added? ☑ Yes ☐ No
(If yes, attach results) VOC

	Before Development	After Development	24 hrs. after
11. Depth to Water (from top of well casing)	144.64 ft.	144.62 ft.	144.64
Date	10/16/91 (m m d d y y)	10/16/91 (m m d d y y)	1725 10.18.91
Time	2~~2~~:31 (NR) ☐ a.m. ☑ p.m.	5:43 ☐ a.m. ☑ p.m.	
12. Sediment in well bottom	__.__ inches	__.__ inches	
13. Water clarity	Clear ☐ 10; Turbid ☑ 15; (Describe)	Clear ☑ 20; Turbid ☐ 25; (Describe)	

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l
16. Screen length (from diagram)	10.0 ft.	

** well not labelled - we labelled -
** grouting incomplete/ collar to be installed

Additional comments on development:

w/c = -.20 -.20
Stick-up = 2.1 ± 2.1±
pump rate = NA (pump rate always changing)

*- initial bottom reading = (NR) ~~152~~ ~ 151.8'
- final bottom reading = 151.72'

24 hr after 151.85'

	initial	15 gal	45 gal	62 gal
T (°C)	14.5 →	15.9	12.8	12.4
pH (units)	7.7	7.3	7.4	7.2
cond. (µmhos)	592	~~592~~ 595 (NR)	632	634

Well developed by: Person's Name and Firm

Name: Nancy Roka/ Vicki Miller

Firm: ABB-ES

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Nancy E. Roka

Firm: ABB-ES

NOTE: Shaded areas are for DNR use only. See instructions for more information.

Grund-fos Redi-flo 2 w/ brass straining cloth and 3/8" ID tubing used for development

~~Purge volume = (152 - 144.64) × .69 gal/ft~~

Notifications to Owners of Impacted Properties

Not applicable. The releases on Parcel H1 have not impacted off-site properties.

PARCEL "F"

Part of the NW 1/4 of Section 23, T10N-R6E, Town of Sumpter, Sauk County, Wisconsin described as follows:
Commencing at the East 1/4 corner of said Section 23, thence N00°58'24"W 170.72 feet to the centerline of an existing drive; thence, along said centerline, S89°28'32"W 3258.71 feet to the point of beginning;
thence N58°46'54"W 1980.50 feet to the centerline of said drive;
thence, along said centerline, S00°16'51"W 892.58 feet;
thence, continuing along said centerline, on the arc of a 156.47 foot radius curve, concave to the northeast, the chord of which bears S45°07'19"E 209.91;
thence, continuing along said centerline, N89°28'32"E 1549.42 feet to the point of beginning.
Subject to easements, covenants and restrictions of record.

PARCEL "G"

Part of Section 10 and Section 11, T10N-R6E, Town of Sumpter; Sauk County, Wisconsin described as follows:
Beginning at the southeast corner of said Section 10;
thence, along the south line thereof, N 89°39'22" W 74.13 feet;
thence N00°07'38"E 1260.65 feet;
thence S88°58'45"E 782.39 feet;
thence S71°10'24"E 492.85 feet;
thence S89°09'30"E 397.56 feet;
thence S00°32'06"W 1096.93 feet to the south line of said Section 11;
thence N89°27'54"W 1564.76 feet to the point of beginning.
Subject to easements, covenants and restrictions of record.

Note: Parcel "G", Parcel "H", Parcel "I" and Parcel "J" are all within Parcel "D". These are areas which will remain under the Army's institutional control.

PARCEL "H"

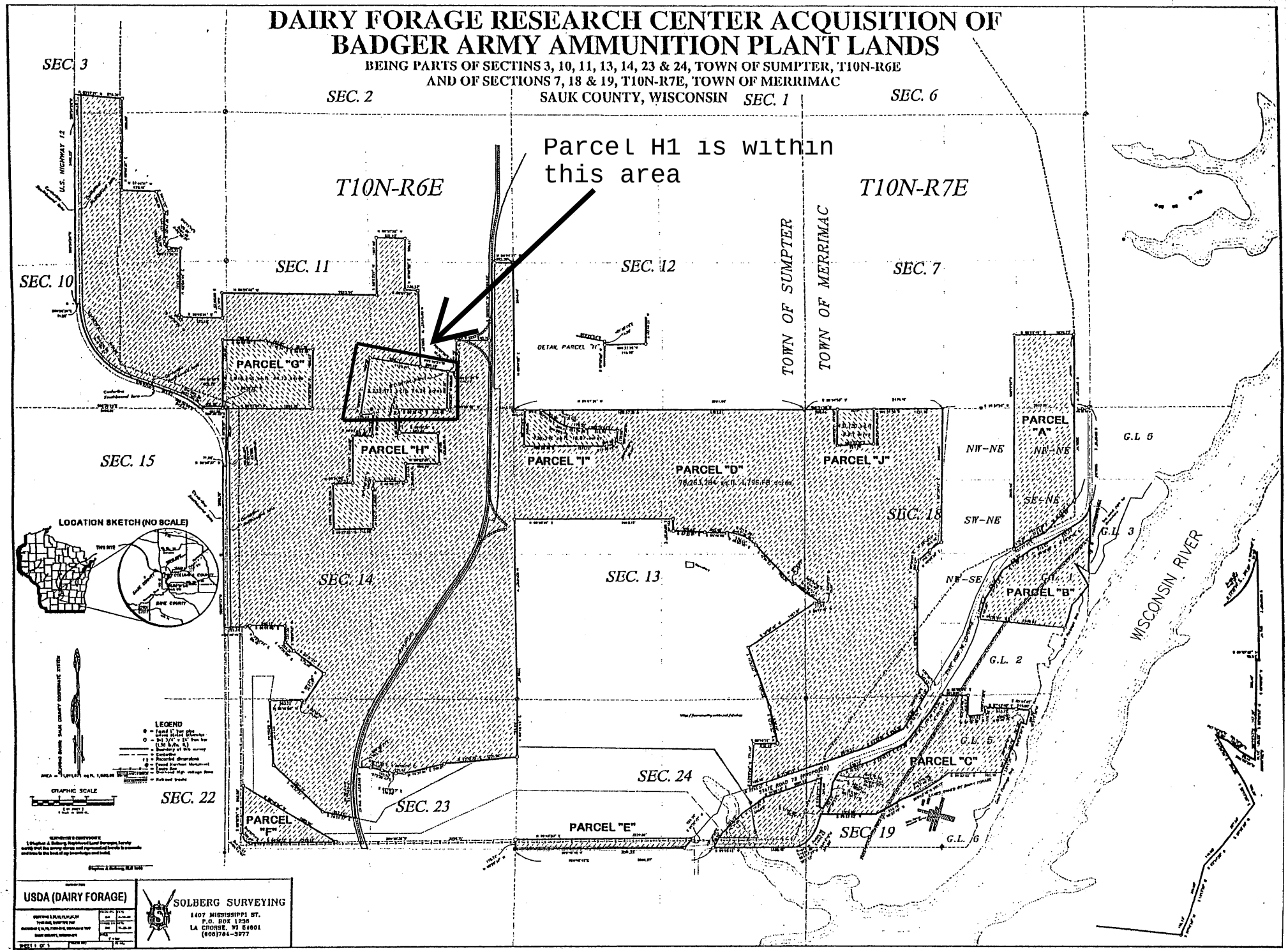
Part of Section 11 and Section 14, T10N-R6E, Town of Sumpter; Sauk County, Wisconsin described as follows:
Commencing at the southeast corner of said Section 11, thence, along the south line thereof, N 89°28'42" W 1213.37 feet to the point of beginning;
thence, along said north line, N89°28'42"W 848.49 feet;
thence S18°23'26"W 96.58 feet;
~~thence S03°56'20"E 339.57 feet;~~
~~thence S89°00'36"E 692.34 feet;~~
~~thence S02°22'23"E 564.88 feet;~~
~~thence N89°23'39"W 609.78 feet;~~
~~thence S01°50'42"E 322.16 feet;~~
~~thence S89°56'31"W 578.83 feet;~~
~~thence S11°25'37"W 138.32 feet;~~
~~thence S00°06'31"E 724.41 feet;~~
~~thence S89°27'25"W 713.50 feet;~~
~~thence N00°39'46"W 818.11 feet;~~
~~thence N86°51'40"E 357.23 feet;~~
~~thence N00°17'22"E 862.32 feet;~~
~~thence S89°52'44"E 355.45 feet;~~
thence N02°45'38"E 405.28 feet;
thence S89°43'53"W 229.43 feet;
thence N09°02'14"E 1050.20 feet;
thence S79°29'54"E 1433.47 feet;
thence S01°08'28"W 697.01 feet to the point of beginning.
Subject to easements, covenants and restrictions of record.

Parcel H previously included Parcel H1.
Parcel H1 corner points only are shown here.

Parcels H (and H1) was previously transferred to the USDA and no revised legal description was conducted by the Army.

DAIRY FORAGE RESEARCH CENTER ACQUISITION OF BADGER ARMY AMMUNITION PLANT LANDS

BEING PARTS OF SECTINS 3, 10, 11, 13, 14, 23 & 24, TOWN OF SUMPTER, T10N-R6E
AND OF SECTIONS 7, 18 & 19, T10N-R7E, TOWN OF MERRIMAC
SAUK COUNTY, WISCONSIN



Verification of Zoning

G.3. The Badger Army Ammunitions Plant land was acquired by the United States for use as an ammunition plant, so under ss. 1.02(intro.) and (1), Wis. States., it is a "site for the erection of …magazines, arsenals,…" over which the United States has exclusive jurisdiction as a "federal enclave." Once Wisconsin cedes exclusive jurisdiction to the United States over a place or tract of land within the state pursuant to ss. 1.02(1) and 1.03, States., the United States retains exclusive jurisdiction" so long… as the place or tract shall remain the property of the United States." To date, Parcel H1 remains United States property subject to the exclusive jurisdiction of the United States.

DEPARTMENT OF THE ARMY
BADGER ARMY AMMUNITION PLANT
S7560 U.S. HIGHWAY 12
NORTH FREEDOM, WISCONSIN 53951-9588

February 3, 2014

SUBJECT: Parcel H1 – Legal Description Certification

Mr. Will Myers
Hydrogeologist
Wisconsin Department of Natural Resources
South Central Region
3911 Fish Hatchery Road
Fitchburg, WI 53711-5397

Dear Mr. Myers:

As a representative for the Responsible Party, I believe that the legal description, as provided in the Case Closure – GIS Registry (Form 4400-202) accurately describes the correct property for Parcels H and H1. Parcel H1 is the northern portion of the former Parcel H.

Please do not hesitate to contact me at 608-643-3361 if you have any questions.

Sincerely,

Joan M. Kenney

Joan M. Kenney
Commander's Representative

Copy furn: Badger Technical Services, LLC