



# **2021 Annual Vapor Intrusion Evaluation Report**

**Wausau Water Supply NPL Site**

Wausau Group

April 14, 2022

**GHD**

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<b>Printed date</b>	4/13/2022 4:31:00 PM
<b>Last saved date</b>	April 13, 2022
<b>File name</b>	Report 44
<b>Author</b>	Kiel Jenkin
<b>Project manager</b>	[Project Manager]
<b>Client name</b>	Wausau Group
<b>Project name</b>	Wausau Water Supply National Priorities List Site
<b>Document title</b>	2021 Annual Vapor Intrusion Evaluation Report   Wausau Water Supply NPL Site
<b>Revision version</b>	Rev [00]
<b>Project number</b>	003978

**Document status**

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date

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# Contents

<b>1. Introduction</b>	<b>1</b>
1.1 Site Background	1
1.2 Site Geology and Hydrology	2
1.3 Site Contaminants of Potential Concern	2
1.4 VISL Calculator	3
<b>2. 2021 Monitoring Activities</b>	<b>3</b>
<b>3. Evaluation of Groundwater Monitoring Data</b>	<b>3</b>
3.1 West Bank	3
3.2 East Bank	5
<b>4. Summary</b>	<b>6</b>

## Figure index

Figure 1	Site Location
Figure 2	Site Plan
Figure 3	Current City Parcel Zoning
Figure 4	Simplified Current Zoning and Groundwater VISL Exceedances
Figure 5	Simplified Future Land Use and Groundwater VISL Exceedances

## Table index

Table 1	VOC Analytical Results Annual Groundwater Monitoring Event August 2021
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# 1. Introduction

GHD Services Inc. (GHD) has prepared this 2021 Annual Vapor Intrusion Evaluation Report (Annual VI Report) for the Wausau Water Supply National Priorities List (NPL) Site (Site) in Wausau, Wisconsin, on behalf of the Wausau Group of Responsible Parties (Group). The Annual VI Report is being submitted in response to the United States Environmental Protection Agency's (EPA) and Wisconsin Department of Natural Resources' (WDNR) request for an annual evaluation of the ongoing vapor intrusion (VI) evaluation at the Site during a call with GHD on February 11, 2021. This report satisfies the request by outlining the VI evaluation progress including investigation results and evaluation of the 2021 annual groundwater monitoring data for potential VI concerns.

VI work conducted at the Site is done in accordance with the *Vapor Intrusion Evaluation Work Plan (Work Plan)* submitted to the EPA on February 22, 2017. The Work Plan was prepared in accordance with the EPA guidance document: "OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (June, 2015)" and the Wisconsin Department of Natural Resources (WDNR) guidance document "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin (December 2010)".

## 1.1 Site Background

The Wausau Superfund Site is located on the north side of the City of Wausau, which is located in north-central Wisconsin along the Wisconsin River in Marathon County. Figure 1 shows the location of the Site. The Site consists of two contaminant source areas separated by the Wisconsin River. The East Bank portion of the Site is related to solvent spills that occurred on property operated by Wausau Chemical Corporation (WCC). The West Bank portion of the Site is related to the former City of Wausau landfill. The former landfill property is presently owned by Regal Beloit Corporation (formerly Marathon Electric Company). These two properties are considered source areas for contaminants in the aquifer, which is the source of drinking water for the City of Wausau. The East Bank and West Bank areas are depicted on the Site Plan, Figure 2. Current city parcel zoning is depicted on Figure 3, with simplified parcel zoning depicted on Figure 4 (current zoning) and Figure 5 (future land use.)

Groundwater and soil remediation has been ongoing at the two source areas since approximately 1985. Remedial actions by the Group were initiated in the early 1990s in accordance with the September 29, 1990, Record of Decision (ROD) and the Consent Decree (CD) entered with the court on January 24, 1991. Remedies implemented at the Site consisted of two soil vapor extraction (SVE) systems to address the source areas and groundwater extraction and treatment, utilizing existing municipal production wells (CW3 and CW6) and a remediation well (EW1).

Source area remediation was accomplished by the installation of SVE systems at Marathon Electric (West Bank) and Wausau Chemical (East Bank) in January 1994. The SVE system at Marathon Electric operated until April 1996, when the West Bank source remediation was approved as complete. The East Bank SVE system was modified in 1996 and continued to operate until January 2001. The East Bank source remediation was approved as complete in 2007.

Groundwater remediation was provided through two existing municipal production wells (CW3 and CW6) and one extraction well installed at Marathon Electric (EW1). Air strippers, located at the Wausau water treatment plant, treated water from the municipal supply wells. Water from EW1 was treated by air stripping (over riprap on the riverbank) before being discharged to the Wisconsin River.

EW1 stopped operating in July 2012 due to pump failure. Since EW1 has completed its performance goal, the Group proposed a pilot study to confirm that City wells CW6 and CW3 will effectively contain the contaminant plume without the need for pumping at EW1. The EW1 Shutdown Pilot Study Report was submitted to EPA in March 2015. The USEPA has provided conditional approval of the shutdown and abandonment of EW1 pending review of the EW1 Abandonment Work Plan submitted to the USEPA on February 17, 2022.

Additional groundwater remediation was provided by a groundwater extraction system operated by WCC between 1985 and 1996 as an interim remediation measure. The extraction system at WCC consisted of a series of shallow wells at the south end of the WCC property. Groundwater from this system was treated by air stripping. This system was in addition to the requirements of the ROD or the CD and operation ceased in 1996.

Preliminary VI evaluation of the Site included sampling and analysis of shallow aquifer groundwater samples. These results were screened using EPA's Vapor Intrusion Screening Level (VISL) Calculator<sup>1</sup>, and WDNR's Vapor Action Levels (VALs), which indicated that additional assessment and delineation in certain areas of the Site were warranted. The objectives of this investigation were to collect additional groundwater data to better delineate the contaminant plume and to collect subsurface vapor data to determine the potential for vapor intrusion to indoor air. Specific tasks included:

- Installation of temporary wells for groundwater sampling
- Laboratory analysis of groundwater samples
- Installation of soil vapor sampling probes
- Building occupancy and construction assessments
- Installation of sub-slab vapor sampling points
- Sampling and analysis of soil vapor, indoor air, and ambient air

A summary of to-date VI investigation activities was submitted to the WDNR and USEPA on December 8, 2021.

## 1.2 Site Geology and Hydrology

The Site is underlain by glacial outwash and alluvial sediments that have filled in the pre-glacial stream valley in which the Wisconsin River now flows. This alluvial aquifer ranges from 0 to 160 feet thick and has an irregular base and lateral boundaries. Relatively impermeable bedrock underlies the aquifer and forms its lateral boundaries within the pre-glacial valley. Six production wells in the Site area provide drinking water for the City of Wausau. These wells are screened in the glacial outwash and alluvial sand and gravel deposits that underlie and are adjacent to the Wisconsin River.

The East Bank groundwater flow patterns are controlled by the operation of CW3. East Bank groundwater contours indicate a large cone of influence surrounding CW3 that fully captures the East Bank contaminant plume. Under natural conditions, groundwater on the East Bank flows in a south-southwest direction towards the Wisconsin River, as observed as recently as the 2017 sampling event when CW3 was not operating due to rehabilitation activities being conducted at the time of hydraulic monitoring.

West Bank contours depict a large cone of influence created by CW6 and CW10. Under natural conditions, West Bank groundwater would flow generally eastward and discharge to the Wisconsin River. Under pumping conditions however, groundwater flows toward the City supply wells.

## 1.3 Site Contaminants of Potential Concern

Site contaminants of potential concern (COPC) are limited to the following chlorinated VOCs:

### ***East Bank***

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- cis-1,2-Dichloroethene (c12DCE)
- Vinyl chloride

### ***West Bank***

- Trichloroethene
- cis-1,2-Dichloroethene
- Vinyl chloride
- Carbon tetrachloride (CT)

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<sup>1</sup> Vapor Intrusion Screening Level (VISL) Calculator Version 3.4, June 2015 RSLs

– Chloroform

Significant concentrations of CT and chloroform were detected in only one well, C3S, which is a shallow well in the former City landfill. These compounds were not detected off of Marathon Electric property and are limited to the landfill.

The East Bank COPCs are related to a release of PCE, which has degraded over time to TCE, c12DCE, and low concentrations of vinyl chloride. C12DCE has no indoor air standard due to the absence of inhalation toxicity information. However, it was included in the list of analytes as an indicator of the presence of potential VOC impacts.

## 1.4 VISL Calculator

GHD used the calculator with conservative, recommended default inputs to identify potential areas of concern. Using the default parameters GHD evaluated three of the four main constituents of concern compared to both residential and commercial target carcinogenic groundwater VISLs. The Site-specific VISL for the November annual sampling data are shown below. EPA does not have a calculatable VISL for cis-1,2-Dichloroethene.

The calculated VISLs at the Site are:

Constituent of Concern	Residential VISL (µg/L)	Commercial VISL (µg/L)
Trichloroethylene (TCE)	5.18	21.8
Tetrachloroethylene (PCE)	57.60	242.0
cis-1,2-Dichloroethene	--	--
Vinyl chloride	1.47	24.5

## 2. 2021 Monitoring Activities

The 2021 annual groundwater monitoring event was conducted on August 2<sup>nd</sup> and 3<sup>rd</sup>, 2021. The 2021 Annual Monitoring Report (AMR) was sent to the EPA and DNR on March 14, 2022 and contains water level monitoring data, groundwater sample data and associated discussion of the results. No formal VI sampling or data evaluation was conducted in 2021 due to the suspension of high-risk activities including sub-slab and indoor sampling during the COVID-19 pandemic. Although soil vapor data was not collected during 2021, this report will evaluate the 2021 groundwater monitoring data for potential VI concerns.

## 3. Evaluation of Groundwater Monitoring Data

A full evaluation and discussion of the 2021 groundwater monitoring data is included in the 2021 AMR. For the purposes of groundwater evaluation for VI concerns this report will evaluate any significant changes in the East and West Bank groundwater plumes that might indicate a new or increased VI risk to the community. The primary method of investigating Site VI risk via groundwater results in the USEPA VISL calculator.

### 3.1 West Bank

The primary chlorinated VOC found in the West Bank groundwater is TCE. TCE was detected at concentrations exceeding the commercial VISL at three of the thirteen monitoring wells and the residential VISL at an additional two monitoring wells. Table 1 includes the 2021 groundwater data compared to the USEPA VISLs. The locations of the monitoring wells are shown on Figure 2. No other constituents of concern exceeded the residential or commercial

VISLs in 2021. VISL exceedances, as well as current and future land use parcel zoning are depicted on Figures 4 and 5, respectively.

Of the five monitoring wells that exceeded the residential TCE VISL, only monitoring wells R2D and W55 are located in an area of the Site that is zoned for residential use. R2D is located on the east bank of Bos Creek, across the road (East Randolph Street) from Scofield Park. The well is approximately 150 feet east and south of the nearest residences. Monitoring well W55 is located in the city right-of-way of Burns Street near East Randolph Street and directly adjacent to several residences. The remaining four locations are located on Regal Beloit property which is zoned as heavy industrial. The three monitoring wells that exceeded the commercial VISL are W54, W53A and WSWD which are both located within the footprint of the former landfill.

The following table presents TCE concentrations from the last four annual sampling events at select West Bank monitoring wells compared to the residential and commercial VISL for TCE. These were the only monitoring wells that exceeded the residential or commercial VISL since 2018 on the West Bank.

*West Bank TCE Concentrations (µg/L)*

Year	R2D	R3D	R4D	W52	W53A	W54	W55	WSWD
2018	14	2.1	0.68	3.9	110	73	5.5	4.3
2019	10	1.1	14	6.8	82	40	7.7	6.4
2020	12	12	4.7	2.9	59	26	15	14
2021	15	1.6	1.1	3.5	130	65	16	36

**RED** = Exceeds Residential VISL (5.18 µg/L)  
**BLUE** = Exceeds Commercial VISL (21.8 µg/L)

TCE concentration trends at the monitoring wells in the footprint of the former landfill had been generally decreasing in recent years, although they remain above the commercial TCE VISL. 2021 analytical results indicated an increase in TCE concentration in groundwater at all locations within the footprint of the former landfill. The nearest receptor to these wells is the Regal Beloit manufacturing building to the north. A 2017 VI investigation indicated that there were elevated levels of TCE soil vapor in the sub-slab in this building, however paired indoor air samples indicated TCE was below the industrial indoor air action level. The 2017 VI investigation data has been previously presented to the USEPA and WDNR and will be submitted under separate cover in a Vapor Intrusion Investigation Report.

Monitoring Well R2D has varied between 10 µg/L and 15 µg/L over the last three years. These values exceed the residential VISL for TCE. The 2017 VI investigation included soil vapor probes located between R2D and the residence located directly to the west. TCE was not detected in the shallow interval (8.5-9.0 feet below ground surface [ft. bgs]) but was detected below the non-industrial screening level in the deep interval (18.5-19.0 ft bgs).

The increase of TCE in groundwater at R4D and W52 in 2019, and subsequently at R3D in 2020 may indicate a “slug” of TCE in groundwater that is trending in the direction of hydraulic capture to the north. 2021 sampling data may indicate the “slug” has moved past R3D as the concentration of TCE dropped from 12 µg/L in 2020 to 1.6 µg/L in 2021.

TCE concentrations in groundwater collected at monitoring well W55 have been relatively stable since 2015 ranging from 4.6 µg/L to 7.7 µg/L before increasing in 2020 (15 µg/L). 2021 annual sampling event has confirmed that this is an upward trend. Previous VI investigations have not directly addressed the W55 area although soil vapor data from the MW1A area to the southeast indicated TCE concentrations well below the non-industrial screening level.

TCE concentrations have also increased over previous years at monitoring well WSWD, ranging from 4.3 µg/L in 2018 to 36 µg/L in 2021. 2022 analytical data may be able to confirm whether this upward trend is ongoing. WSWD is located at the base of the Wisconsin River West Bank and is the furthest well of those exhibiting VISL exceedances from any potential receptors.

## 3.2 East Bank

While PCE was the original contaminant on the East Bank, the presence of TCE, c12DCE, and vinyl chloride, at concentrations that exceed the PCE concentration in many wells, indicates an active natural biodegradation process. In 2021, the only vinyl chloride exceeded its residential groundwater VISL and no constituent of concern exceeded the commercial groundwater VISLs. Vinyl chloride exceeded the residential VISL (1.47 µg/L) at monitoring well E37A with a concentration of 6.2 µg/L. Monitoring well E37A is located in the parking lot outside of the Thrive Foodery restaurant in an area of the Site that is zoned for “Urban – Mixed Use”. For the purposes of this evaluation this particular zoning category is being considered as residential zoning. VISL exceedances, as well as current and future land use parcel zoning are depicted on Figures 4 and 5, respectively.

The following tables present VOC concentrations from the last four annual sampling events at select East Bank monitoring wells compared to the residential and commercial VISLs for PCE, TCE, and vinyl chloride. These were the only monitoring wells that exceeded the residential or commercial VISLs since 2018 on the East Bank.

*East Bank PCE Concentrations (µg/L)*

Year	WC5A	WC3B	E37A	WW6
2018	7.1	70	1.3	ND
2019	0.63 J	350	0.42 J	3.9
2020	19	7.7	0.96 J	0.91 J
2021	30	5.1	ND	ND

**RED** = Exceeds Residential VISL (57.60 µg/L)  
**BLUE** = Exceeds Commercial VISL (242 µg/L)

No East Bank well exceeded the residential or commercial VISL for PCE in 2021. Monitoring well WC3B, located to the east of the southern extent of the Wausau Chemical Building, and directly adjacent to the contaminated source soil below the building showed a significant decrease in PCE concentration from 350 µg/L in 2019, which exceeded the commercial VISL. In 2020 the concentration of PCE at WC3B dropped to 7.7 µg/L, well below the residential VISL, a trend that continued in 2021 with a concentration of 5.1 µg/L.

*East Bank TCE Concentrations (µg/L)*

Year	WC5A	WC3B	E37A	WW6
2018	0.60	1.4	0.81	2.2
2019	0.48 J	44	0.65	11
2020	0.30 J	0.55	0.39 J	ND
2021	1.2	ND	0.17 J	0.18 J

**RED** = Exceeds Residential VISL (5.18 µg/L)  
**BLUE** = Exceeds Commercial VISL (21.8 µg/L)

No East Bank well exceeded the residential or commercial VISL for TCE in 2021. As with its PCE concentration, monitoring well WC3B showed a significant decrease in TCE concentration from 44 µg/L in 2019, which exceeded the commercial VISL to 0.55 µg/L in 2020 and was not detected in 2021. Monitoring well WW6 decreased from 11 µg/L in 2019, which exceeded the residential VISL, to not detected in 2020. WW6 is located in the alleyway between the Wausau Music Center and the Wausau Chemical Building located on East Wausau Avenue. This area is zoned for heavy industrial use but is located across the street from areas zoned for urban mixed use and residential. The nearest residential receptor is 2108 North Third Street. Previous sub-slab and indoor air samples collected from this residence do not indicate a VI issue. This data has been previously presented to the USEPA and WDNR and was formally included in the December 2021 Vapor Intrusion Investigation Report.



*East Bank Vinyl Chloride Concentrations (µg/L)*

Year	WC5A	WC3B	E37A	WW6
2018	30	ND	2.3	ND
2019	ND	10	ND	ND
2020	4.2	ND	0.39 J	ND
2021	1.1	0.55 J	6.2	ND

**RED** = Exceeds Residential VISL (1.47 µg/L)  
**BLUE** = Exceeds Commercial VISL (24.5 µg/L)

The only location to exceed a residential or commercial VISL for vinyl chloride in 2021 was monitoring well E37A located in the Thrive Foodery restaurant property. The area is zoned for “Urban – Mixed Use” and is directly adjacent to the nearby residential neighborhood to the east. The nearest residential receptor is approximately 150 feet to the east of E37A. As summarized on the December 2021 Vapor Intrusion Investigation Report, sub-slab and indoor air samples collected in the nearby residences have never shown detections of vinyl chloride.

## 4. Summary

No formal VI sampling or data evaluation was conducted in 2021 due to the suspension of high-risk activities including sub-slab and indoor sampling during the COVID-19 pandemic. Site constituents of concern were run through the EPA VISL calculator and 2021 groundwater monitoring data was screened for potential VI concerns. Only TCE on the West Bank and vinyl chloride on the East Bank exceeded the groundwater VISLs in 2021.

Five wells on the West Bank exceeded the residential TCE groundwater VISL and three of those locations, located at the Regal Beloit property (zoned heavy industrial) exceeded the commercial groundwater VISL. The remaining two locations were located in areas zoned for residential use. These locations have had historically elevated levels of TCE that have fluctuated in concentration since the 1990s.

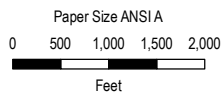
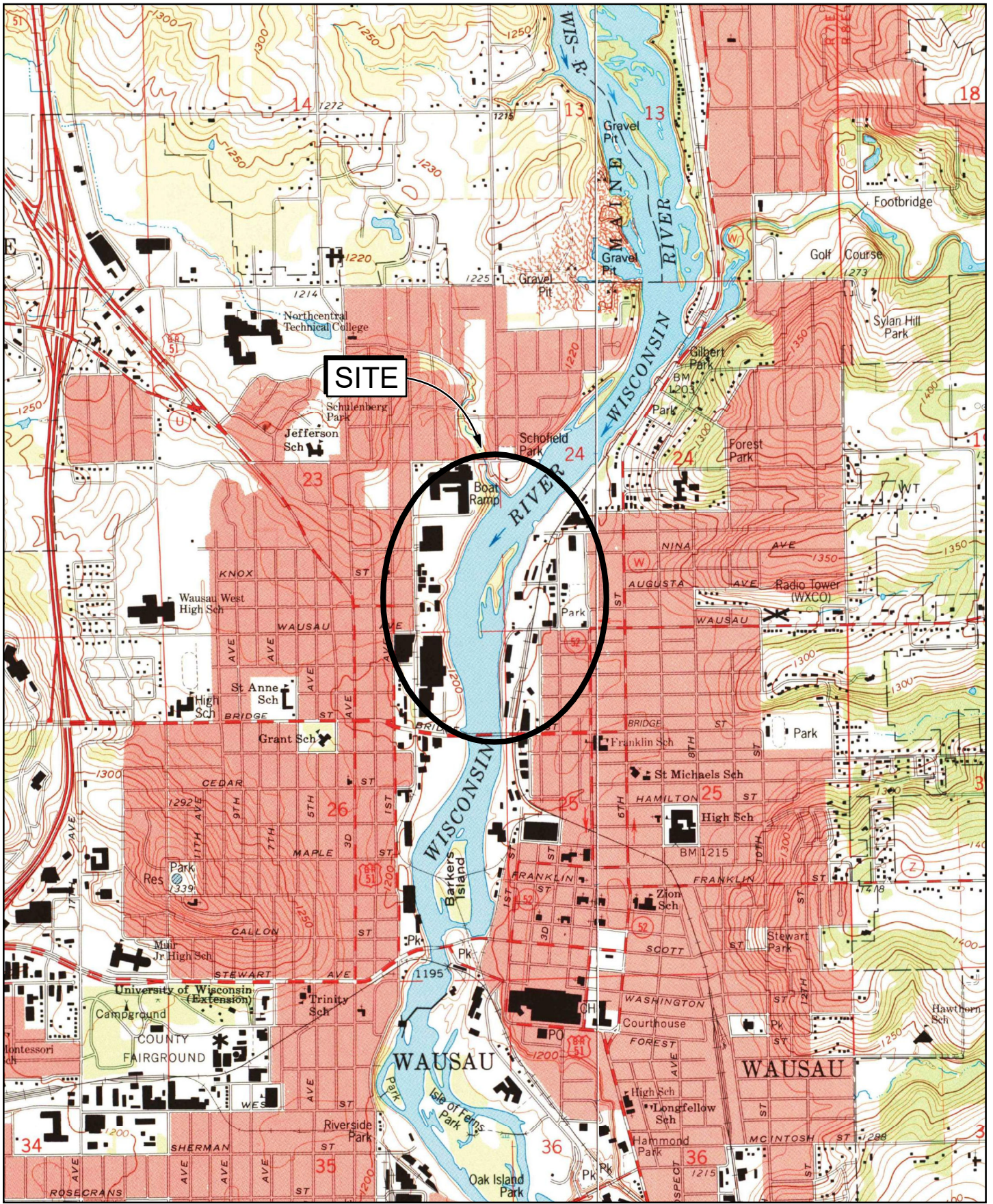
Monitoring well E37A, located in the Thrive Foodery parking lot, was the only East Bank well to exceed a groundwater VISL by having a vinyl chloride concentration of 6.2 µg/L, exceeding the residential VISL.

There were no new VI risks identified in 2021 based on comparison of 2021 groundwater sample data screened against the EPA VISL calculator values. No further VI sampling is planned in 2022.

The 2022 Annual VI Report will be submitted to the USEPA and WDNR in the first quarter of 2023.

# Figures





Map Projection: Lambert Conformal Conic  
Horizontal Datum: North American 1983 HARN  
Grid: NAD 1983 HARN WISCRS Marathon County Feet

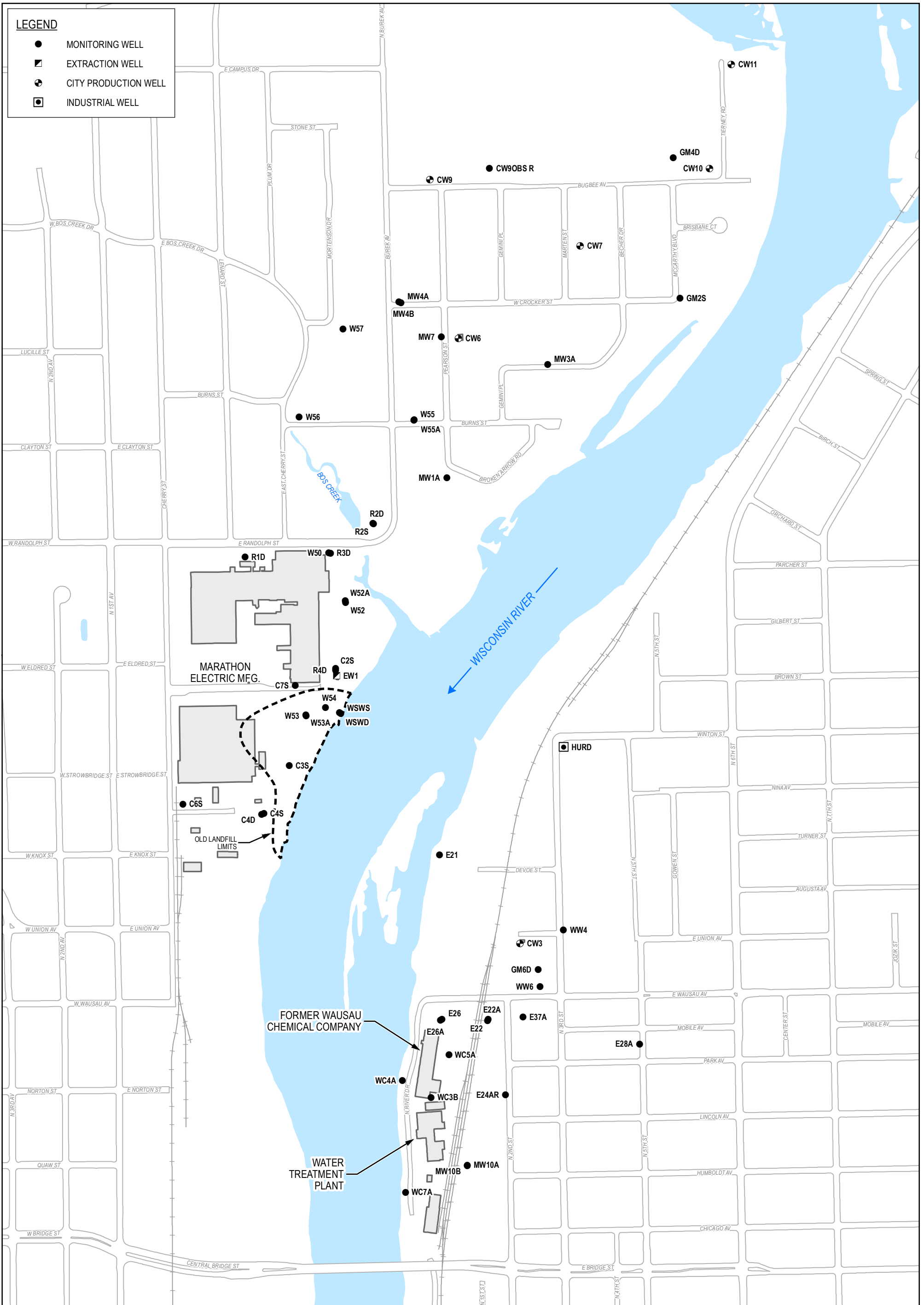
**WAUSAU WATER SUPPLY NPL SITE**  
**WAUSAU, WISCONSIN**

Project No. 003978-00  
Revision No. -  
Date 03/09/2022

**SITE LOCATION**

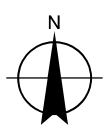
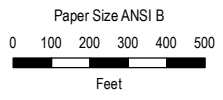
**FIGURE 1**





**LEGEND**

- MONITORING WELL
- ▣ EXTRACTION WELL
- ⊕ CITY PRODUCTION WELL
- ⊠ INDUSTRIAL WELL



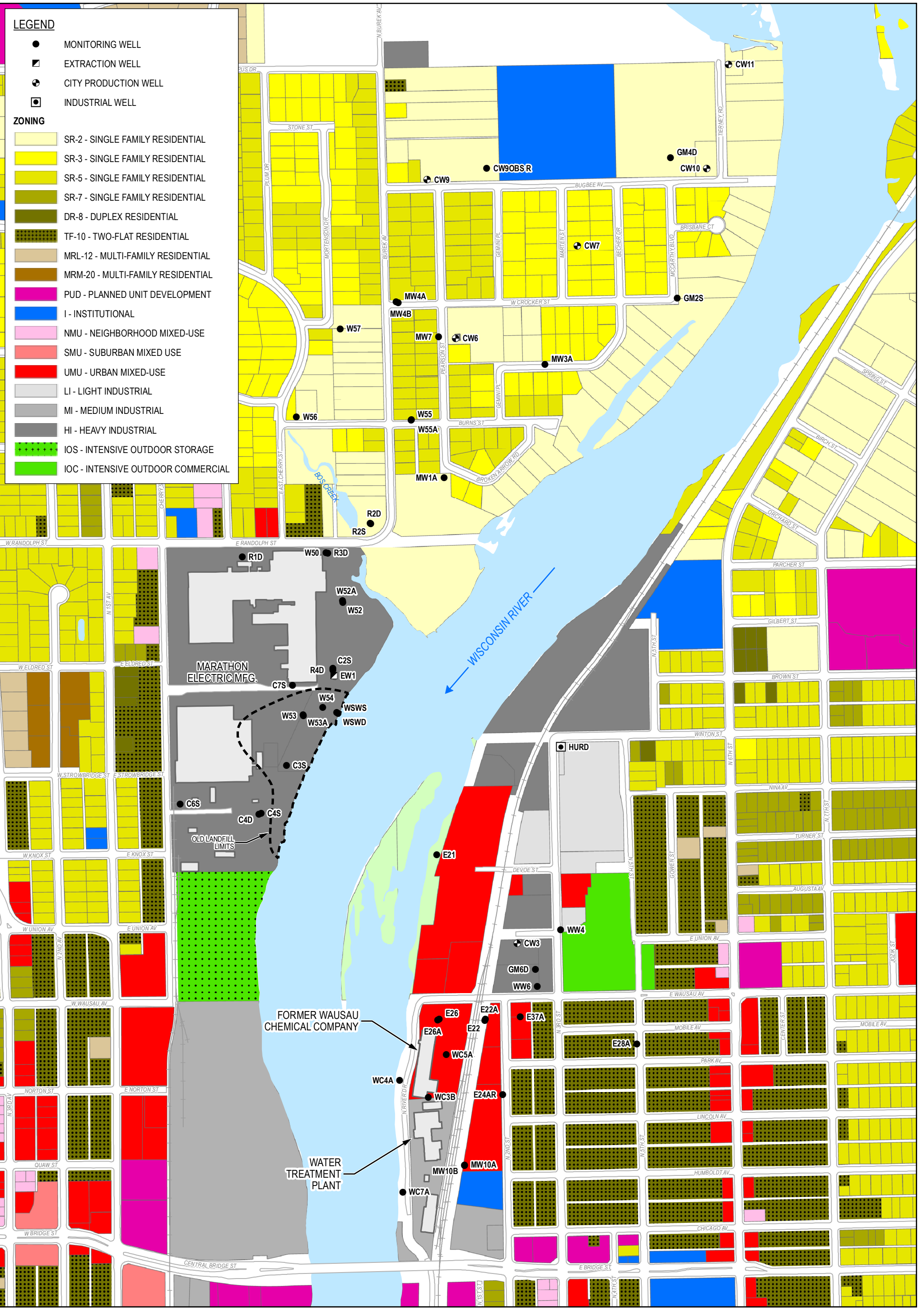
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**WAUSAU WATER SUPPLY NPL SITE  
 WAUSAU, WISCONSIN**

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**SITE PLAN**

**FIGURE 2**

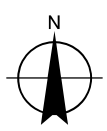
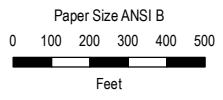


**LEGEND**

- MONITORING WELL
- ⊠ EXTRACTION WELL
- ⊕ CITY PRODUCTION WELL
- ⊡ INDUSTRIAL WELL

**ZONING**

- SR-2 - SINGLE FAMILY RESIDENTIAL
- SR-3 - SINGLE FAMILY RESIDENTIAL
- SR-5 - SINGLE FAMILY RESIDENTIAL
- SR-7 - SINGLE FAMILY RESIDENTIAL
- DR-8 - DUPLEX RESIDENTIAL
- TF-10 - TWO-FLAT RESIDENTIAL
- MRL-12 - MULTI-FAMILY RESIDENTIAL
- MRM-20 - MULTI-FAMILY RESIDENTIAL
- PUD - PLANNED UNIT DEVELOPMENT
- I - INSTITUTIONAL
- NMU - NEIGHBORHOOD MIXED-USE
- SMU - SUBURBAN MIXED USE
- UMU - URBAN MIXED-USE
- LI - LIGHT INDUSTRIAL
- MI - MEDIUM INDUSTRIAL
- HI - HEAVY INDUSTRIAL
- IOS - INTENSIVE OUTDOOR STORAGE
- IOC - INTENSIVE OUTDOOR COMMERCIAL



**WAUSAU WATER SUPPLY NPL SITE  
WAUSAU, WISCONSIN**

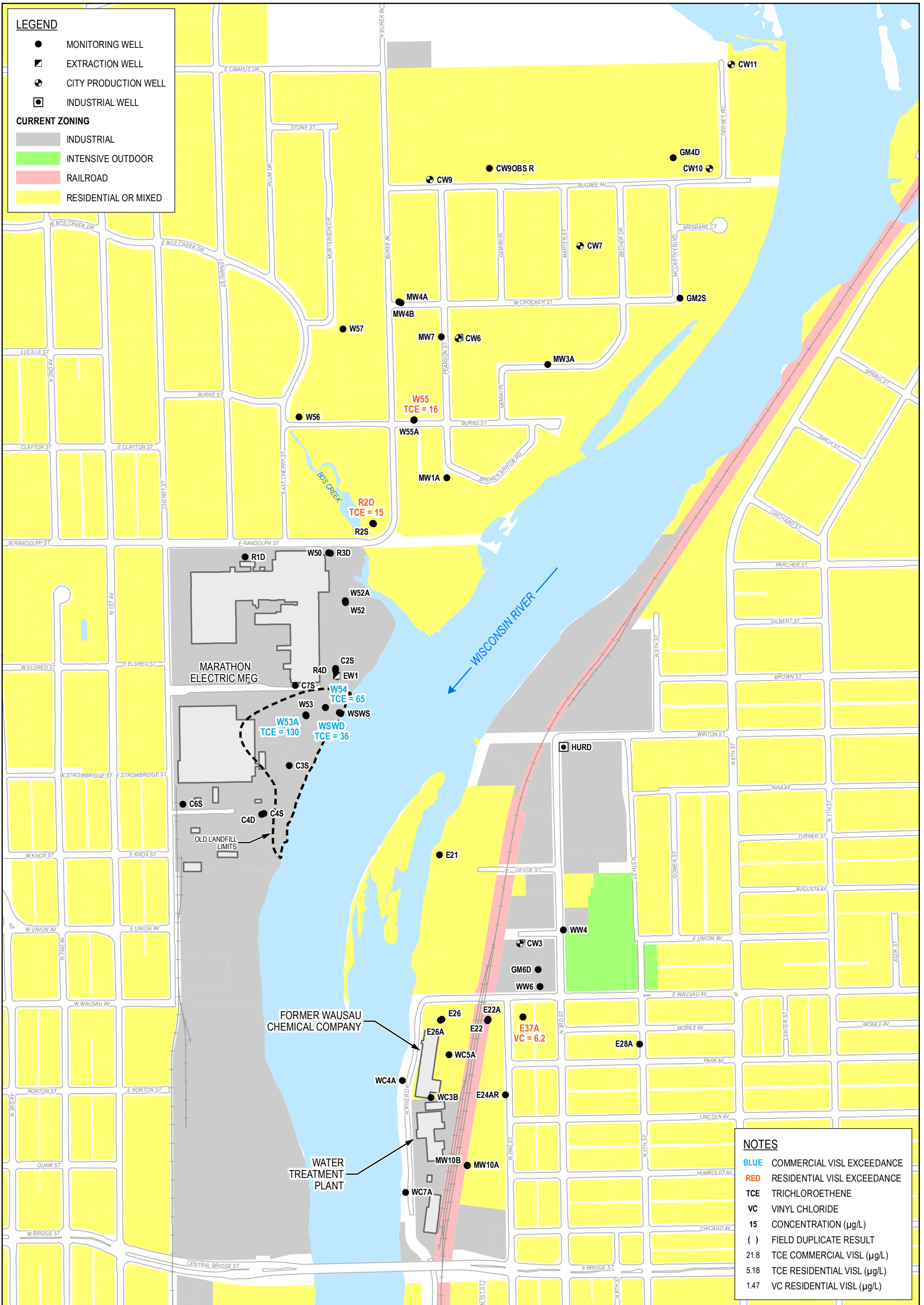
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Date 03/09/2022

**CURRENT ZONING**

**FIGURE 3**

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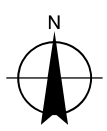
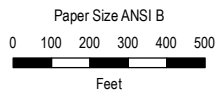
- MONITORING WELL
- ⊠ EXTRACTION WELL
- ⊕ CITY PRODUCTION WELL
- ⊡ INDUSTRIAL WELL

**CURRENT ZONING**

- INDUSTRIAL
- INTENSIVE OUTDOOR
- RAILROAD
- RESIDENTIAL OR MIXED

**NOTES**

- BLUE COMMERCIAL VISL EXCEEDANCE
- RED RESIDENTIAL VISL EXCEEDANCE
- TCE TRICHLOROETHENE
- VC VINYL CHLORIDE
- 15 CONCENTRATION (µg/L)
- ( ) FIELD DUPLICATE RESULT
- 21.8 TCE COMMERCIAL VISL (µg/L)
- 5.18 TCE RESIDENTIAL VISL (µg/L)
- 1.47 VC RESIDENTIAL VISL (µg/L)



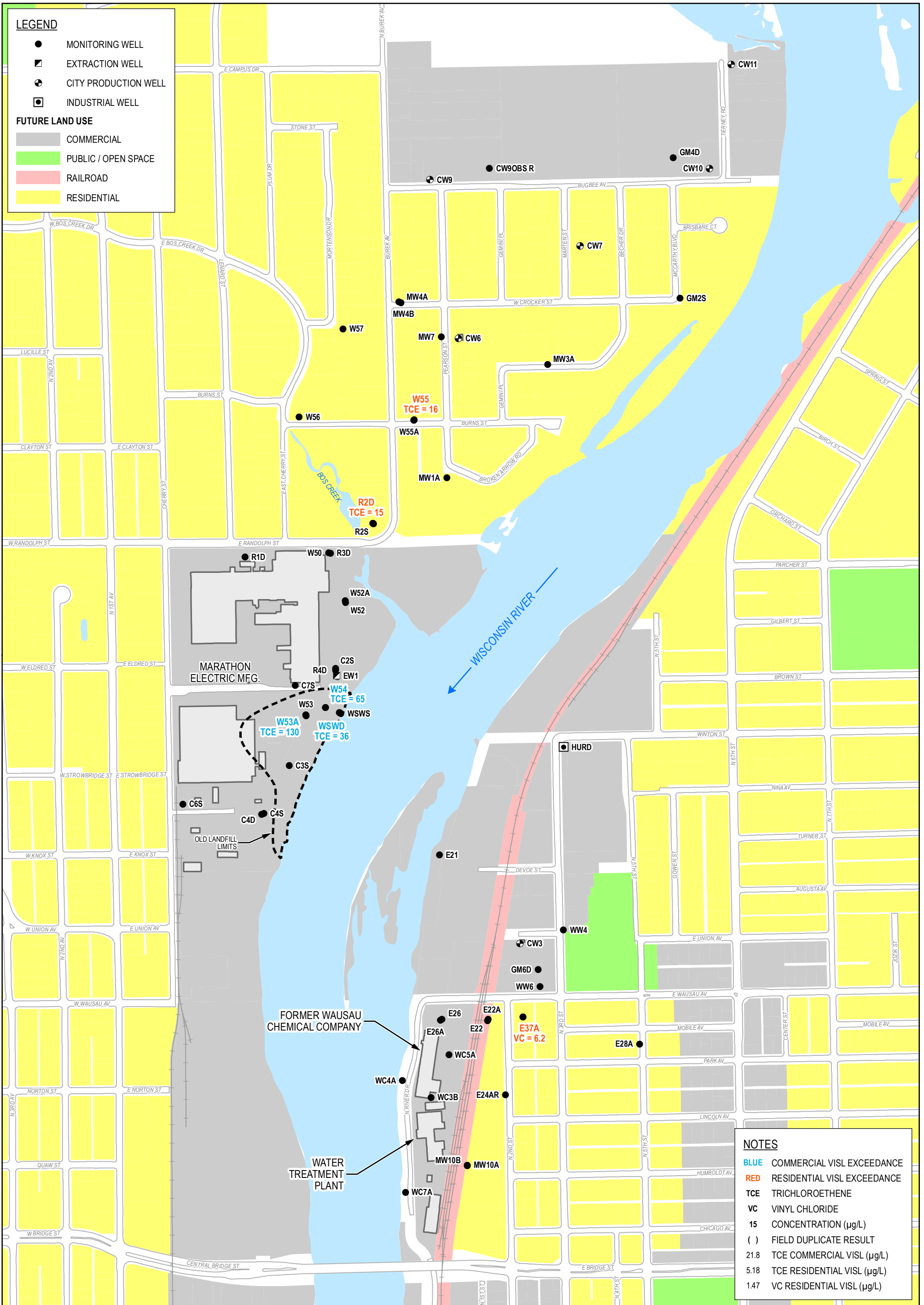
**WAUSAU WATER SUPPLY NPL SITE  
WAUSAU, WISCONSIN**

**SIMPLIFIED CURRENT ZONING  
AND GROUNDWATER  
VISL EXCEEDANCES**

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Revision No. -  
Date 03/09/2022

**FIGURE 4**





**LEGEND**

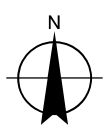
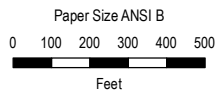
- MONITORING WELL
- ⊠ EXTRACTION WELL
- ⊕ CITY PRODUCTION WELL
- ⊡ INDUSTRIAL WELL

**FUTURE LAND USE**

- COMMERCIAL
- PUBLIC / OPEN SPACE
- RAILROAD
- RESIDENTIAL

**NOTES**

- BLUE COMMERCIAL VISL EXCEEDANCE
- RED RESIDENTIAL VISL EXCEEDANCE
- TCE TRICHLOROETHENE
- VC VINYL CHLORIDE
- 15 CONCENTRATION (µg/L)
- ( ) FIELD DUPLICATE RESULT
- 21.8 TCE COMMERCIAL VISL (µg/L)
- 5.18 TCE RESIDENTIAL VISL (µg/L)
- 1.47 VC RESIDENTIAL VISL (µg/L)



**WAUSAU WATER SUPPLY NPL SITE  
WAUSAU, WISCONSIN**

**SIMPLIFIED FUTURE LAND USE  
AND GROUNDWATER  
VISL EXCEEDANCES**

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Revision No. -  
Date 03/09/2022

**FIGURE 5**

# Table



**Table 1**  
**Annual Groundwater Monitoring Event**  
**Analytical Results - August 2-3, 2021**  
**Wausau Water Supply NPL Site**  
**Wausau, Wisconsin**

Sample Location:		Sample Name:							Sample Location:		Sample Name:														
Sample Date:		CW3		E21		E22A		E24AR		E37A		MW10B		WC3B		WC5A		WW4		WW6		C2S		C4S	
		W-210802-KJ-05		W-210803-KJ-13		W-210803-KJ-10		W-210803-KJ-12		W-210803-KJ-11		W-210803-KJ-14		W-210802-KJ-08		W-210802-KJ-07		W-210803-KJ-15		W-210802-KJ-06		W-210802-KJ-02		W-210803-KJ-29	
		08/02/2021		08/03/2021		08/03/2021		08/03/2021		08/03/2021		08/03/2021		08/02/2021		08/02/2021		08/03/2021		08/02/2021		08/02/2021		08/03/2021	
Parameters	Units	WDNR	ES	EB	EB	EB	EB	EB	EB	Parameters	Units	WDNR	ES	EB	EB	EB	EB	WB	WB						
<b>Volatile Organic Compounds</b>										<b>Volatile Organic Compounds</b>															
1,1,2-Trichloroethane	ug/L	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,1,2-Trichloroethane	ug/L	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1-Dichloroethene	ug/L	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,1-Dichloroethene	ug/L	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
Acetone	ug/L	9,000		10 U	10 U	10 U	10 U	10 U	10 U	Acetone	ug/L	9,000		10 U	10 U	10 U	10 U	10 U	10 U						
Benzene	ug/L	5		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Benzene	ug/L	5		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U						
Carbon tetrachloride	ug/L	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Carbon tetrachloride	ug/L	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
Chloroform (Trichloromethane)	ug/L	6		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	Chloroform (Trichloromethane)	ug/L	6		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
cis-1,2-Dichloroethene	ug/L	70		0.48 J	1.0 U	1.0 U	2.9	25	1.0 U	cis-1,2-Dichloroethene	ug/L	70		1.1	1.0	1.0 U	2.8	1.0 U	1.0 U						
Ethylbenzene	ug/L	700		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Ethylbenzene	ug/L	700		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U						
Methylene chloride	ug/L	5		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	Methylene chloride	ug/L	5		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U						
Tetrachloroethene	ug/L	5		0.55 J	1.0 U	13	2.1	1.0 U	1.0 U	Tetrachloroethene	ug/L	5		5.1	30	1.0 U	1.0 U	1.0 U	1.0 U						
Toluene	ug/L	800		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Toluene	ug/L	800		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U						
Trichloroethene	ug/L	5		0.86	0.50 U	0.22 J	3.4	0.17 J	0.50 U	Trichloroethene	ug/L	5		0.50 U	1.2	0.50 U	0.18 J	0.50 U	2.6						
Vinyl chloride	ug/L	0.2		1.0 U	1.0 U	1.0 U	0.33 J	6.2	1.0 U	Vinyl chloride	ug/L	0.2		0.55 J	1.1	1.0 U	1.0 U	1.0 U	1.0 U						
Xylenes (total)	ug/L	2,000		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Xylenes (total)	ug/L	2,000		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,4-Dioxane	ug/L			--	--	2.0 U	--	--	--	1,4-Dioxane	ug/L			2.0 U	--	--	--	--	--						

Note:  
 U - Not detected at the associated reporting limit  
 J - Estimated concentration

	-Exceeded US EPA Residential VISL
	-Exceeded US EPA Commercial VISL
	-Detected
	-Concentration exceeded WDNR Groundwater Enforcement Standard

EB - East Bank Well  
 WB - West Bank Well  
 (1) US EPA Vapor Intrusion Screening Levels (VISLs) are calculated at a Target Cancer Risk (TCR) and Noncancer Quotient (THQ) of 1E-05 and 1, respectively.

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Table 1

Annual Groundwater Monitoring Event  
Analytical Results - August 2-3, 2021  
Wausau Water Supply NPL Site  
Wausau, Wisconsin

Sample Location:			C4S	CW6	EW1	MW1A	R2D	R3D	Sample Location:			R4D	R4D	W52	W52	W53A	W54
Sample Name:			W-210803-KJ-30	W-210803-KJ-09	W-210803-KJ-21	W-210802-KJ-01	W-210803-KJ-23	W-210803-KJ-26	Sample Name:			W-210802-KJ-03	W-210802-KJ-04	W-210803-KJ-18	W-210803-KJ-19	W-210803-KJ-20	W-210803-KJ-28
Sample Date:			08/03/2021	08/03/2021	08/03/2021	08/02/2021	08/03/2021	08/03/2021	Sample Date:			08/02/2021	08/02/2021	08/03/2021	08/03/2021	08/03/2021	08/03/2021
			(Duplicate)										(Duplicate)		(Duplicate)		
Parameters	Units	WDNR ES	WB	WB	WB	WB	WB	WB	Parameters	Units	WDNR ES	WB	WB	WB	WB	WB	WB
<b>Volatile Organic Compounds</b>			<b>Volatile Organic Compounds</b>														
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	9,000	10 U	10 U	10 U	10 U	10 U	10 U	Acetone	ug/L	9,000	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	ug/L	70	1.0 U	1.0 U	1.0 U	1.0 U	1.5	1.0 U	cis-1,2-Dichloroethene	ug/L	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.6
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Tetrachloroethene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	2.5	2.7	0.50 U	0.38 J	15	1.6	Trichloroethene	ug/L	5	1.0	1.1	3.7	3.5	130	65
Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L		--	--	--	--	2.0 U	--	1,4-Dioxane	ug/L		--	--	2.0 U	2.0 U	--	2.0 U

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Table 1

Annual Groundwater Monitoring Event  
Analytical Results - August 2-3, 2021  
Wausau Water Supply NPL Site  
Wausau, Wisconsin

<b>Sample Location:</b>			<b>W55</b>	<b>W56</b>	<b>WSWD</b>
<b>Sample Name:</b>			<b>W-210803-KJ-16</b>	<b>W-210803-KJ-25</b>	<b>W-210803-KJ-22</b>
<b>Sample Date:</b>			<b>08/03/2021</b>	<b>08/03/2021</b>	<b>08/03/2021</b>
<b>Parameters</b>	<b>Units</b>	<b>WDNR ES</b>	<b>WB</b>	<b>WB</b>	<b>WB</b>
<b>Volatile Organic Compounds</b>					
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U
Acetone	ug/L	9,000	10 U	10 U	10 U
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	ug/L	70	21	1.0 U	0.91 J
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	1.0 U	1.0 U	1.0 U
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	16	0.50 U	36
Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L		2.0 U	--	--

Note:

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