

*** All present are expected to conduct themselves in accordance with our City's Core Values ***



OFFICIAL NOTICE AND AGENDA - **Amended**

of a meeting of a City Board, Commission, Department Committee, Agency, Corporation, Quasi-Municipal Corporation or Sub-unit thereof.

Notice is hereby given that the Park and Recreation Committee of the City of Wausau, Wisconsin will hold a regular or special meeting on the date, time and location shown below.

Meeting of the: **PARKS AND RECREATION COMMITTEE OF THE CITY OF WAUSAU**
Date/Time: **Monday, November 1, 2021 at 4:30**
Location: **City Hall (407 Grant St, Wausau WI 54403) - Council Chambers**
Members: **Tom Neal, Patrick Peckham, Tom Kilian, Lou Larson, Sarah Watson**

AGENDA ITEMS FOR CONSIDERATION (All items listed may be acted upon)

- 1 Call the Meeting to Order
- 2 Public Comment or Suggestions
- 3 Approve Minutes - October 4, 2021
- 4 Discussion and Possible Action Regarding the Donation of Park Land Adjacent to Westview Terrace Park
- 5 Discussion and Possible Action Regarding Remedial Action Options for Riverside Park Soils
- 6 Educational Items
 - A. Park Update (Memorial Benches and Playground, Water Systems, Sylvan Hill Snow Making, ADA Corrections, Oak Island, Routine Operations/Programs)
 - B. **Assembly Bill 604 Update - <https://docs.legis.wisconsin.gov/2021/related/amendments/ab604>**
- 7 Future Agenda Items - Kayak Launch Update
- 8 Next Meeting Date - Monday, December 6, 2021 at 4:30pm
- 9 Adjournment

Pat Peckham, Chair

This meeting is being held in person and/or via teleconference (all public participants' phones will be muted during the meeting) by calling **1-408-418-9388**. The Access Code is: **2499 565 7325** The Password is: **ParkComm11012021** (7275266611012021 from Phone).

Members of the public who do not wish to appear in person may view the meeting live over the internet of the City of Wausau's YouTube Channel <http://www.tinyurl.com/WAAMedia>, live by cable TV. Channel 981, and a video is available in its entirety and can be accessed at <https://tinyurl.com/WausauCityCouncil>. Any person wishing to offer public comment who does not appear in person to do so, may e-mail Jamie.polley@co.marathon.wi.us with "Parks Committee public comment" in the subject line prior to the meeting start. All public comment, either by email or in person, will be limited to items on the agenda at this time. The messages related to agenda items received prior to the start of the meeting will be provided to the Chair.

In accordance with the requirements of Title II of the Americans with Disabilities Act of 1990 (ADA), the City of Wausau will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs or activities. If you need assistance or reasonable accommodations in participating in this meeting or event due to a disability as defined under the ADA, please call the ADA Coordinator at (715) 261-6590 or ADAServices@ci.wausau.wi.us to discuss your accessibility needs. We ask your request be provided a minimum of 72 hours before the scheduled event or meeting. If a request is made less than 72 hours before the event the City of Wausau will make a good faith effort to accommodate your request.

This Notice was posted at City Hall and faxed to the Daily Herald newsroom on 10/28/2021 @ 8:30 a.m. Questions regarding this agenda may be directed to Jodi Luebke, Park Office (715) 261-1560.

Distribution List: City Website, Media, WSD-Admin, Alderpersons, Mayor, Polley, Dept. Staff, Maryanne Groat, Brad Lenz, Eric Lindman, Lance Leonhard, Wisconsin Woodchucks, Wausau Events, Public Access, Wausau River District, Community Development

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This Notice was posted at City Hall and faxed to the Daily Herald newsroom on 10/27/2021 @ 2:15 p.m. Questions regarding this agenda may be directed to Jodi Luebke, Park Office (715) 261-1560.

Distribution List: City Website, Media, WSD-Admin, Alderpersons, Mayor, Polley, Dept. Staff, Maryanne Groat, Brad Lenz, Eric Lindman, Lance Leonhard, Wisconsin Woodchucks, Wausau Events, Public Access, Wausau River District, Community Development

DRAFT
CITY OF WAUSAU – PARK AND RECREATION COMMITTEE MEETING MINUTES

Date/Time: October 4, 2021 at 4:30 p.m. Location: Riverside Park Shelter, 100 Sherman Street

Members Present: Tom Kilian, Lou Larson, Tom Neal, Pat Peckham (c)

Members Excused: Sarah Watson

Others Present: Jamie Polley-Director, Marcus Aumann-Assistant Director of Community Services, Katie Rosenberg-Mayor, Lindsey Lewitzke-Wausau Events, Ali Aderhoeft-Wausau Events, Pete Valiska-Wausau Events, other interested parties

1. In accordance with Chapter 19, Wisc. Statutes, notice of this meeting was posted and sent to the Daily Herald in the proper manner. A quorum was present and the meeting was called to order by Chairman Peckham at 4:30pm.

2. Public Comment – none brought forward

3. Approval of Minutes – September 13, 2021 – **Motion** by Neal, second by Kilian to approve the Park and Recreation Committee draft September 13, 2021 minutes. Motion **carried** by voice vote, vote reflected as 4-0.

4. Discussion and Possible Action Regarding the Parks, Recreation & Forestry Department 2022 Fee Schedule – Polley explained that approval of fees is recommended at this time to set the shelter rates for the following year. This allows the department to allow users to reserve shelters 12 months in advance. Staff is recommending adjustments to the fees that include a 3% increase in the shelter fees (2023), slight increase to Athletic Park, ball diamond, sports field fees and pools fees (2022). The increases proposed are to keep in line with CPI increases and the increased departmental staffing and equipment costs. **Motion** by Larson, second by Neal to approve the 2022 fee schedule for City fees. Motion **carried** by voice vote, vote reflected as 5-0.

5. Discussion and Possible Action Regarding Cost Recovery for Wausau Area Events – Polley said staff would like direction from Committee about what is expected of the Department as far as cost recovery for all events, not just Wausau Events. The City and County are implementing Priority Based Budgeting which forces Departments to look at all costs of providing services to the community. Wausau Events has been charged differently than some other events and staff is trying to improve on its consistency with all the events. Neal discussed the criteria and some of the evaluation process that the Room Tax Commission uses when making their decisions about events. Lewitzke felt that a free event that is receiving room taxes should get charged the parks space fee plus a percentage of the overall cost of parks help and that events that are charging fees pay a little higher percentage. Aumann wanted to get more consistent across the board for old and new events and thought that was a good point about room tax dollars. Kilian wondered if a more objective scoring model could be developed that would be equitable for all groups having events. Polley thought if an event met certain criteria then a percentage of the fees could be weighted as in-kind services which could be part of the fee request. Currently the costs the Park Department has are being absorbed by the City so that's where a percentage could be done if the City is willing to absorb some of the event costs. If the City wants the Department to recover their costs then it's a different philosophical question.

Neal felt it was their policy to keep encouraging more things to happen in Wausau and he thought some of this should be questioned of the Finance and Economic Development Committees. Peckham thought that it had always been kind of understood that the City underwrote a lot of these events and he had been okay with it because it was good for the community and visitors. He has seen situations where organizers of some events have been able to find sponsors when they needed to. Lewitzke didn't believe Wausau Events could easily absorb any more costs for something like Concerts on the Square and it was very hard to find sponsors for an event that the same people come to every week than those that were more of a quality-of-life thing. Neal felt an organization that comes to the Room Tax Commission should itemize all costs of the event including those from the City Departments. Neal suggested Wausau Events bring Concerts on the Square to the Room Tax Commission. Lewitzke didn't believe that event met qualifications for Room Tax funds and they used some of those funds for marketing other events. She understood it was unrealistic to charge Wausau Events nothing for those costs while other people were charged something but if they have to absorb full costs then they cannot provide the quality and number of events. Aumann questioned if there was any value in the City or Department being recognized as a sponsor, not as the primary facilitator but as a key part of an event taking place.

Kilian commented on two bigger events that he was more concerned about the City absorbing the labor costs than some of the material costs. He thought in the private market there were ways to look at revenue concerns as they relate to costs and part of that could be put into a performance-based agreement where there would be revenue sharing opportunities for the City. If the revenue didn't hit a certain mark the cost would decrease but at least then there is a rationale for why some things are for free to some and not to others.

Valiska spoke about how the City has always supported their organization and they understand there are costs but creating community through events has always been one of the thought processes and if they are charged more that reduces the benefit that they can provide to grow the event. Businesses are still struggling to provide sponsorships. They can bring all items to the Room Tax Commission but that will be asking for more money to pay for things that have been provided in support of them having events in Wausau to bring people to the community.

Polley said the Department is willing to do whatever the City wants and will provide the services to make everything successful. She just wanted Committee to be aware of the City subsidizing this organization while others are all mostly paying for their fees. Because Wausau Events needs to do their budget she suggests they continue with past practices for 2022. In the meantime staff will learn if the City is willing to continue to absorb costs beyond the facility fee and will research to see if more can be done to offset these event costs not just for parks but also for other City Departments. All of the charges need to be figured out and then what the City is willing to support for any event and where that offset might come from. They will then have a 2023 policy not only for Wausau Events but other organizations that might come forward with similar larger events. Kilian objected and thought the same should be done for every group. **Motion** by Neal, second by Larson to follow the Park Directors suggestion for supporting past practice and providing the same services for Wausau Events in 2022 while working on a 2023 policy for all events. Motion **carried** by voice vote, vote reflected as 3-1 with Kilian as the dissenting vote.

6. Educational Items

A. Park Update - Memorial Benches: Staff is preparing sites and forms for memorial bench installations in several city and county park locations. Water Systems: Winterization procedures are underway for facilities/areas that are currently done for the season. I.e. Pools, sports facilities, restrooms and irrigation systems. Sylvan Tubing Hill Snowmaking Water System: Staff is preparing materials and performing site work for installation of an upgraded booster pump system in the mechanical building. ADA Study Barrier Corrections: Staff continues on corrections for ADA guidelines. Small correction levels include small plumbing fixes, fixture and grab bar relocations in restrooms, tree path obstructions, adding ADA approved picnic tables, etc. Routine Operations/Programs: Mowing Operations; seasonal staff is almost gone; routes are combined for coverage. Urban forestry program; stump grinding, tree trimming, removals. Building and structure maintenance. Shelter reservations and Special Events; Equipment maintenance and repair, Restroom Maintenance

B. Riverside Park Testing Update – Kilian felt they were finally moving towards the finish line and approaching a positive outcome. He said in the provided document under Section 7 the Conclusion and Recommendation two sentences read “based on these results REI recommends remedial actions be taken to address unsaturated soil contamination exceeding the WAC Chapter NR720 direct contact RCLs. Prior to the development of a Remedial Action Options Report, the WDNR will need to determine what standards the TEQ values will be compared as this will significantly affect the area of remediation.” Kilian said that indicated that they want to know what remedial actions will be taken to address the exceedances of Wisconsin regulatory standards that were found in certain areas of the park. The DNR has really good standards for RCL's which are either below the limit or not so it's very easy to identify. TEQ's are more of a toxicological value and Wisconsin typically doesn't use TEQ values to address dioxin and furon contamination so he thought they should follow State standards. He said almost all contamination in Wisconsin is addressed through Wisconsin regulatory standards which he believes are both reasonable and protective. After discussion it was decided Polley would let Public Works Director Lindman know and he could let REI know what the Committee is thinking and that the item will be put on the November meeting agenda as an actionable item.

Neal left the meeting at 5:40pm

C. EAB Update – Polley mentioned that the State website “datcpservices.wisconsin.gov/eab/index.jsp” has a lot of information and maps of where the Emerald Ash Borer is in all the Counties in the State and when it was detected. The beetle is here in Wausau but is not hugely widespread. The State has a lot of resources to help mitigate it and there are some

grants available for some Emerald Ash Borer management that the Department will be looking into but it isn't too that point yet here. Staff is following the same practices as some of the surrounding areas.

7. Future Agenda Items – Kayak Launch Update

8. Next Meeting Date – Monday, November 1st at 4:30pm the regular meeting at Council Chambers, City Hall

9. Adjournment – **Motion** by Larson, second by Kilian to adjourn at 5:45pm. Motion **carried** by voice vote, vote reflected as 4-0.

AGENDA SUMMARY

4. Discussion and Possible Action Regarding the Donation of Park Land Adjacent to Westview Terrace Park

The owners of the property located at 1502 and 1504 Silver Spring St are wishing to potentially donate a portion of their property to the City. The area they are looking to donate is approximately 0.3 acres and is adjacent to the Westview Terrace Park. A creek separates the park from the parcel. The owners are looking to donate it to reduce the amount of property they maintain. Attached is an overview of the parcel. There is a line of wetland on the northern part of the parcel as it nears the creek. The parcels proximity to the park could be utilized as another entrance to the park with a trail and small footbridge over the creek. If this additional entrance is not desired or necessary, the addition of this piece of land does not benefit the park with the separation of the creek.

The Committee is asked to review this potential land donation and determine if this land is desirable to the city. If the Committee determines that the land would be desirable to the city, staff will work with the owners. The land will need to be subdivided and the parcel created prior to the city accepting the donation.

5. Discussion and Possible Action Regarding Remedial Action Options for Riverside Park Soils

At the October Park and Recreation Committee meeting the Committee reviewed the Site Investigation Report from REI. This item was an informational item so no action could be taken. Alder Kilian requested that this item be placed on the November agenda as an actionable item. Per the minutes from the October meeting, Alder Kilian *thought they should follow State standards. He said almost all contamination in Wisconsin is addressed through Wisconsin regulatory standards which he believes are both reasonable and protective.*

Public Works Director Lindman and a representative from REI will attend the meeting to assist with this discussion. The Site Investigation Report was submitted to the WDNR for review and formal response from the WDNR concerning the completeness of the site investigation. Currently, REI is waiting for a written response from WDNR. They are afforded 60 days from the time they receive payment which was Sept. 21. Per REI, in the site investigation report the argument was made to utilize the WAC Chapter NR720 standards for the individual compounds as the cleanup standard for the site. The question included in the conclusion of the report was so that if the WDNR required the continued use of the TEQ calculations the department would provide a numerical standard for the TEQ.

The Committee will discuss this item further and recommend action if necessary.

6. Educational Items

6A. Park Updates

Memorial Benches and Playground Restoration:

A few benches need to be installed yet and/or repaired due to vandalism. Staff are concluding restoration work around newly installed memorial benches and playgrounds.

Water Systems:

Most city water systems have been winterized at this point.

Sylvan Tubing Hill Snowmaking Water System:

Booster pump and plumbing work will be taking place between 10/26 and 11/12.

AGENDA SUMMARY

ADA Study Barrier Corrections:

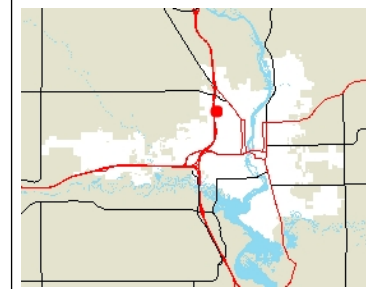
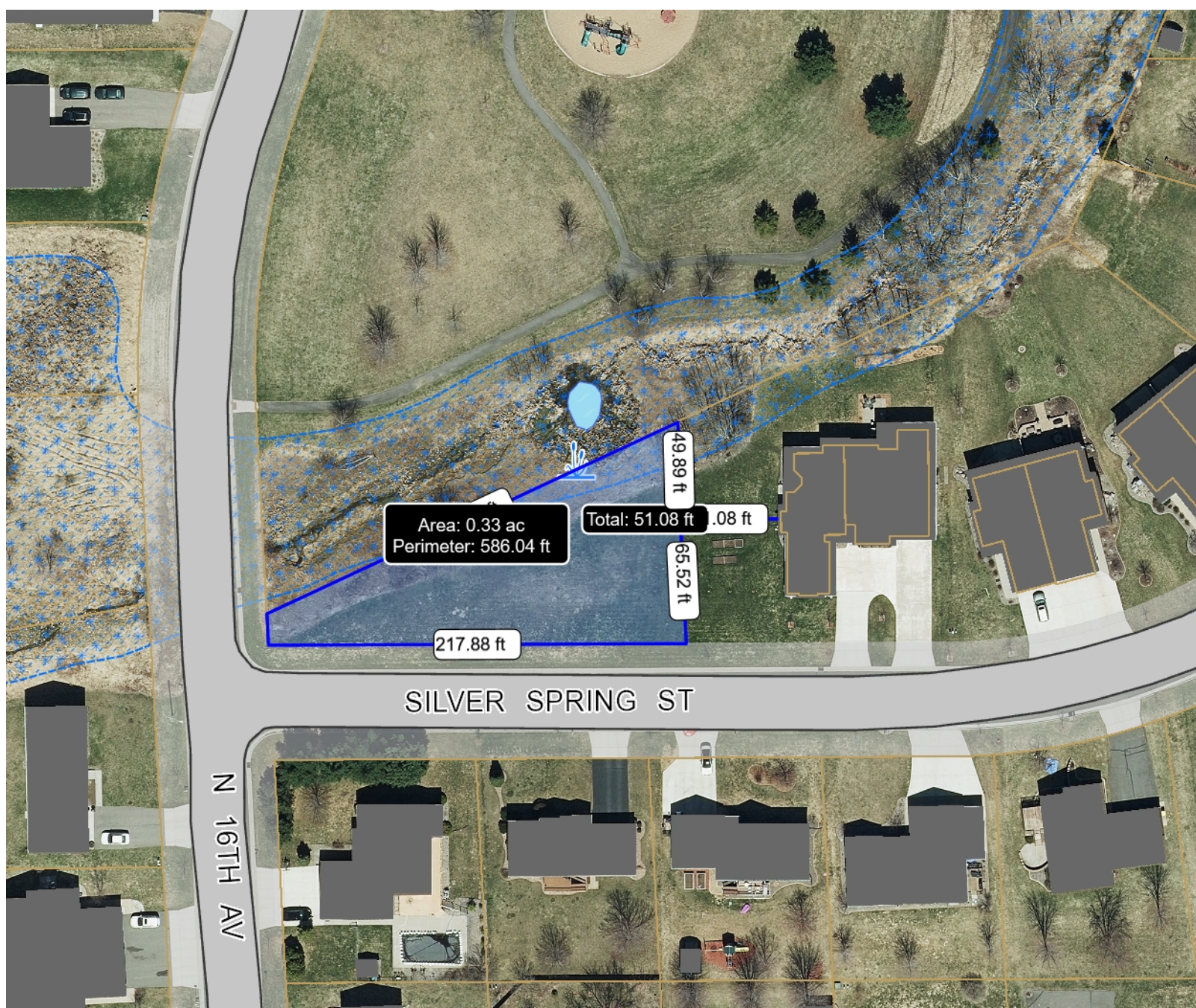
Staff continues corrections for ADA guidelines. Small correction levels include small plumbing fixes, fixture and grab bar relocations in restrooms, tree path obstructions, adding ADA approved picnic tables, etc. ONGOING

Oak Island:

The open shelter by the skate park is being replaced.

Routine Operations/Programs:

Mowing Operations; Working on mulching leaves with limited staff
Urban forestry program: Planting will be complete the first week of November
Building and structure maintenance.
Shelter reservations and Special Events.
Equipment maintenance and repair
Restroom Maintenance



Legend

- Muni-Outline (FullExtent)
- Parcel
- Section Line/Number
- Right Of Way
- Building
- Annexion (2015 - Present)
 - 2015
 - 2016
 - 2017
 - 2018
 - 2019
 - 2020
- HighwaySign (FullExtent)
 - USH
 - STH
 - CTH
- Street Name
- Railroad
- Bridge
- Overpass
- Paved Road
- Divided Highway
- Right Of Way
- Lake - Pond
- River - Stream
- WI DNR Wetland (<2 Acres)
- WI DNR Wetland (>2 Acres)
- Wausau Wetland



Notes

Map Created: 10/26/2021

37.41 0 37.41 Feet



NAD_1983_HARN_WISCRS_Marathon_County_Feet

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THIS MAP IS NOT TO BE USED FOR NAVIGATION



REI

**CIVIL & ENVIRONMENTAL
ENGINEERING, SURVEYING**

SITE INVESTIGATION REPORT

RIVERSIDE RAIL CORRIDOR

132 RIVER STREET

WAUSAU, WI 54401

BRRTS #02-37-584785

REI PROJECT #9073



**COMPREHENSIVE
SERVICES WITH
PRACTICAL
SOLUTIONS**



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RIVERSIDE RAIL CORRIDOR

132 RIVER STREET

WAUSAU, WI 54401

BRRTS #02-37-584785

REI PROJECT #9073



PREPARED FOR:

**City of Wausau
Attn: Mr. Eric Lindman, P.E
407 Grant Street
Wausau, WI 54403**

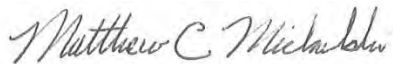
SEPTEMBER 2021

SITE INVESTIGATION REPORT

WISCONSIN ADMINISTRATIVE CODE CHAPTER NR712 PROFESSIONAL CERTIFICATIONS

The recommendations contained in this report are based on the information obtained from our study of the site and were arrived at in accordance with accepted hydrogeologic and engineering practices at this time and location.

"I, Matthew C. Michalski, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

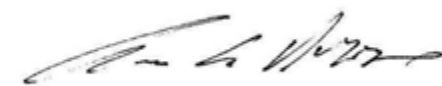


Hydrogeologist

9/13/2021

Date

"I, Matthew C. Michalski, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."



Senior Hydrogeologist

9/13/2021

Date

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SITE INVESTIGATION REPORT

RIVERSIDE RAIL CORRIDOR

132 RIVER STREET

WAUSAU, WI 54401

BRRTS #02-37-584785

REI PROJECT #9073

1.0 EXECUTIVE SUMMARY

The subject property is currently and has been utilized as a public park maintained by the City of Wausau. The lands currently contained within the park boundaries were deeded to the city through three (3) deeds dated October 15, 1923, January 18, 1930, and November 13, 1930 with provisions requiring the lands be maintained as a public park for free use of the public.

On September 24, 2019, TRC Solutions submitted results for the Wood Waste Burning Site Investigation related the open WAULECO SNE Corp (BRRTS# 02-37-000006) Environmental Repair Program (ERP) site. Soil samples were collected based on aerial deposition models with samples collected both within and outside of modeled deposition areas. Soil samples collected outside of the area of modeled deposition were located near potential sources of dioxins and furans. Three (3) samples were collected along former railroad tracks south of Riverside Park which revealed an exceedance for residential direct contact Residual Contaminant Level (RCL).

On November 21, 2019, the City of Wausau received a “Responsible Party” letter for contamination identified within the former rail corridor located at the south end of Riverside Park. The “Responsible Party” letter identified the property owners’ responsibilities in relation to the identified contamination. An ERP site listing was opened for the property on the WDNR’s BRRTS database. On December 31, 2019, REI submitted a Site Investigation Workplan on behalf of the responsible party.

The site investigation consisted of thirty (30) hand sampling locations. Fifty-seven (57) unsaturated soil samples were submitted to a state certified laboratory for analysis. Laboratory analytical results for seventeen (17) soil samples collected either within the subject property boundaries or surrounding neighborhood, by other consulting firms, as part of other projects submitted to the WDNR were also utilized. Results of the investigation are as follows:

Unconsolidated materials encountered during the site investigation varied depending on location within the subject property. Along the former railroad tracks, associated grade, and sloped portion of the property, generally consisted of a brown sandy silt to silty sand with varying amounts of organics, glass fragments, coal clinkers, and metal fragments underlain by a reddish tan fine to coarse grained sand with gravel in a few locations.

Unconsolidated materials encountered in areas of manicured lawn consisted of brown silt with medium grained sand from land surface to depths ranging from nine (9) to twelve (12) inches below land surface. Underlain by a reddish brown to light brown silty clay to sandy clay with varying amounts of gravel.

Unsaturated soil contamination exceeding the Wisconsin Administrative Code (WAC) Chapter NR720 Industrial Direct Contact RCLs was identified in twenty-five (25) of the seventy-four (74) soil samples utilized as part of the site investigation.

The concentration of 1,2,3,4,6,7,8-HpCDD in sample Culvert In (4-6 inches bls) also identified an exceedance of the WAC Chapter NR720 Industrial Direct Contact RCL. The concentration of 2,3,4,7,8-PeCDF in samples Culvert Out (4-6 inches bls) and 1003 EMT (8-10 inches bls) also identified exceedances of the WAC Chapter NR720 Industrial Direct Contact RCL.

Three (3) soil samples identified WAC Chapter NR720 Non-Industrial Direct Contact RCL exceedances for the calculated cumulative hazard index including: Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), and N4-3 (0-6 inches bls).

Ten (10) soil samples identified WAC Chapter NR720 Non-Industrial Direct Contact RCL exceedances for the calculated cumulative cancer risk including: Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), N4-3 (0-6 inches bls), P1 (7-9 inches bls), P8

(2-3 and 10-12 inches bls), P10 (2-3 inches bls), P11 (2-3 and 10-12 inches bls), and P17 (10-12 inches bls).

2,3,7,8-TCDD is the only compound analyzed with a WAC Chapter NR720 Groundwater Pathway Protection RCL. Zero (0) of the seventy-four (74) soil samples collected from within the park boundaries or nearby neighborhood identified an exceedance of the WAC Chapter NR720 Groundwater Pathway Protection RCL.

Based on these results, REI recommends remedial actions be taken to address unsaturated soil contamination exceeding the WAC Chapter NR720 direct contact RCLs. Prior to the development of a Remedial Action Options Report, the WDNR will need to determine what standards the TEQ values will be compared as this will significantly affect the area of remediation. Due to the variability of the potential standards to compare the calculated TEQ values, REI recommends the Site Investigation Report be submitted to the WDNR as part of a Technical Assistance Request with the required WDNR fee (\$1,050.00). The Technical Assistance Request will require the WDNR to provide a formal response concerning the completeness of the site investigation.

2.0 INTRODUCTION

2.1 Purpose of Report

The purpose of the site investigation was to determine the degree and extent of Dioxin and Furan contamination related to the above referenced site. The site investigation was prompted after contaminated unsaturated soil was identified on the subject property as part of the open Wauleco SNE Corp (BRRTS# 02-37-000006) ERP site in August 2019. The Wisconsin Department of Natural Resources was notified on October 31, 2019 that “environmental pollution” was identified on the subject property. Subsequently, the WDNR sent a Responsible Party (RP) letter, dated November 21, 2021, which required that a site investigation be conducted for the subject property.

2.2 General Information

2.2.1 Responsible Party

City of Wausau
Attn: Mr. Eric Lindman, P.E.
407 Grant Street
Wausau, WI 54403

2.2.2 Regulatory Contact

Wisconsin Department of Natural Resources
Remediation and Redevelopment Program
Attn: Mr. Matt Thompson
West Central Regional Office
1300 W. Clairemont Avenue
Eau Claire, WI 54701

2.2.3 Environmental Consulting Firm

REI Engineering, Inc.
Attn: Mr. Matthew C. Michalski
4080 North 20th Avenue
Wausau, Wisconsin 54401
Phone: (715) 675-9784
E-mail: MMichalski@REIengineering.com

2.2.4 Site Name, Address, & Legal Description

Riverside Rail Corridor
132 River Street
Wausau, WI 54401

Facility ID:

737251350

Parcel ID Number:

291-2907-362-0511

Public Land Survey System:

The North Half (N $\frac{1}{2}$) of the Southeast Quarter (SE $\frac{1}{4}$) of Section Thirty-five (35),
Township Twenty-nine North (29N), Range Seven East (7E), Marathon County,
Wisconsin.

WTM Coordinates:

Easting: 548,852

Northing: 497,486

Latitude & Longitude:

Latitude: 44° 57' 0.8" N

Longitude: 89° 38' 3.3" W

Legal Description:

The subject property was obtained by the City of Wausau through three (3) deeds dated October 15, 1923, January 18, 1930, and November 13, 1930 with provisions requiring the lands be maintained as a public park for free use of the public. Per the City of Wausau the lands deeded to the city are not platted and no plat or certified survey maps exist for the subject property.

The site location is depicted in Figure 1. Copies of the current deeds and Marathon County GIS map depicting the property boundaries are presented in Appendix A.

2.3 Site Background

2.3.1 Current & Historic Land Use

The subject property is currently and has been utilized as a public park maintained by the City of Wausau. The lands currently contained within the park boundaries were deeded to the city through three (3) deeds dated October 15, 1923, January 18, 1930, and November 13, 1930 with provisions requiring the lands be maintained as a public park for free use of the public.

Historically, the area west and northwest of the site investigation consisted of industrial properties including the Curtis & Yale Co (Hardwood Flooring and Screen Door Factory) which is currently part of the adjacent 3M facility. Based on Sanborn Fire Insurance Maps (Sanborn) from 1912 the Curtis & Yale Co facility historically had five (5) small structures located within the northern portion of the current park property boundaries. The exact use of these buildings is not identified on the Sanborn maps, but the structures are absent in the 1923 Sanborn Map. Other industrial entities in the area included Doors, Windows, and Molding manufacturing facility. Adjacent properties to the

southwest of the area of investigation generally consist of single family residential properties.

2.3.2 Site Layout

Riverside Park consists of 20.17 acres located along the southwest bank of the Wisconsin River (WBIC 1179900) and Lake Wausau (WBIC 1437500). The park is divided into two (2) parcels separated by the right of way of Sherman Street. The site investigation was limited to the southern parcel, containing 8.54 acres of land extending from the southern right of way of Sherman Street to the northern right of way of Thomas Street. Additionally, the portion of the park located between the right of ways of River Street and Thomas Street historically was a railroad right of way with a single track which had become overgrown with small trees and brush prior to being removed in the fall of 2019. Surface covers in this area currently consist of an impenetrable surface walking path and landscaping.

The railroad tracks remaining extend approximately 500 feet into Riverside Park along the southwest property boundary before entering private property. The southwestern edge of the park between the right of ways of Sherman Street and River Street has a steep downward slope into the interior of the park with the railroad tracks located at the top of the slope. Along the railroad track a single culvert is present perpendicular to the tracks allowing surface runoff from areas southwest of the railroad tracks to discharge down the slope into the park. Ground surface covers on the slope consist of bare earth with decaying organics at the surface, trees, bushes, and areas of thick vegetation at the base of the slope.

The area northeast of the slope generally consists of manicured lawn with two areas of asphalt parking lots and an asphalt walking trail. This area is relatively level.

The current layout of the property is depicted on Figure 2, Figure 3, and Figure 4.

2.3.3 Zoning

Based on the City of Wausau GIS the subject property and the adjacent properties to the north and south are zoned UMU – Urban Mixed Use. The adjacent properties to the west are zoned LI – Light Industrial and the adjacent property across Grand Avenue is zoned I – Institutional. A zoning map from the City of Wausau GIS and select portions of the City of Wausau Title 23: Zoning Ordinance is included in Appendix B.

2.3.4 Previous Releases/Investigations

No other Bureau for Remediation and Redevelopment Tracking System (BRRTS) activities are listed for the subject property and no other releases are known to have occurred on the property.

2.3.4 Current Investigation

On September 24, 2019, TRC Solutions submitted results for the Wood Waste Burning Site Investigation related the open WAULECO SNE Corp (BRRTS# 02-37-000006) Environmental Repair Program (ERP) site. Soil samples were collected based on aerial deposition models with samples collected both within and outside of modeled deposition areas. Soil samples collected outside of the area of modeled deposition were located near potential sources of dioxins and furans. Three (3) samples were collected along former railroad tracks south of Riverside Park which revealed an exceedance for residential direct contact Residual Contaminant Level (RCL).

On November 21, 2019, the City of Wausau received a “Responsible Party” letter for contamination identified within the former rail corridor located at the south end of Riverside Park. The “Responsible Party” letter identified the property owners’ responsibilities in relation to the identified contamination. An ERP site listing was opened for the property on the WDNR’s BRRTS database. On December 31, 2019, REI submitted a Site Investigation Workplan on behalf of the responsible party.

2.3.5 Other Sources of Analytical Data

In June 2006, CWE, Inc. (CWE) collected soil samples from three (3) locations for laboratory analysis of seventeen (17) dioxins. Two (2) of the samples were collected from within the boundaries of Riverside Park, Culvert In and Culvert Out, however the Culvert Out sample was later reported to have been collected approximately thirty (30) feet down slope from the culvert discharge location.

In December 2008, CWE collected soil samples from nine (9) locations for laboratory analysis of seventeen (17) dioxins. Seven (7) of the samples were collected from the neighborhood directly south of Riverside Park.

In January 2018, Sand Creek Consulting (SCC) collected soil samples from four (4) locations (B-101, B-102, B-103, and B-104) within the Thomas Street right of way south of Riverside Park. Four (4) soil samples were submitted for laboratory analysis of seventeen (17) dioxins.

In August 2019, TRC Companies, Inc. (TRC) collected soil samples from thirty-six (36) locations. Three (3) locations (N4-1, N4-2, and N4-3) within the railroad tracks located directly east of Riverside Park. One (1) soil sample from each location was submitted for laboratory analysis of seventeen (17) dioxins.

In November 2019, SCC collected soil samples from three (3) locations (RP-101, RP-102, and RP-103) within Riverside Park. One (1) soil sample from each location was submitted for laboratory analysis of seventeen (17) dioxins.

In September 2020, ARCADIS collected soil samples from five (5) locations within a nearby railroad right of way located west of the subject property. Three (3) locations (SB-01, SB-03, and SB-05) has soil samples collected and submitted for dioxins laboratory analysis. Two (2) soil samples from each location were submitted for laboratory analysis of seventeen (17) dioxins.

Historic soil analytical results are included in Tables 1a-c.

2.3.6 Regional Geology & Hydrogeology

The site is located in the northcentral portion of the Central Wisconsin River Basin. Land surface elevation at the site is approximately $1,180 \pm 10$ feet above MSL according to the U.S.G.S. Wausau East, Wisconsin 7.5-minute quadrangle

map. The topography for the region consists of gently rolling till plains slightly modified by stream erosion. The region has many crystalline rock outcroppings that project through the glacial deposits. The nearest surface water is Lake Wausau (WBIC 1437500) located adjacent to the northeast boundary of the subject property. Lake Wausau is a drainage lake and impoundment of the Wisconsin River (WBIC 1179900). Lake Wausau is not listed as an impaired water, but the Wisconsin River is identified as an impaired water due to Mercury and Polychlorinated biphenyls (PCBs).

The geology and water resources of the basin as described by Devaul and Green (1971), indicate that unconsolidated surficial geology generally consists of unpitted outwash consisting of stratified sand and gravel with some clay and silt including alluvium. Major streams generally have branching drainage patterns and there are fewer wetlands or natural lakes compared to outwash deposits to the south and northeast. The bedrock in the area consists of Pre-Cambrian crystalline rock. The depth to bedrock is anticipated to be present at approximately 40 feet bls, based on local Well Construction Reports.

Soil permeabilities for the unpitted outwash material are 2.5 to 5 inches per hour. The average annual precipitation in the area is about 30.9 inches per year. The typical evapotranspiration rate is about 19.7 inches per year. This leaves about 11.2 inches per year for surface runoff and groundwater recharge. Surface water inflow into the basin averages 7.1 inches per year and outflow averages 18 inches per year (Devaul and Green, 1971).

2.4 Contaminant of Concern Information

2.4.1 Terminology Utilized

Due to the numerous naming conventions and large number of compounds potentially included as part of the dioxins, furans, and biphenyls families of chemicals the following terminology is commonly utilized and will be included throughout this report. 2,3,7,8-tetrachlorodibenzo-*p*-dioxin is commonly shortened to 2,3,7,8-TCDD, TCDD, or referenced simply as dioxin. Dioxin-like compounds (DLCs) is “a description used for compounds that have chemical structures, physico-chemical properties, and toxic responses similar to TCDD

(U.S. EPA, 2010).” DLC include compounds from the dioxins, furan, and biphenyls families of chemicals. Furthermore dioxin and dioxin-like compounds are commonly referenced simply as dioxins.

2.4.2 Dioxins, Furans, and Biphenyls

These compounds include chlorinated and brominated dibenzo-*p*-dioxins (CDDs and BDDs), dibenzo-*p*-furans (CDFs and BDFs), and biphenyls (PCBs and PBBs). Dioxins consists of two (2) benzene molecules joined by two (2) oxygen molecules at adjacent carbons on each of the benzene molecules and between one (1) to eight (8) chlorine and/or bromine atoms. Furans consist of two (2) benzene molecules fused to a central furan molecule and between one (1) to eight (8) chlorine and/or bromine atoms. Biphenyls consist of two (2) linked benzene molecules with between one (1) to ten (10) chlorine and/or bromine atoms. Not all dioxins and dioxin-like compounds have the same toxicity or ability to cause illness or adverse health effects and not all isomers are biologically active (ATSDR, 2006).

The most toxic form of dioxins is 2,3,7,8-TCDD, which is the most studied isomer (ATSDR, 1999). Because of their hydrophobic nature and resistance towards metabolism, dioxins persist and bioaccumulate in fatty tissues of animals and humans (U.S. EPA, 2010).

2.4.3 Toxicity Equivalence Factors (TEFs) & Toxicity Equivalence (TEQ) Value

The TEF methodology is based on the concept of dose addition. Dose addition assumes the toxicokinetic and toxicodynamic of all compounds are assumed to be similar and the dose-response curves of the components of a mixture are assumed to be similarly shaped. The combined toxicity of the individual components is estimated using the sum of the scaled concentrations, relative to that of a designated index chemical. TCDD is typically utilized as the designated index chemical for dioxins (U.S. EPA, 2010).

To apply TEFs to an environmental mixture of dioxins, each individual compounds concentration is multiplied by a specific TEF indexed to TCDD. This yields individual CDD, CDF, or PCB concentrations that are equivalent to

TCDD. The TEQ value for a sample is calculated by summing the TEF concentrations for all dioxins present in the sample. The formula for calculating exposure concentrations for DLCs in a mixture utilizing TCDD TEQ is as follows:

$$TEQ = \sum_{i=1}^n (C_i \times TEF_i)$$

TEQ = TCDD Toxicity Equivalence

n = number of DLCs in a mixture

i = exposure to individual PCDD, PCDF, or PCB compound

C_i = Concentration of individual compound

TEF_i = TEF of individual compound

The TEQ value represents an estimate of the total TCDD equivalent dose for the mixture components being considered.

TEFs utilized as part of this site investigation were obtained from the U.S. EPA Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds (2010) and are summarized in Table 2.

Compound	TEF
Dioxins	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1
1,2,3,7,8,9-Heptachlorodibenzo-p-dioxin (HpCDD)	0.01
Octachlorodibenzo-p-dioxin (OCDD)	0.0003
Furans	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.1
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.03
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.3
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.1
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.1
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.01
Octachlorodibenzofuran (OCDF)	0.0003

Table 2: Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds (U.S. EPA, 2010).

2.4.4 WAC Chapter NR720 Standards

WAC Chapter NR720 dictates approved methods for determining residual contaminant levels (RCLs) for soil based on protection of groundwater and protection of human health from direct contact. The WDNR RR Program published generic RCLs as part of the NR720 RR Soil RCL Worksheets which include RCLs for protection of the groundwater pathway, non-industrial direct contact, and industrial direct contact exposure scenarios. Laboratory analytical results were compared to the soil RCLs for protection of the groundwater pathway and non-industrial direct contact exposure scenarios present within the NR720 RR Soil RCL Worksheets. Soil RCLs utilized as part of the site investigation are summarized in Table 3.

Compound	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Protection
Dioxins (ng/kg)			
2,3,7,8-TCDD	4.82	21.8	30.0
1,2,3,7,8-PeCDD	4.93	22.3	No Standard
1,2,3,4,7,8-HxCDD	49.3	223	No Standard
1,2,3,6,7,8-HxCDD	49.3	223	No Standard
1,2,3,7,8,9-HxCDD	49.3	223	No Standard
1,2,3,7,8,9-HpCDD	484	2.19E+03	No Standard
OCDD	1.64E+04	7.44E+04	No Standard
Furans (ng/kg)			
2,3,7,8-TCDF	48.2	219	No Standard
1,2,3,7,8-PeCDF	164	744	No Standard
2,3,4,7,8-PeCDF	16.4	74.4	No Standard
1,2,3,4,7,8-HxCDF	48.5	220	No Standard
1,2,3,6,7,8-HxCDF	48.5	220	No Standard
2,3,4,6,7,8-HxCDF	49.3	223	No Standard
1,2,3,7,8,9-HxCDF	49.3	223	No Standard
1,2,3,4,6,7,8-HpCDF	490	2.22E+03	No Standard
1,2,3,4,7,8,9-HpCDF	490	2.22E+03	No Standard
OCDF	1.64E+04	7.44E+04	No Standard

Table 3: Applicable WAC Chapter NR720 Standards.

In addition to comparing laboratory analytical results to RCLs for each individual compound a cumulative exposure was determined, for each sample, utilizing the NR720 RR Soil RCL Worksheets. WAC Chapter NR720 sets a cumulative direct contact excess cancer risk of 1×10^{-5} and a hazard index for non-carcinogens of one (1).

The WDNR requested that the calculated TEQ values for each sample be compared to the WAC Chapter NR720 standards for TCDD as part of the initial site assessment.

2.4.5 US EPA Preliminary Remediation Goals (PRGs)

In April 1998, the US EPA Office of Solid Waste and Emergency Response (OSWER) issued a Directive (OSWER Directive 9200.4-26) detailing

recommended preliminary remediation goals (PRGs) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resources Conservation and Recovery Act (RCRA) corrective actions sites. For Superfund and RCRA cleanup sites where dioxins are a principal contaminant of concern the document specified a PRG of 1 ppb (1,000 ppt) TEQ for residential exposure scenario and 5 ppb (5,000 ppt) to 20 ppb (20,000 ppt) TEQ for commercial/industrial exposure scenarios (U.S. EPA, 1998).

In December 2008, the US EPA OSWER released a memorandum (OSWER 9285.7-84FS) which included the document “Frequently Asked Questions on the Update to the ATSDR Policy Guideline for Dioxins and Dioxin-Like Compounds in Residential Soil.” In 1998, the Agency for Toxic Substances and Disease Registry (ATSDR) developed a policy guideline for dioxins in residential soil to assist ATSDR health assessors in evaluating public health implications of dioxins. The guideline established three levels as criteria for comparing dioxin levels in residential soil: a screening level, and evaluation level, and a public health action level along with recommended specific considerations for public health actions within each of these levels. In October 2008 ATSDR issued an update eliminating the evaluation level and public health action level but retained the screening level of 0.05 ppb (50 ppt) as an initial comparison value for health assessments. The December 2008 EPA “Frequently Asked Questions on the Update to the ATSDR Policy Guideline for Dioxins and Dioxin-Like Compounds in Residential Soil” document identified that the EPA PRGs for dioxins remained at 1 ppb (1,000 ppt) in surface soils involving a residential exposure pathway for human health. “The 1 ppb (1,000 ppt) level is recommended unless extenuating site-specific circumstances warrant different levels or a more stringent state applicable or relevant and appropriate requirement establishes a cleanup level at CERCLA sites” (U.S. EPA, 2008).

3.0 METHODOLOGIES

Sampling methods and procedures are included in this report as Appendix C. Site photographs are presented in Appendix D. The current layout of the property, sample locations are shown on Figure 2, Figure 3, Figure 4, and Figure 5.

3.1 Soil

Investigation of the extent of soil contamination was conducted via hand sampling. Soil samples were obtained by utilizing a clean decontaminated shovel to remove soils until the top of the sample interval was encountered. REI personnel used a stainless-steel garden trowel to loosen soils within the sample interval. A gloved hand was then used to collect the loosened soils and fill the appropriate laboratory provided containers. Once filled the containers were closed with the appropriate screw on lids and labeled. Methods and procedures for soil sampling are summarized in Appendix C.

3.2 Soil Sample Series

Two (2) soil sample series were collected as part of this site investigation. Initially, the “R” series sample locations were collected as part of the WDNR required WAC Chapter NR716 site investigation. “P” series sample locations were initially requested by the City of Wausau Park and Rec Committee based off of historic soil sampling laboratory analytical results collected from within the park. Prior to each sampling event proposed soil sample locations were staked to allow for review by City of Wausau personnel, aldermen, and community groups.

3.2.1 “R” Series Samples

In April 2020, ten (10) soil sample locations, R1 through R10, were selected along the historic railroad corridor extending northwest from Thomas Street into Riverside Park along the southwestern property boundary. Seven (7) of the ten (10) sample locations were located directly adjacent to the existing railroad tracks. Three (3) sample locations were located approximately fifteen (15) to fifty (50) feet side gradient of the railroad tracks. One (1) soil sample was collected from each sample location and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins.

In September 2020, REI personnel collected additional soil sample from two (2) of the soil sample locations sampled in April 2020. At both locations the additional soil sample was collected from a deeper sample interval. One (1) soil sample was collected from each sample location and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins.

In May 2021, one (1) additional soil sample was added to the “R” series. The sample location was requested by the WDNR due to historic analytical results. One (1) soil sample was collected and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins.

3.2.2 “P” Series Samples

In April 2020, the City of Wausau Park and Rec Committee requested REI personnel collected soil samples from five (5) locations identified by the committee. Two (2) soil samples were collected from each sample location and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins. One (1) soil sample was collected from approximately two (2) to three (3) inches below land surface. In areas of manicured lawn, this sample interval was directly beneath the rooting zone and in lightly vegetated or non-vegetative locations was of sufficient depth to remove highly organic soils composed primarily of decaying leaves and vegetation and shallow roots. The second sample was collected at depths ranging from seven (7) to fourteen (14) inches below land surface. The depth of the second sample interval was either collected directly below the A soil horizon in four (4) of the five (5) sample locations and at refusal in sample location P1. Sample location P1 was located directly below the outfall of a culvert and appears to have historically been armored with large pieces of concrete. Multiple attempts were made to reach deeper depths but were unsuccessful.

In September 2020, REI personnel collected soil samples from eleven (11) soil sample locations within Riverside Park. Two (2) soil samples were collected from each sample location and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins.

In May 2021, REI personnel collected soil samples from four (4) new soil sample locations within Riverside Park. Two (2) soil samples were collected from each sample location and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins. One (1) additional soil sample was collected from the P1 and P11 sample locations at depths greater than the previous sampling completed. One (1) soil sample was collected from each

sample location and submitted to a state certified laboratory for EPA Method 1613B analysis of seventeen (17) dioxins.

The soil analytical results are summarized on Table 1b and Tables 1d-g. The complete laboratory soil analytical reports are presented in Appendix E.

3.3 Decontamination Procedures

Equipment used throughout the investigation was decontaminated utilizing the following procedure. Please note, the only reusable equipment employed during the site sampling consisted of metal shovels and a stainless-steel garden trowel. Prior to decontamination, excess soils were removed. Equipment was then placed in a clean 5-gallon plastic bucket containing a mixture of deionized water and Liquinox® prepared according to the manufacturer's instructions. The equipment was scrubbed with a clean nylon brush with special care taken to clean all areas which contacted soils during hand sampling. Equipment was then rinsed in a separate clean 5-gallon bucket containing deionized water to remove any remaining cleaning solution. Finally, the equipment was rinsed with deionized water and the rinse water was captured in a third 5-gallon bucket. Decontaminated equipment was allowed to air dry prior to additional sampling use.

Water utilized to decontaminate equipment was containerized in 55-gallon steel DOT approved drums and temporarily stored at REI's facility until disposal.

3.4 Investigative Wastes

No investigative waste was generated as part of this site investigation. Soils removed during soil sampling activities were utilized to backfill the sample locations. Deionized water utilized for decontamination of equipment was containerized and transported to the City of Wausau Wastewater Treatment Plant for treatment.

4.0 SUMMARY OF SITE INVESTIGATION

The following is a summary of events that have taken place at the site as part of the site investigation:

December 19, 2019	WDNR notified REI retained as the environmental consultant for environmental investigation.
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December 31, 2019	REI submitted Site Investigation Work Plan to the WDNR.
January 30, 2020	WDNR provides notice to proceed with the scope of services outlined in the December 31, 2019 Site Investigation Work Plan
April 23, 2020	REI personnel collected soil samples from sample locations R1 through R10 and P1 through P5.
July 10, 2020	REI personnel staked the proposed soil sample locations P6 through P16.
August 5, 2020	REI personnel collected soil samples from sample locations P6 through P16, RP-102, and RP-103. Due to a power outage at the laboratory the collected samples exceeded the allowable holding temperature and as such were not analyzed.
September 14, 2020	REI personnel collected soil samples from sample locations P6 through P16, RP-102, and RP-103.
February 24, 2021	WDNR requests additional soil sampling to further define degree and extent.
April 23, 2021	REI personnel staked the proposed soil sample locations P17 through P20.
May 12, 2021	REI personnel collected soil samples from sample locations P1, P11, P17 through P20, and R11.

5.0 RESULTS OF INVESTIGATION

5.1 Site Geology

Unconsolidated materials encountered during the site investigation varied depending on location within the subject property. Along the former railroad tracks, associated grade, and sloped portion of the property, generally consisted of a brown sandy silt to silty sand with varying amounts of organics, glass fragments, coal clinkers, and metal

fragments underlain by a reddish tan fine to coarse grained sand with gravel in a few locations.

Unconsolidated materials encountered in areas of manicured lawn consisted of brown silt with medium grained sand from land surface to depths ranging from nine (9) to twelve (12) inches below land surface. Underlain by a reddish brown to light brown silty clay to sandy clay with varying amounts of gravel.

Figure 6 depicts the elevation profile southwest to northeast across the area of the identified culvert.

5.2 Site Hydrogeology

Groundwater was not encountered during completion of the site investigation. However, based on data included in the 2020 Annual Groundwater Monitoring Report for the nearby Wauleco/SNE ERP site (BRRTS# 02-37-000006) depth to groundwater in the area of the site investigation ranges from approximately eight (8) to twenty (20) feet below land surface depending on well location and the local groundwater flow is toward the east.

5.3 Soil & Vadose Zone Quality

In the fall of 2019, the City of Wausau redeveloped the former railroad tracks located between River Street and Thomas Street. As part of the redevelopment the former railroad tracks were removed and approximately the top six (6) inches of soil were removed and transported to the Marathon County Landfill for disposal. Following the soil removal, sheet pilings were installed along Lake Wausau (WBIC 1437500) and the Wisconsin River (WBIC 1179900). Following installation of the sheet pilings, clean fill materials were utilized to adjust the land surface elevation and a paved walking path was installed with landscaping present along the sides. Based on the approximately top six (6) inches of the soil column having been excavated during the site redevelopment the locations of soil samples N4-1 (0-6 inches bls), N4-2 (0-6 inches bls), N4-3 (0-6 inches bls), R8 (2-4 inches bls), R9 (4-5 inches bls), and R10 (5-6 inches bls) were removed. The complete laboratory reports are included in Appendix E.

5.3.1 WAC Chapter NR720 RCLs

Unsaturated soil contamination identified during the site investigation included concentrations exceeding the WAC Chapter NR720 state soil standards for the following:

Concentrations of at least one (1) of the seventeen (17) dioxins exceeding the WAC Chapter NR720 Non-Industrial Direct Contact RCL were identified in twenty-five (25) of the seventy-four (74) soil samples collected from within the park boundaries or nearby neighborhood. Table 4 summarizes individual exceedances by compound.

Compound	WAC Chapter NR720 Non-Industrial Direct Contact RCL Exceedances	Exceedance Count
Dioxins		
2,3,7,8-TCDD	No Exceedances	0
1,2,3,7,8-PeCDD	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), 117 Riv 1 (4-6 inches bls), 117 Riv 2 (4-6 inches bls), N4-2 (0-6 inches bls)^, N4-3 (0-6 inches bls)^, R1 (3-5 inches bls), P1 (7-9 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 and 10-12 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls)	16
1,2,3,4,7,8-HxCDD	No Exceedances	0
1,2,3,6,7,8-HxCDD	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), P1 (7-9 and 22-24 inches bls), P8 (2-3 and 10-12 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls)	9
1,2,3,7,8,9-HxCDD	Culvert In (4-6 inches bls)	1
1,2,3,7,8,9-HpCDD	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), 117 Riv 1 (4-6 inches bls), 117 Riv 2 (4-6 inches bls), N4-1 (0-6 inches bls)^, N4-2 (0-6 inches bls)^, N4-3 (0-6 inches bls)^, R1 (3-5 inches bls), P1 (2-3, 7-9, and 22-24 inches bls), P6 (2-3 inches bls), P7 (2-3 inches bls), P8 (2-3 and 10-12 inches bls), P9 (2-3 inches bls), P10 (10-12 inches bls), P11 (2-3 and 10-12 inches bls), P13, (2-3 inches), P17 (2-3 and 10-12 inches bls)	22
OCDD	Culvert In (4-6 inches bls), P11 (2-3 inches bls)	2
Furans		
2,3,7,8-TCDF	No Exceedances	0
1,2,3,7,8-PeCDF	N4-2 (0-6 inches bls)^	1
2,3,4,7,8-PeCDF	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls)*, 1003 EMT (8-10 inches bls)*, N4-3 (0-6 inches bls)^, P1 (2-3, 7-9, and 22-24 inches bls), P6 (2-3 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 and 10-12 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls), P18 (2-3 inches bls)	15
1,2,3,4,7,8-HxCDF	N4-3 (0-6 inches bls)	1
1,2,3,6,7,8-HxCDF	No Exceedances	0
2,3,4,6,7,8-HxCDF	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), 1003 EMT (8-10 inches bls), P11 (2-3 and 10-12 inches bls)	4
1,2,3,7,8,9-HxCDF	No Exceedances	0
1,2,3,4,6,7,8-HpCDF	Culvert In (4-6 inches bls), P11 (2-3 inches bls)	2
1,2,3,4,7,8,9-HpCDF	No Exceedances	0
OCDF	No Exceedances	0

^ = Sample location excavated during redevelopment

Table 4: WAC Chapter NR720 Non-Industrial Direct Compound RCL exceedances by compound.

The concentration of 1,2,3,4,6,7,8-HpCDD in sample Culvert In (4-6 inches bls) also identified an exceedance of the WAC Chapter NR720 Industrial Direct Contact RCL. The concentration of 2,3,4,7,8-PeCDF in samples Culvert Out (4-6 inches bls) and 1003 EMT (8-10 inches bls) also identified exceedances of the WAC Chapter NR720 Industrial Direct Contact RCL.

Three (3) soil samples identified WAC Chapter NR720 Non-Industrial Direct Contact RCL exceedances for the calculated cumulative hazard index including: Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), and N4-3 (0-6 inches bls).

Ten (10) soil samples identified WAC Chapter NR720 Non-Industrial Direct Contact RCL exceedances for the calculated cumulative cancer risk including: Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), N4-3 (0-6 inches bls), P1 (7-9 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 inches bls), P11 (2-3 and 10-12 inches bls), and P17 (10-12 inches bls).

Please note, 2,3,7,8-TCDD is the only compound analyzed with a WAC Chapter NR720 Groundwater Pathway Protection RCL. Zero (0) of the seventy-four (74) soil samples collected from within the park boundaries or nearby neighborhood identified an exceedance of the WAC Chapter NR720 Groundwater Pathway Protection RCL.

A soil isoconcentration map depicting the estimated extent of unsaturated soil contamination exceeding the WAC Chapter NR720 state soil standards for all sampled parameters is included in Figure 7. Soil isoconcentration and “heat” maps depicted 1,2,3,4,6,7,8-HpCDD concentrations are included in Figures 8 and 9. Please note, the soil isoconcentrations and “heat” maps depict contamination extending southwest beyond the property boundaries of the subject property. However due to the limited and significantly further spaced data points in this direction, this depiction is related to the software program attempting to correlate the further spaced data points. Due to this the accuracy of these maps is best limited to the subject property in the areas of higher density data points.

5.3.2 TEQ Values

The calculated TEQ values were compared to the EPA PRG and ATSDR Screening Level for residential soils and the WAC Chapter NR720 RCLs for 2,3,7,8-TCDD.

Zero (0) of the calculated TEQ values exceeded the ERP PRG for dioxins in residential soils.

The calculated TEQ values exceeded the ATSDR Screening Level for residential soils in soil samples Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), N4-3 (0-6 inches bls), P1 (7-9 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 inches bls), P11 (2-3 and 10-12 inches bls), and P17 (10-12 inches bls).

The calculated TEQ values exceeded the WAC Chapter NR720 Non-Industrial Direct Contact RCL for 2,3,7,8-TCDD in forty-nine (49) of the seventy-four (74) soil samples collected from within the park boundaries or nearby neighborhood. Twenty-four (24) of the calculated TEQ values also exceed the WAC Chapter NR720 Industrial Direct Contact RCL.

Soil isoconcentration and “heat” maps depicted TEQ values are included in Figures 10 and 11. Please note, the soil isoconcentrations and “heat” maps depict contamination extending southwest beyond the property boundaries of the subject property. However due to the limited and significantly further spaced data points in this direction, this depiction is related to the software program attempting to correlate the further spaced data points. Due to this the accuracy of these maps is best limited to the subject property in the areas of higher density data points.

5.4 Potential/Known Receptors

5.4.1 Vapor Intrusion Potential

The WDNR Publication RR-800 *Addressing Vapor Intrusion at Remediation and Redevelopment Sites in Wisconsin* does not specifically address semi-volatile compounds including dioxins. No structures exist on the subject property and as such vapor intrusion does not appear to present a significant threat at this time. As discussing in section 5.3, the Soil isoconcentrations maps depict

contamination extending southwest beyond the property boundaries of the subject property. However due to the limited and significantly further spaced data points in this direction, this is due to the program utilized to product the maps.

5.4.2 Private or Municipal Potable Wells

No structures currently exist on the subject property but the area is served by the City of Wausau municipal water system. The surrounding properties are all served by the City of Wausau municipal water system. According to the City of Wausau Water Works department, no municipal wells exist within 1,200 feet of the subject property. No private potable wells are known to exist within 1,200 feet of the subject property.

5.4.3 Surface Water & Sediments

The nearest surface water is Lake Wausau (WBIC 1437500) located adjacent to the northwest property boundary of the subject property. Lake Wausau is a drainage lake and impoundment of the Wisconsin River (WBIC 1179900). Lake Wausau is not listed as an impaired water, but the Wisconsin River is identified as an impaired water due to Mercury and PCBs. Based on laboratory results, the extent of unsaturated soil contamination from this site does not appear to be impacting any surface waters or sediments.

6.0 SITE CHARACTERIZATION

The subject property is currently utilized as a city park with no structures present on the subject property. Ground surface covers on the property are composed primarily of manicured lawn. A paved walking path and parking lot with landscaping are also present. Ground surface covers on the sloped portion of the property consist of bare earth with decaying organics at the surface, trees, bushes, and areas of thick vegetation at the base of the slope.

Unsaturated soil contamination exceeding the WAC Chapter NR720 state soil standards at this property appear to be associated with multiple sources including the former railroad tracks. However, the highest concentrations identified appear to be related to overland flow of water into and discharging from a culvert passing beneath

the railroad tracks located at the top of a steep slope located on the western side of the property. The historic source of overland flow into the culvert is not known as the adjacent property's land surface elevation have been drastically modified due to the installation of a storm water retention pond. The area located west of the culvert is a mixture of residential and industrial properties

As the source of the dioxin contamination on the subject property is not known the potential presence of Perfluoroalky and Polyfluoroalky Substances (PFAS) can not be ruled out. However, the historic and current land use of the subject property did not identify any land uses generally associated with PFAS.

7.0 CONCLUSION & RECOMMENDATIONS

Based on the data collected, soil contamination, exceeding the WAC Chapter NR720 Direct Contact RCLs exists on the subject property. The extent of unsaturated soil contamination appears to have been adequately defined on the subject property.

Unsaturated soil contamination exceeding the WAC Chapter NR720 Groundwater Pathway Protection RCLs was not identified in any of the collected soil samples. Based on the soil analytical results, groundwater samples were not collected as part of this site investigation.

Based on these results, REI recommends remedial actions be taken to address unsaturated soil contamination exceeding the WAC Chapter NR720 direct contact RCLs. Prior to the development of a Remedial Action Options Report, the WDNR will need to determine what standards the TEQ values will be compared as this will significantly affect the area of remediation. Due to the variability of the potential standards to compare the calculated TEQ values, REI recommends the Site Investigation Report be submitted to the WDNR as part of a Technical Assistance Request with the required WDNR fee (\$1,050.00). The Technical Assistance Request will require the WDNR to provide a formal response concerning the completeness of the site investigation.

8.0 REFERENCES

- ATSDR. (1999). *Chlorinated Dibenzo-p-Dioxins (CDDs)*. U.S. Department of Health and Human Services, Division of Toxicology and Environmental Medicine. Atlanta: Agency for Toxic Substances and Disease Registry.
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- Wisconsin Department of Natural Resources. (n.d.). Bureau for Remediation and Redevelopment Tracking System (BRRTS) on the Web. Retrieved from <https://dnr.wi.gov/botw/SetUpBasicSearchForm.do>

Wisconsin Department of Natural Resources. (n.d.). RR Sites Map. Retrieved from <https://dnrmaps.wi.gov/H5/?viewer=rrsites>

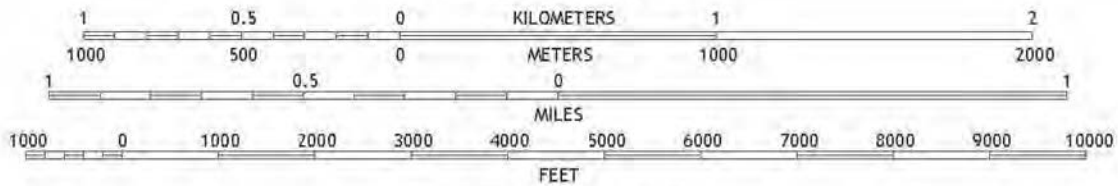
Wisconsin Department of Natural Resources. (n.d.). Surface Water Data Viewer. Retrieved from <https://dnrmaps.wi.gov/H5/?Viewer=SWDV>

Wisconsin Department of Natural Resources. (n.d.). Well Driller Viewer. Retrieved from [https://dnrmaps.wi.gov/H5/?viewer=Well Driller Viewer](https://dnrmaps.wi.gov/H5/?viewer=Well_Driller_Viewer)

DRAWING FILE: P:\9000-9099\9073 - CITY OF WAUSAU RIVERSIDE RR CORRIDOR\DWGS\9073-VICN.DWG LAYOUT: RR CORRIDOR PLOTTED: SEP 13, 2021 - 2:12PM PLOTTED BY: MATTHEW



SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

WAUSAU WEST QUADRANGLE
WISCONSIN - MARATHON COUNTY
7.5-MINUTE SERIES

UTM GRID AND 2011 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

2°50'
50 MILS
1°54'
34 MILS



WAUSAU WEST, WI
2018

REI ENGINEERING, INC.

RIVERSIDE RAILROAD CORRIDOR
132 RIVER STREET
WAUSAU, WI



FIGURE 1 : VICINITY MAP

PROJECT NO.
9073

DRAWN BY:
MCM

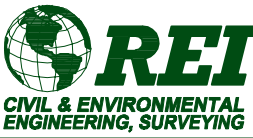
DATE:
9/13/2021

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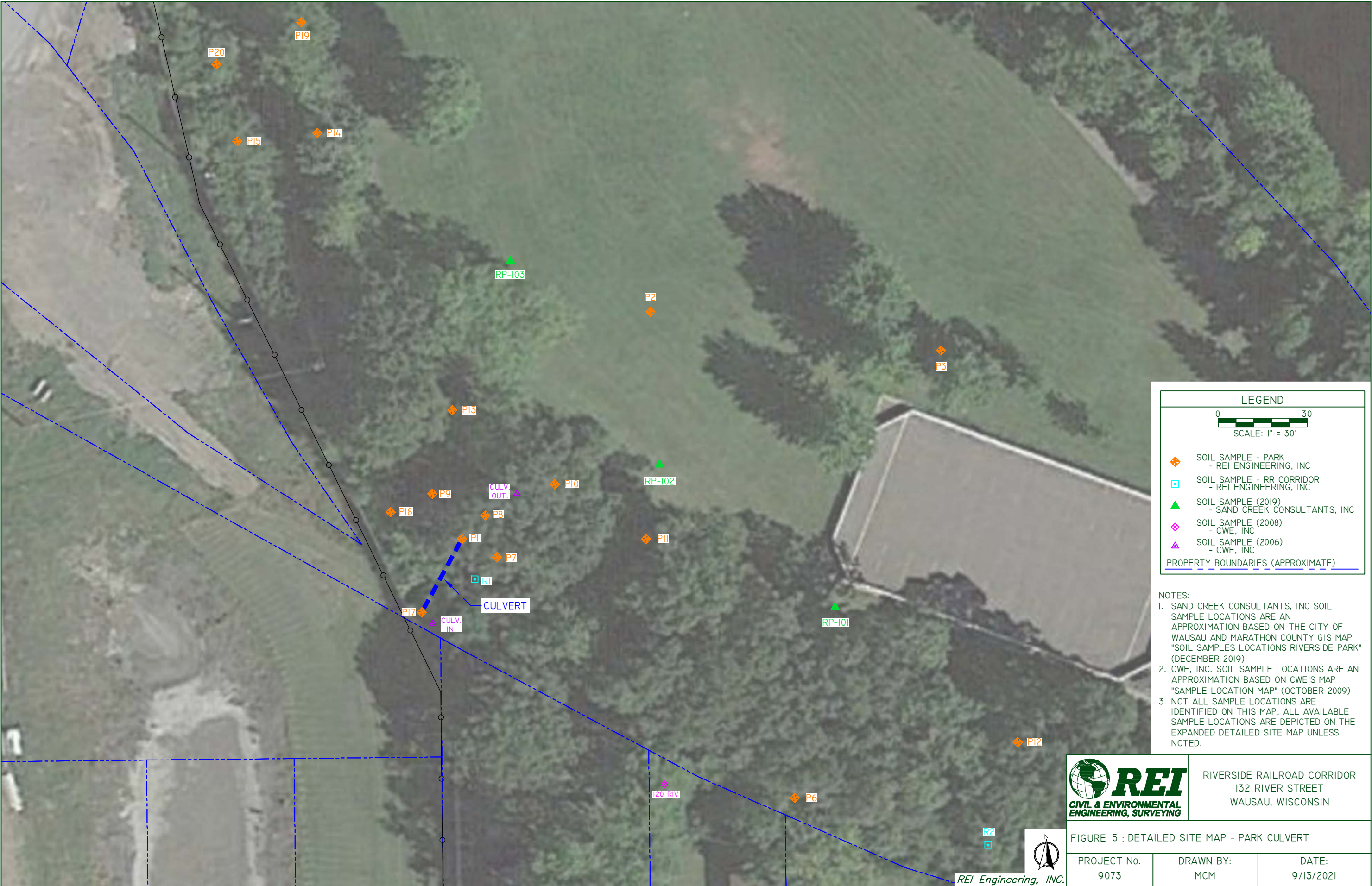


LEGEND		
 SCALE: 1" = 60'		
	SOIL SAMPLE - RR CORRIDOR - REI ENGINEERING, INC	
	SOIL SAMPLE (2019) - TRC	
	SOIL SAMPLE (2017) - AECOM	
	SOIL SAMPLE (2008) - CWE, INC	
PROPERTY BOUNDARIES (APPROXIMATE)		
NOTES: 1. TRC SOIL SAMPLE LOCATIONS ARE AN APPROXIMATION BASED ON TRC'S MAP "LOCATION OF 36 SOIL SAMPLES AND RCL EXCEEDANCES", IDENTIFIED AS FIGURE 6 (OCTOBER 2019). 2. CWE, INC. SOIL SAMPLE LOCATIONS ARE AN APPROXIMATION BASED ON CWE'S MAP "SAMPLE LOCATION MAP" (OCTOBER 2009) 3. NOT ALL SAMPLE LOCATIONS ARE IDENTIFIED ON THIS MAP. ALL AVAILABLE SAMPLE LOCATIONS ARE DEPICTED ON THE EXPANDED DETAILED SITE MAP UNLESS NOTED.		
 RIVERSIDE RAILROAD CORRIDOR 132 RIVER STREET WAUSAU, WISCONSIN		FIGURE 3 : DETAILED SITE MAP - RAILROAD
PROJECT No. 9073	DRAWN BY: MCM	DATE: 9/13/2021

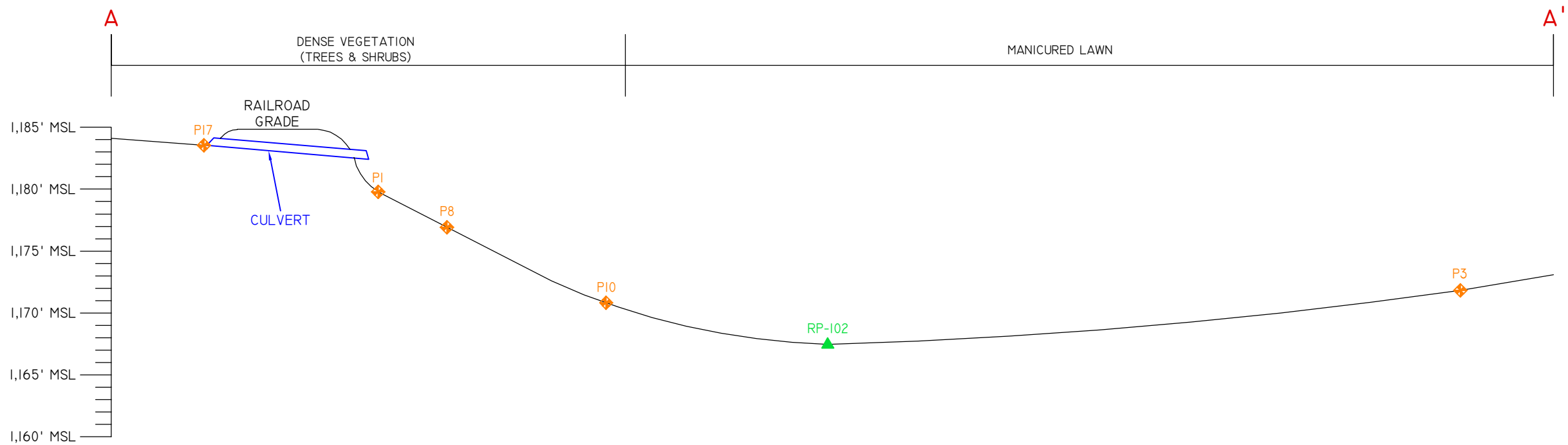
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DRAWING FILE: P:\9000-9099\9073 - CITY OF WAUSAU RIVERSIDE RR CORRIDOR\dwgs\9073-DETAILED SITE.DWG LAYOUT: PARK CULVERT CLOSEUP PLOTTED: SEP 13, 2021 - 2:15PM PLOTTED BY: MATTM



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HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=10'

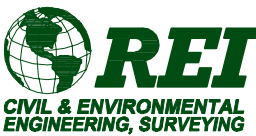


HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=10'

LEGEND

0 30
SCALE: 1" = 30'

- SOIL SAMPLE - PARK (2020)
- REI ENGINEERING, INC
- SOIL SAMPLE - RR CORRIDOR (2020)
- REI ENGINEERING, INC
- SOIL SAMPLE (2019)
- SAND CREEK CONSULTANTS, INC
- SOIL SAMPLE (2006)
- CWE, INC
- PROPERTY BOUNDARIES (APPROXIMATE)



RIVERSIDE RAILROAD CORRIDOR
132 RIVER STREET
WAUSAU, WISCONSIN

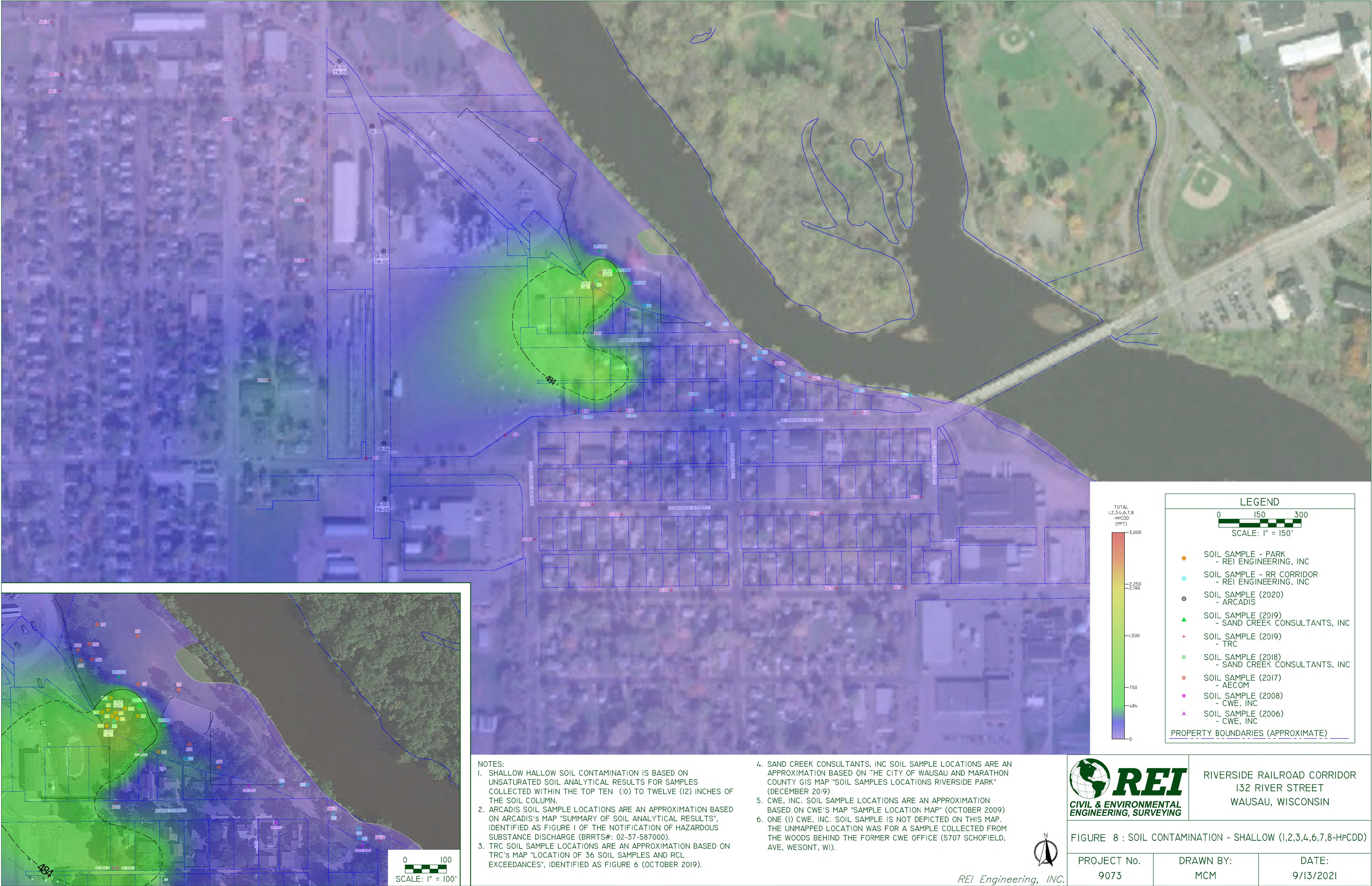
FIGURE 6 : ELEVATION PROFILE A-A'

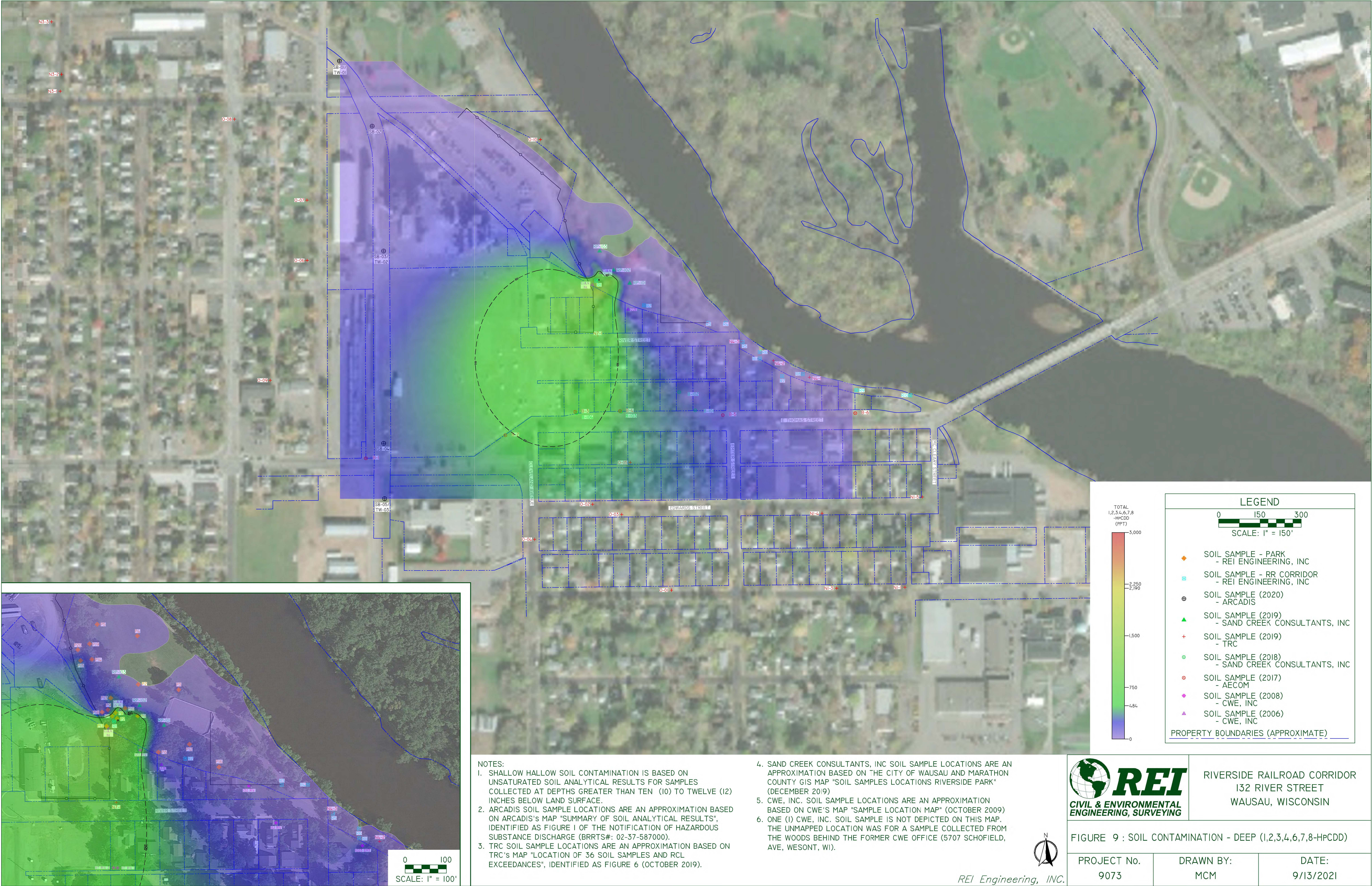
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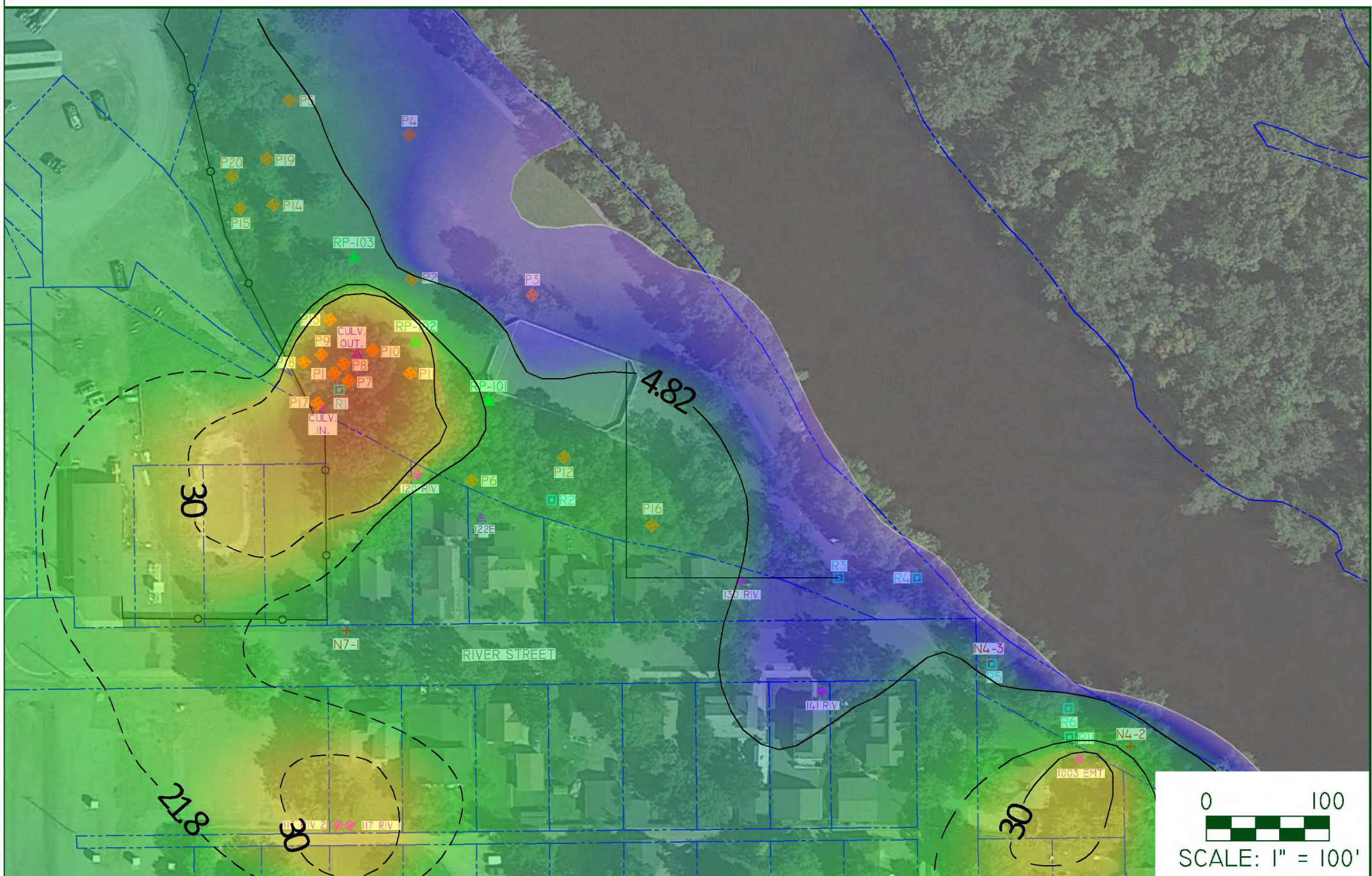
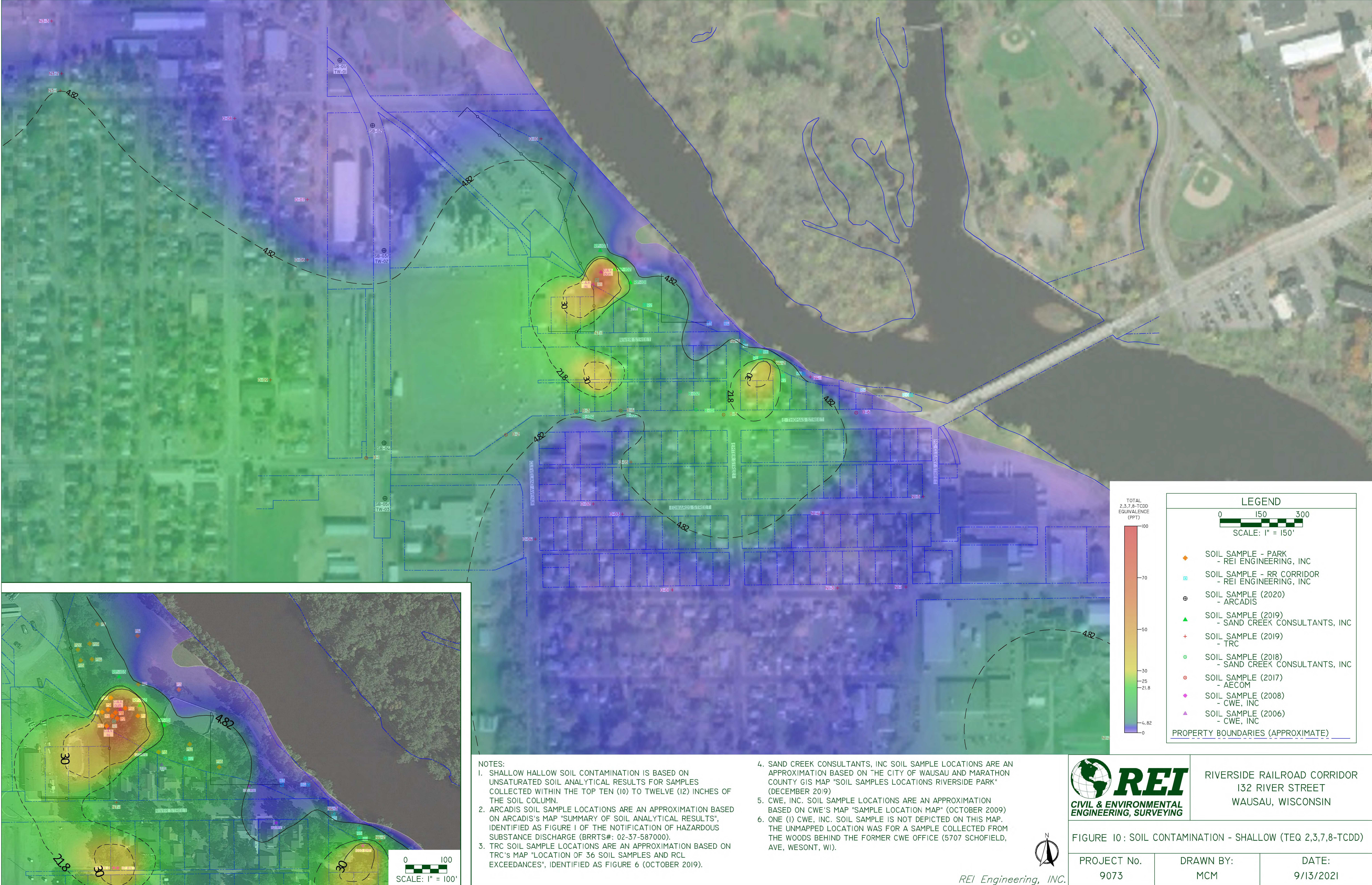
REI ENGINEERING, INC.

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- NOTES:
1. SHALLOW SOIL CONTAMINATION IS BASED ON UNSATURATED SOIL ANALYTICAL RESULTS FOR SAMPLES COLLECTED WITHIN THE TOP TEN (10) TO TWELVE (12) INCHES OF THE SOIL COLUMN.
 2. ARCADIS SOIL SAMPLE LOCATIONS ARE AN APPROXIMATION BASED ON ARCADIS'S MAP "SUMMARY OF SOIL ANALYTICAL RESULTS", IDENTIFIED AS FIGURE I OF THE NOTIFICATION OF HAZARDOUS SUBSTANCE DISCHARGE (BRRS#: 02-37-587000).
 3. TRC SOIL SAMPLE LOCATIONS ARE AN APPROXIMATION BASED ON TRC'S MAP "LOCATION OF 36 SOIL SAMPLES AND RCL EXCEEDANCES", IDENTIFIED AS FIGURE 6 (OCTOBER 2019).

4. SAND CREEK CONSULTANTS, INC SOIL SAMPLE LOCATIONS ARE AN APPROXIMATION BASED ON THE CITY OF WAUSAU AND MARATHON COUNTY GIS MAP "SOIL SAMPLES LOCATIONS RIVERSIDE PARK" (DECEMBER 2019)
5. CWE, INC. SOIL SAMPLE LOCATIONS ARE AN APPROXIMATION BASED ON CWE'S MAP "SAMPLE LOCATION MAP" (OCTOBER 2009)
6. ONE (1) CWE, INC. SOIL SAMPLE IS NOT DEPICTED ON THIS MAP. THE UNMAPPED LOCATION WAS FOR A SAMPLE COLLECTED FROM THE WOODS BEHIND THE FORMER CWE OFFICE (5707 SCHOFIELD, AVE, WESONT, WI).

TOTAL
2,3,7,8-TCDD
EQUIVALENCE
(PPT)

100
70
50
30
25
21.8
4.82
0

LEGEND

0 150 300
SCALE: 1" = 150'

- ◆ SOIL SAMPLE - PARK
- REI ENGINEERING, INC
- SOIL SAMPLE - RR CORRIDOR
- REI ENGINEERING, INC
- ⊕ SOIL SAMPLE (2020)
- ARCADIS
- ▲ SOIL SAMPLE (2019)
- SAND CREEK CONSULTANTS, INC
- ✦ SOIL SAMPLE (2019)
- TRC
- SOIL SAMPLE (2018)
- SAND CREEK CONSULTANTS, INC
- ◊ SOIL SAMPLE (2017)
- AECOM
- ◇ SOIL SAMPLE (2008)
- CWE, INC
- △ SOIL SAMPLE (2006)
- CWE, INC

PROPERTY BOUNDARIES (APPROXIMATE)



RIVERSIDE RAILROAD CORRIDOR
132 RIVER STREET
WAUSAU, WISCONSIN

FIGURE 10: SOIL CONTAMINATION - SHALLOW (TEQ 2,3,7,8-TCDD)		
PROJECT No. 9073	DRAWN BY: MCM	DATE: 9/13/2021

REI Engineering, INC.

DRAWING FILE: P:\9000-9099\9073 - CITY OF WAUSAU RIVERSIDE RR CORRIDOR\DWGS\9073-Soil Contamination-DEEP (TEQ) EXPANDED.DWG LAYOUT: SITE (24X36) PLOTTED: SEP 13, 2021 - 2:26PM PLOTTED BY: MATTH

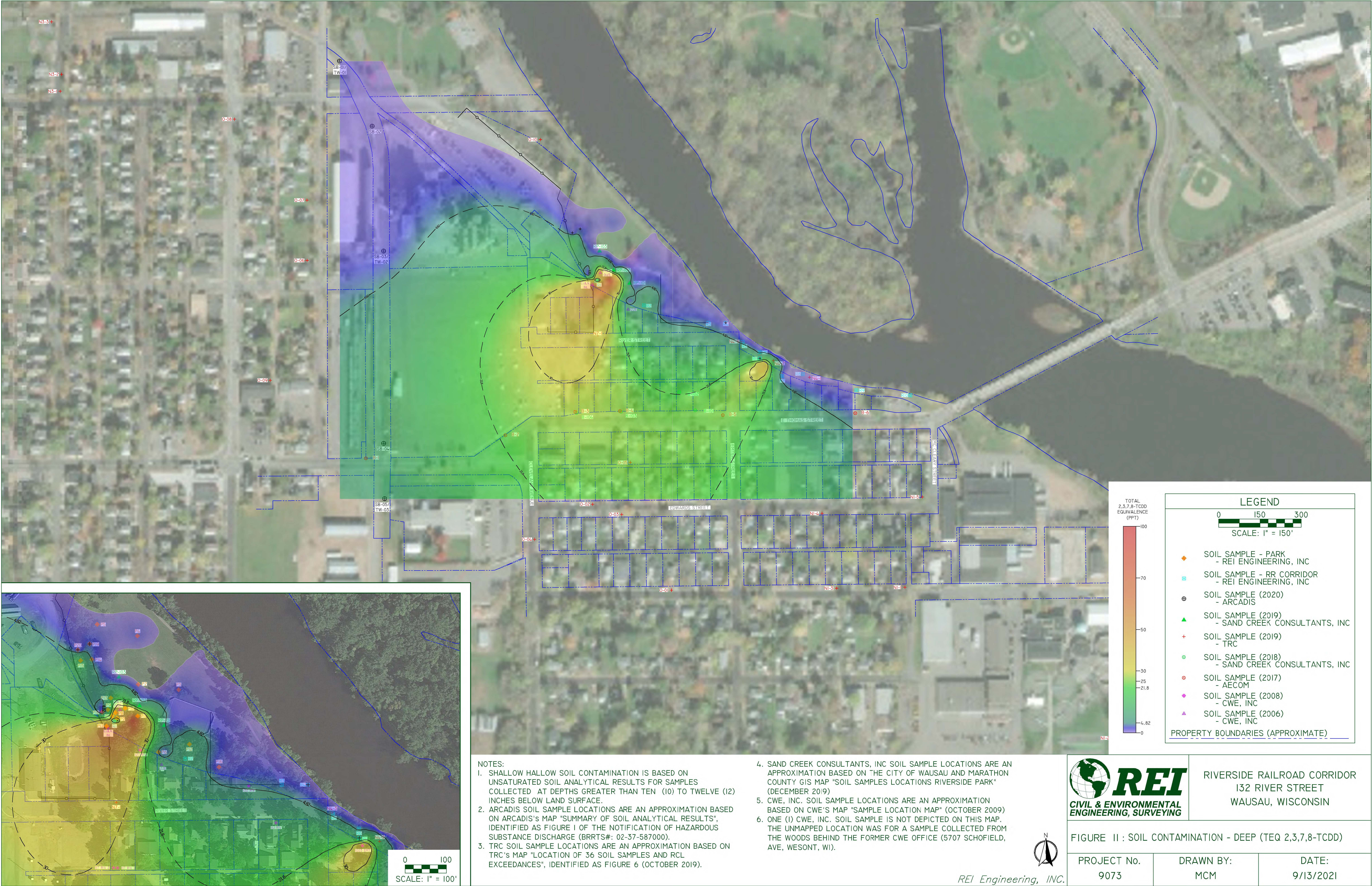


Table 1a
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						CWE, Inc.											
Date-->						6/13/2006	6/13/2006	6/13/2006	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008
Sample-->						Culv. In.	Culv. Out	122E	1003 Emt	130 Riv	141 Riv	120 Riv	117 Riv 1	Fern	117 Riv 2	Oak	Weston
Sample Depth--(Inches)-->						4-6 ²	4-6 ²	4-6 ²	8-10	4-6	6-8	4-6	4-6	4-6	4-6	4-6	4-6
Percent Moisture (%)-->						-	-	-	-	-	-	-	-	-	-	-	-
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL												
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	2.1	<2.0	<0.99	<1	<1.8	<1	<1	<1	<1	<1	<1	<1
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	15	11	<4.9	<5	<5	<5	<5	5.1	<5	5.6	<5	<5
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	48	23	6.3	<5	<5	<5	<5	12	<5	15	<5	<5
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	140	83	17	15	6.0	<5	<5	41	5.6	44	<5	<5
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	60	36	11	6.8	5.5	<5	<5	25	<5	27	<5	<5
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	2,400	1,400	270	260	95	87	120	1,100	170	1,100	30	<5
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	17,000	9,300	1,600	3,000	700	630	830	7,600	1,200	8,200	270	24
Total TCDD	--	ng/kg	--	--	--	10	14	6.7	7.9	<1.8	3.3	5.7	15	3.5	22	<1	<1
Total PeCDD	--	ng/kg	--	--	--	84	71	<4.9	<5	<5	<5	<5	40	<5	48	<5	<5
Total HxCDD	--	ng/kg	--	--	--	780	570	110	85	58	25	34	310	34	360	<5	<5
Total HpCDD	--	ng/kg	--	--	--	4,300	2,800	460	500	190	170	230	2,000	300	2,000	58	<5
Furan Congeners																	
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	6.7	7.3	1.7 [†]	2.0	<3.9	<1	<1	3.5	1.4	3.7	<1	<1
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	13	8.7	<4.9	<5	<5	<5	<5	<5	<5	<5	<5	<5
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	45	80	5.7	76	<5	<5	<5	16	<5	16	<5	<5
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	32	35	7.3	24	<5	<5	<5	37	<5	12	<5	<5
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	34	33	5.4	26	<5	<5	<5	19	5.9	17	<5	<5
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	59	75	9.0	100	<5	<5	<5	29	<5	23	<5	<5
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	14	11	<4.9	6.4	<5	<5	<5	<5	<5	5.0	<5	<5
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	550	480	94	160	43	27	42	350	83	350	19	<5
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	40	31	8.5	13	<5	<5	<5	20	<5	20	<5	<5
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	950	710	130	170	49	36	53	520	170	550	34	<5
Total TCDF	--	ng/kg	--	--	--	110	190	43	140	4.8	18	24	110	16	110	12	5.6
Total PeCDF	--	ng/kg	--	--	--	550	880	69	880	49	28	33	260	12	250	45	<5
Total HxCDF	--	ng/kg	--	--	--	990	1,200	150	1,600	64	40	52	580	60	560	27	<5
Total HpCDF	--	ng/kg	--	--	--	1,400	710	250	540	87	51	78	870	190	850	38	<5
Individual Exceedances (DC)			1	1	--	8	5	0	2	0	0	0	2	0	2	0	0
Cumulative Hazard Index (DC)			1.0	1.0	--	1.6315	1.4627	0.1804	0.8558	0.0366	0.0105	0.0151	0.6551	0.0519	0.6298	0.0059	0.0001
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	2.2E-05	1.8E-05	2.4E-06	9.4E-06	5.6E-07	2.8E-07	3.9E-07	8.9E-06	8.7E-07	8.7E-06	1.2E-07	1.5E-09
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	106	88	12	46	2.8	1.3	1.9	44	4.2	42	0.58	0.0072

Notes:

NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet

This site is assessed as Non-Industrial

RCL = Residual Contaminant Level

DC = Direct Contact

ng/kg = Parts Per Trillion (ppt)

< = Concentration Below Laboratory Detection Limit

- = Not Sampled/Collected

-- = No Standard/Not Applicable

TEQ = Toxicity Equivalent Calculations

¹ = TEQ values calculated using the U.S. EPA 2007 values.

² = Depth is approximate. CWE letter notes sample collection from base of A horizon, generally 4 to 6 inches below land surface.

Laboratory Qualifiers and Notes:

[†] = Estimated maximum concentration

TCDD: Tetrachlorodibenzo-p-dioxin

PeCDD: Pentachlorodibenzo-p-dioxin

HxCDD: Hexachlorodibenzo-p-dioxin

HPCDD: Heptachlorodibenzo-p-dioxin

OCDD: Octachlorodibenzo-p-dioxin

TCDF: Tetrachlorodibenzofuran

PeCDF: Pentachlorodibenzofuran

HxCDF: Hexachlorodibenzofuran

HPCDF: Heptachlorodibenzofuran

OCDF: Octachlorodibenzofuran

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
<u>Underlined</u>	= Exceeds NR720 Industrial Not-To-Exceed DC RCL

Table 1b
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						Sand Creek Consulting (SCC)				TRC				SCC		REI	SCC	REI
Date-->						1/9/2018	1/9/2018	1/9/2018	1/9/2018	8/14/2019	8/14/2019	8/14/2019	8/14/2019	11/5/2019	11/5/2019	9/14/2020	11/5/2019	9/14/2020
Sample-->						B-101	B-102	B-103	B-104	N4-1*	N4-2*	N4-3*	N7-1	RP-101	RP-102	RP-102	RP-103	RP-103
Sample Depth--(Inches)-->						8	8	8	8	0-6	0-6	0-6	0-6	10	8	10-12	10	12-14
Percent Moisture (%)-->						12.0	15.1	16.8	9.9	8.7	12.0	8.9	8.2	26.7	24.6	9.9	22.6	17.7
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL													
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	<0.28	<0.41	<0.23	<0.23	0.80 ^J	0.85 ^J	1.0	0.26 ^J	<2.1 ^D	<0.27	<0.28	<2.5	<0.36
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	2.3 ^J	0.74 ^{I,J,EMPC}	0.48 ^{I,J,EMPC}	0.56 ^J	2.5 ^J	5.2	5.9	0.91 ^J	<1.5 ^D	1.9 ^J	0.44 ^{I,J,EMPC}	<0.55	<0.59
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	3.1 ^J	1.1 ^J	0.55 ^{I,J,EMPC}	0.69 ^J	6.3	7.8 ^{J,DN2}	9.0 ^{J,DN2}	2.2 ^J	<2.9 ^D	4.8 ^J	1.1 ^{I,J,EMPC}	1.4 ^J	<1.2
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	15	4.2 ^J	2.2 ^J	3.6 ^J	24	39 ^{DN2}	44 ^{DN2}	6.1	6.0 ^{J,D}	21	5.8	4.7	<1.4
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	7.6	2.4 ^J	1.4 ^J	1.9 ^J	12	15 ^{J,DN2}	15 ^{J,DN2}	3.4 ^J	3.4 ^{J,D}	8.9	3.0 ^J	2.0 ^{I,J,EMPC}	<1.1
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	290	85	50	81	530	820 ^{DN2}	930 ^{DN2}	150	95 ^D	380	110	77	9.4
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	2,000	570	380	650	5,100	7,300 ^{DN2}	9,200 ^{DN2}	1,300	610 ^{I,J,D}	3,000	900	520	63
Total TCDD	--	ng/kg	--	--	--	10	2.5 ^B	1.7 ^{B,J}	1.1 ^{B,J}	11	18	12	21	<2.1 ^D	2.0	1.1	4.7	0.40 ^J
Total PeCDD	--	ng/kg	--	--	--	23	7.1	2.6	3.3 ^J	22	25	33	50	<1.5 ^D	9.6	2.2 ^J	7.2	<0.59
Total HxCDD	--	ng/kg	--	--	--	120	39	19	24	170	260 ^{DN2}	310 ^{DN2}	7.6	45 ^D	120	40	35	<1.1
Total HpCDD	--	ng/kg	--	--	--	560	160	99	150	1,000	1,600 ^{DN2}	1,900 ^{DN2}	330	180 ^D	710	210	140	9.4
Furan Congeners																		
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	2.9 ^V	0.87 ^J	<0.46	<0.26	2.1 ^V	4.4 ^C	2.4 ^V	0.55 ^{I,J,EMPC}	<2.4 ^D	1.4 ^C	<0.61	1.9 ^V	<0.44
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	2.0 ^J	0.70 ^J	<0.52	0.42 ^J	2.1 ^J	270 ^{P,EMPC}	3.4 ^J	0.69 ^J	<1.5 ^D	1.8 ^J	<0.46	<0.29	<0.73
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	9.8	2.0 ^J	1.1 ^J	1.2 ^J	11	14	61	4.1 ^J	<1.7 ^D	14	5.3 ^{I,J,EMPC}	12	<0.44
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	5.8	2.0 ^{I,J,EMPC}	1.3 ^J	1.5 ^J	8.2	16 ^{J,DN2}	75 ^{P,DN2,EMPC}	3.6 ^{P,J,EMPC}	4.8 ^{J,D}	6.3	<0.73	2.1 ^J	<1.3
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	6.7	1.8 ^J	0.99 ^J	1.2 ^J	8.0	20 ^{J,DN2}	28 ^{P,DN2,EMPC}	2.7 ^J	3.8 ^{J,D}	14 ^{P,EMPC}	11 ^{P,EMPC}	6.2 ^{P,EMPC}	<1.2
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	11 ^{P,EMPC}	2.7 ^J	1.2 ^J	1.6 ^J	6.5	16 ^{J,DN2}	30 ^{DN2}	2.4 ^J	3.9 ^{J,D}	6.2	7.7	5.2	<1.3
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	1.3 ^J	0.36 ^J	<0.12	<0.20	3.0 ^J	6.7 ^{J,DN2}	6.1 ^{J,DN2}	0.8 ^J	2.0 ^{J,D,EMPC}	2.9 ^J	<1.1	1.5 ^{I,J,EMPC}	<1.2
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	120	30	17	26	150	250 ^{DN2}	380 ^{DN2}	46	37 ^D	99	40	45	3.2 ^J
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	4.0 ^J	0.96 ^{I,J,EMPC}	0.81 ^J	1.0 ^J	9.4	14 ^{J,DN2}	20 ^{J,DN2}	2.3 ^J	2.3 ^{I,J,D,EMPC}	6.3	2.4 ^{I,J,EMPC}	2.4 ^J	<1.7
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	190	36	19	42	320	490 ^{DN2}	620 ^{DN2}	71	49 ^{I,J,D,EMPC}	170	56	68	6.2 ^J
Total TCDF	--	ng/kg	--	--	--	69	23	7.9	6.6	58	99	140 ^E	21	<2.4 ^D	41	14	35	<0.44
Total PeCDF	--	ng/kg	--	--	--	120	36	0.38	18	180	480	760	50	130 ^D	260	120	190	2.6 ^J
Total HxCDF	--	ng/kg	--	--	--	150	37	24	27	200	430 ^{DN2}	1,200 ^{DN2}	87	110 ^D	280	120	210	<1.2
Total HpCDF	--	ng/kg	--	--	--	140	46	34	59	380	610 ^{DN2}	1,100 ^{DN2}	100	91 ^D	250	90	110	3.2 ^J
Individual Exceedances (DC)			1	1	--	0	0	0	0	1	3	4	0	0	0	0	0	0
Cumulative Hazard Index (DC)			1.0	1.0	--	0.2495	0.0676	0.0352	0.0493	0.3379	0.713	1.0547	0.1096	0.0596	0.2933	0.1112	0.1333	0.0012
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	3.2E-06	8.7E-07	4.6E-07	6.7E-07	4.5E-06	9.0E-06	1.3E-05	1.4E-06	8.0E-07	3.8E-06	1.4E-06	1.5E-06	3.0E-08
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	15	4.2	2.4	3.3	22	44	62	7.0	3.9	19	6.7	7.5	0.15

Notes:

NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet

This site is assessed as Non-Industrial

RCL = Residual Contaminant Level

DC = Direct Contact

ng/kg = Parts Per Trillion (ppt)

< = Concentration Below Laboratory Detection Limit

-- = Not Sampled/Collected

-- = No Standard/Not Applicable

TEQ = Toxicity Equivalent Calculations

¹ = TEQ values calculated using the U.S. EPA 2007 values.

* = Excavated during redevelopment

TCDD: Tetrachlorodibenzo-p-dioxin

PeCDD: Pentachlorodibenzo-p-dioxin

HxCDD: Hexachlorodibenzo-p-dioxin

HPCDD: Heptachlorodibenzo-p-dioxin

OCDD: Octachlorodibenzo-p-dioxin

TCDF: Tetrachlorodibenzofuran

PeCDF: Pentachlorodibenzofuran

HxCDF: Hexachlorodibenzofuran

HPCDF: Heptachlorodibenzofuran

OCDF: Octachlorodibenzofuran

Laboratory Qualifiers and Notes:

^J = Estimated Value

EMPC = Estimated Maximum Possible Concentration

^P = PCDE Interference

^I = Interference Present

^V = Results verified by confirmation analysis

^C = Results obtained from confirmation analysis

^D = Results obtained from analysis of diluted sample

^{DN2} = Results obtained from diluted sample

^E = Exceeds calibration Range

^B = Less than 10x higher than method blank level

Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
<u>Underlined</u>	= Exceeds NR720 Industrial Not-To-Exceed DC RCL

Table 1c
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						Arcadis						
Date-->						9/26/2020	9/26/2020	9/26/2020	9/26/2020	9/26/2020	9/30/2020	9/30/2020
Sample-->						SB-01 (0-4)	SB-01 (28-31)	Dup-01	SB-03 (0-4)	SB-03 (24-27.5)	SB-05 (0-4)	SB-05 (29-31.5)
Sample Depth--(Inches)-->						0-4	28-31	28-31	0-4	24-27.5	0-4	29-31.5
Percent Moisture (%)-->												
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL							
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	<0.21	<0.15	<0.15	<0.18	<0.13	0.35 ^{1, EMPC}	<0.038
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	<0.15	<0.0097	<0.11	<0.14	<0.10	0.99 ^{1, EMPC}	<0.047
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	0.85 ^{1, B}	0.27 ^{1, B}	0.29 ^{1, B, EMPC}	0.46 ^{1, B}	<0.033	2.7 ¹	0.20 ^{1, EMPC}
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	1.4 ¹	<0.034	0.18 ^{1, EMPC}	1.9 ^{1, B}	<0.042	9.3	<0.048
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	0.91 ^{1, B}	<0.028	<0.030	0.87 ^{1, B}	0.082 ^{1, B}	5.2 ¹	<0.044
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	21 ^B	0.46 ^{1, B}	0.95 ^{1, B, EMPC}	67 ^B	3.5 ^{1, B}	230 ^B	0.11 ^{1, B}
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	130 ^B	2.7 ^{1, B}	6.7 ^{1, B, EMPC}	850 ^B	41 ^B	1,800 ^B	1.3 ^{1, B}
Total TCDD	--	ng/kg	--	--	--	2.2	<0.15	<0.15	<0.18	<0.13	13 ^{EMPC}	<0.038
Total PeCDD	--	ng/kg	--	--	--	<0.26	<0.0097	<0.11	<0.14	<0.10	21 ^{EMPC}	<0.047
Total HxCDD	--	ng/kg	--	--	--	7.2 ^B	0.27 ^{1, B}	0.46 ^{1, B, EMPC}	12 ^{B, EMPC}	0.43 ^{1, B, EMPC}	68	0.20 ^{1, EMPC}
Total HpCDD	--	ng/kg	--	--	--	40 ^B	0.98 ^{1, B}	2.1 ^{1, B, EMPC}	360 ^B	21 ^B	560 ^B	0.28 ^{1, B, EMPC}
Furan Congeners												
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	0.6 ¹	<0.071	<0.084	<0.11	<0.063	0.78 ^{1, B}	0.066 ^{1, B}
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	<0.18	<0.049	<0.060	<0.094	<0.050	<0.58	0.072 ^{1, EMPC}
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	0.52 ^{1, EMPC}	<0.053	<0.071	<0.10	<0.059	1.6 ¹	<0.038
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	0.85 ¹	<0.041	0.2 ¹	0.32 ^{1, EMPC}	<0.055	4.4 ¹	<0.070
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	0.89 ¹	<0.036	0.23 ^{1, EMPC}	0.33 ¹	<0.049	3.7 ¹	<0.062
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	0.82 ^{1, EMPC}	<0.030	0.20 ¹	0.33 ¹	<0.041	3.0 ¹	<0.037
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	0.44 ¹	<0.028	0.29 ¹	<0.13	<0.042	<0.41	0.049 ¹
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	6.5 ^B	0.18 ^{1, B, EMPC}	0.43 ^{1, B}	8.2 ^B	0.39 ^{1, B, EMPC}	69 ^B	0.18 ^{1, B, EMPC}
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	0.71 ^{1, B, EMPC}	<0.022	0.21 ^{1, B, EMPC}	0.66 ^{1, B}	<0.030	3.1 ¹	<0.035
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	13 ^B	0.79 ^{1, B}	1.1 ^{1, B}	40 ^B	1.8 ^{1, B, EMPC}	140 ^B	0.52 ^{1, B, EMPC}
Total TCDF	--	ng/kg	--	--	--	5.3 ^{EMPC}	<0.071	<0.084	<0.11	<0.068	23 ^{EMPC}	0.11 ^{1, B, EMPC}
Total PeCDF	--	ng/kg	--	--	--	17 ^{EMPC}	<0.053	<0.21	1.0 ^{1, EMPC}	<0.17	69	0.16 ^{1, EMPC}
Total HxCDF	--	ng/kg	--	--	--	16 ^{EMPC}	<0.041	0.91 ^{1, EMPC}	7.9 ^{EMPC}	0.21 ^{1, EMPC}	96	<0.051
Total HpCDF	--	ng/kg	--	--	--	17 ^{B, EMPC}	0.32 ^{1, B, EMPC}	0.98 ^{1, B, EMPC}	31 ^B	1.3 ^{1, B, EMPC}	180 ^B	0.18 ^{1, B, EMPC}
Individual Exceedances (DC)			1	1	--	-	-	-	-	-	-	-
Cumulative Hazard Index (DC)			1.0	1.0	--	-	-	-	-	-	-	-
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	-	-	-	-	-	-	-
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	1.2	0.034	0.16	1.4	0.060	8.3	0.037

Notes:
NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet
This site is assessed as Non-Industrial
RCL = Residual Contaminant Level
DC = Direct Contact
ng/kg = Parts Per Trillion (ppt)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled/Collected
-- = No Standard/Not Applicable
TEQ = Toxicity Equivalent Calculations
¹ = TEQ values calculated using the U.S. EPA 2007 values.

TCDD: Tetrachlorodibenzo-p-dioxin
PeCDD: Pentachlorodibenzo-p-dioxin
HxCDD: Hexachlorodibenzo-p-dioxin
HPCDD: Heptachlorodibenzo-p-dioxin
OCDD: Octachlorodibenzo-p-dioxin
TCDF: Tetrachlorodibenzofuran
PeCDF: Pentachlorodibenzofuran
HxCDF: Hexachlorodibenzofuran
HPCDF: Heptachlorodibenzofuran
OCDF: Octachlorodibenzofuran

Laboratory Qualifiers and Notes:
¹ = Estimated Value
EMPC = Estimated Maximum Possible Concentration
^B = Compound was found in the blank and sample.
² = Lab report containd two (2) separate identical results
³ = Lab report containd two (2) separate results with one result = 0.0050 mg/kg and the seond = 0.0052 mg/kg.
Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
<u>Underlined</u>	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL

Table 1d
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						REI Engineering, Inc.												
Date-->						4/23/2020	9/14/2020	4/23/2020	9/14/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	5/12/2021
Sample-->						R1	R1	R2	R2	R3	R4	R5	R6	R7	R8*	R9*	R10*	R11
Sample Depth--(Inches)-->						3-5	10-12	4-6	10-12	3-6	3-5	6-9	6-8	11-13	2-4	4-5	5-6	10-12
Percent Moisture (%)-->						28.6	12.9	22.4	15.4	16.7	18.8	13.3	8.6	8.1	11.3	3.9	8.3	10.4
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL													
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	1.1 ^J	<0.67	0.55 ^J	<0.39	<0.24	<0.18	<0.34	<0.52	<0.20	<0.17	<0.15	<0.22	<0.43
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	5.2 ^J	1.9 ^J	2.8 ^J	1.0 ^{I,J,EMPC}	0.55 ^{I,J,EMPC}	1.2 ^J	0.84 ^J	0.73 ^J	<0.10	<0.094	<0.097	0.24 ^{I,J,EMPC}	0.87 ^J
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	12	5.1 ^J	5.1 ^J	3.3 ^J	0.39 ^{I,J,EMPC}	1.7 ^J	0.89 ^{I,J,EMPC}	0.59 ^{I,J,EMPC}	<0.25	<0.22	<0.19	0.61 ^J	8.5
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	39	16	22	11	1.6 ^{I,J,EMPC}	6.0	3.5 ^J	2.6 ^J	<0.25	<0.17	0.29 ^J	1.5 ^J	2.3 ^J
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	24	8.5	10	5.2 ^{I,J,EMPC}	1.2 ^{I,J,EMPC}	3.6 ^J	1.9 ^J	1.2 ^J	<0.26	0.16 ^{I,J,EMPC}	<0.17	1.2 ^J	8.0
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	960	310	400	200	37	0.64 ^J	78	57	5.8	1.3 ^J	5.3	33	4.0 ^J
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	7,400	2,600	3,000	1,400	270	850	660	510	44	49	35	280	150
Total TCDD	--	ng/kg	--	--	--	22	7.5	9.3	4.1	1.2	6.3	<0.34	<0.52	<0.20	<0.17	<0.15	<0.22	1,300
Total PeCDD	--	ng/kg	--	--	--	58	20	29	5.9	2.4 ^J	11	<4.3	3.1 ^J	<0.10	<0.094	0.16 ^J	0.72 ^J	3.8
Total HxCDD	--	ng/kg	--	--	--	350	140	160	60	16	51	28	15.0	2.4 ^J	1.3 ^J	2.7 ^J	14	8.5
Total HpCDD	--	ng/kg	--	--	--	1,900	610	760	410	77	230	160	130	11	12	10	63	56
Furan Congeners																		
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	4.0 ^V	1.8 ^C	2.5 ^V	1.5 ^V	0.66 ^J	0.80 ^{I,J,EMPC}	<0.34	<0.48	<0.17	<0.26	<0.18	0.18 ^{I,J,EMPC}	1.1 ^C
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	4.7 ^J	1.9 ^J	3.2 ^J	<1.0	0.49 ^J	0.94 ^J	0.57 ^J	<0.022	<0.14	<0.047	<0.16	0.17 ^{I,J,EMPC}	1.0 ^J
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	12	5.0 ^J	15	4.8 ^J	1.3 ^J	2.4 ^J	5.7	9.2	0.14 ^{I,J,EMPC}	0.24 ^J	0.56 ^J	0.81 ^J	13
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	19	9.8 ^{P,EMPC}	24 ^{P,EMPC}	4.1 ^J	1.2 ^J	2.8 ^J	1.2 ^J	1.7 ^J	<0.28	<0.28	0.20 ^J	0.52 ^J	3.9 ^J
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	22	6.7	7.9	3.8 ^J	1.4 ^{I,J,EMPC}	4.8 ^{P,EMPC}	2.0 ^J	1.8 ^J	<0.18	0.85 ^J	0.90 ^{P,I,EMPC}	1.2 ^{P,I,EMPC}	5.2
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	23	7.5	15	6.8	1.5 ^J	3.6 ^J	4.8	1.9 ^J	<0.27	0.28 ^J	0.43 ^J	0.93 ^J	8.5
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	5.5 ^J	1.7 ^{I,J,EMPC}	3.1 ^J	<0.90	<0.46	0.64 ^J	0.67 ^{I,J,EMPC}	<0.17	<0.23	<0.20	<0.14	0.22 ^{I,J,EMPC}	1.6 ^{J,P,EMPC}
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	340	120	140	65	14	40	28	17	2.2 ^J	1.8 ^J	1.9 ^J	8.6	61
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	17	6.8	7.6	2.7 ^{I,J,EMPC}	<0.50	2.0 ^J	1.3 ^J	1.2 ^J	<0.22	<0.15 ^{I,J,EMPC}	<0.14	0.46 ^J	4.0 ^J
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	450	170	180	110	16	56	39	32	3.0 ^J	2.5 ^{I,J,EMPC}	2.4 ^J	19	92
Total TCDF	--	ng/kg	--	--	--	110	50	72	15	5.8	22	9.6	7.8	0.31 ^J	0.49 ^J	2.4	3.0	27
Total PeCDF	--	ng/kg	--	--	--	230	120	240	97	17	41	81	86	1.9 ^J	2.2 ^J	9.2	13	140
Total HxCDF	--	ng/kg	--	--	--	520	210	290	130	22	60	86	39	3.1 ^J	3.7 ^J	6.9	14	290
Total HpCDF	--	ng/kg	--	--	--	750	230	310	150	30	87	74	44	2.4 ^J	1.8 ^J	1.9 ^J	20	170
Individual Exceedances (DC)			1	1	--	2	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Hazard Index (DC)			1.0	1.0	--	0.6165	0.2248	0.3381	0.1425	0.0392	0.0986	0.0905	0.0951	0.0016	0.0046	0.0075	0.026	0.1848
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	8.3E-06	2.9E-06	4.3E-06	1.9E-06	4.8E-07	1.0E-06	1.1E-06	1.1E-06	2.8E-08	5.1E-08	8.9E-08	3.3E-07	1.9E-06
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	40	14	23	9.1	2.3	5.0	5.3	5.4	0.14	0.25	0.43	1.6	9.5

Notes:

NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet

This site is assessed as Non-Industrial

RCL = Residual Contaminant Level

DC = Direct Contact

ng/kg = Parts Per Trillion (ppt)

< = Concentration Below Laboratory Detection Limit

- = Not Sampled/Collected

-- = No Standard/Not Applicable

TEQ = Toxicity Equivalent Calculations

¹ = TEQ values calculated using the U.S. EPA 2007 values.

* = Excavated during redevelopment

TCDD: Tetrachlorodibenzo-p-dioxin

PeCDD: Pentachlorodibenzo-p-dioxin

HxCDD: Hexachlorodibenzo-p-dioxin

HPcDD: Heptachlorodibenzo-p-dioxin

OCDD: Octachlorodibenzo-p-dioxin

TCDF: Tetrachlorodibenzofuran

PeCDF: Pentachlorodibenzofuran

HxCDF: Hexachlorodibenzofuran

HPCDF: Heptachlorodibenzofuran

OCDF: Octachlorodibenzofuran

Laboratory Qualifiers and Notes:

^J = Estimated Value

EMPC = Estimated Maximum Possible Concentration

^P = PCDE Interference

^I = Interference Present

^V = Results verified by confirmation analysis

^C = Results obtained from confirmation analysis

^D = Results obtained from analysis of diluted sample

^E = Exceeds calibration Range

Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
<u>Underlined</u>	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL

Table 1e
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						REI Engineering, Inc.										
Date-->						4/23/2020	4/23/2020	5/12/2021	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020	4/23/2020
Sample-->						P1	P1	P1	P2	P2	P3	P3	P4	P4	P5	P5
Sample Depth--(Inches)-->						2-3	7-9	22-24	2-3	10-12	2-3	12-14	2-3	9-11	2-3	11-13
Percent Moisture (%)-->						45.0	24.7	12.7	20.7	19.5	19.0	12.0	17.8	12.9	19.9	16.8
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL											
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	0.35 ^J	0.71 ^J	<3.9 ^D	<0.30	<0.13	<0.24	<0.74	<0.96	<0.54	<0.76	<0.91
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	3.0 ^{I, J, EMPC}	6.1	3.0 ^{J, D}	0.43 ^J	<0.15	0.25 ^J	0.42 ^{I, J, EMPC}	<0.56	<0.53	0.74 ^{I, J, EMPC}	<0.79
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	6.0 ^J	14	10 ^{J, D}	0.58 ^{I, J, EMPC}	<0.21	0.61 ^J	0.77 ^{I, J, EMPC}	1.8 ^{I, J, EMPC}	0.57 ^{I, J, EMPC}	1.8 ^J	<0.39
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	23	57	50 ^D	2.6 ^J	0.4 ^J	1.4 ^J	1.4 ^J	3.9 ^J	1.9 ^J	4.4 ^J	0.64 ^J
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	13	30	26 ^D	1.6 ^{I, J, EMPC}	0.35 ^{I, J, EMPC}	0.67 ^{I, J, EMPC}	0.76 ^J	3.0 ^J	0.82 ^{I, J, EMPC}	2.6 ^{I, J, EMPC}	<0.64
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	520	1,200	900 ^D	55	4.8 ^J	27	28	110	39	110	17
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	4,000	9,600	6,600 ^D	370	67	170	220	890	310	840	130
Total TCDD	--	ng/kg	--	--	--	4.0	9.6	<3.9 ^D	1.7	0.82 ^J	<0.24	<0.74	<0.96	<0.54	2.3	1.1
Total PeCDD	--	ng/kg	--	--	--	18	53	26 ^D	5.3 ^J	<0.15	1.8 ^J	0.82	3.6 ^J	<0.43	6.6	<0.79
Total HxCDD	--	ng/kg	--	--	--	200	430	330 ^D	22	4.8 ^J	9.1	7.2	37	12	43	5.9
Total HpCDD	--	ng/kg	--	--	--	1,100	2,500	1,800 ^D	110	19	52	54	200	73	200	31
Furan Congeners																
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	1.6 ^J	2.6 ^V	<4.6 ^D	0.47 ^J	<0.21	0.26 ^{I, J, EMPC}	<0.64	<0.74	<0.77	<0.96	<0.66
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	3.1 ^J	6.1	<1.1 ^D	0.40 ^{I, J, EMPC}	<0.26	<0.48	<0.61	<1.2	<0.59	<1.1	<1.1
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	26	34	22 ^{J, D}	1.1 ^J	<0.22	0.61 ^J	2.2 ^J	2.3 ^{I, J, EMPC}	0.89 ^J	1.8 ^{I, J, EMPC}	0.55 ^{I, J, EMPC}
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	9.3	15	16 ^{J, D}	1.4 ^J	<0.30	0.83 ^J	0.73 ^J	2.3 ^{I, J, EMPC}	1.6 ^{P, J, EMPC}	2.4 ^{I, J, EMPC}	<0.41
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	10	21	16 ^{J, D}	2.1 ^{P, J, EMPC}	0.55 ^J	1.3 ^{I, J, EMPC}	0.81 ^{I, J, EMPC}	2.4 ^J	0.86 ^J	1.7 ^J	<0.45
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	25	39	14 ^{J, D}	1.7 ^J	0.22 ^{I, J, EMPC}	0.67 ^{I, J, EMPC}	1.6 ^{I, J, EMPC}	3.0 ^J	0.65 ^J	2.7 ^J	<0.45
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	4.5 ^J	6.9	<1.5 ^D	<0.56	<0.24	<0.33	<0.33	<0.16	<0.14	<0.40	<0.43
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	140	340	250 ^D	16	3.9 ^J	11	8.1	41	16	54 ^{P, EMPC}	9.5 ^{P, EMPC}
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	9.7	21	14 ^{J, D}	0.78 ^{I, J, EMPC}	<0.60	<0.87	<0.51	1.4 ^J	<0.27	<0.72	<0.98
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	240	540	400 ^D	26	4.1 ^{I, J, EMPC}	12	13	55	20	59	12
Total TCDF	--	ng/kg	--	--	--	81	110	74 ^D	6.2	0.48	2.6	1.8	13	1.6	8.9	<0.66
Total PeCDF	--	ng/kg	--	--	--	440	610	280 ^D	17	2.9	9.7	25	31	12	26	3.6 ^J
Total HxCDF	--	ng/kg	--	--	--	440	830	550 ^D	25	5.7	15	24	40	17	45	3.0 ^J
Total HpCDF	--	ng/kg	--	--	--	380	840	620 ^D	35	7.8	20	18	83	31	46	8.3
Individual Exceedances (DC)			1	1	--	2	4	3	0	0	0	0	0	0	0	0
Cumulative Hazard Index (DC)			1.0	1.0	--	0.4623	0.8467	0.5517	0.0489	0.0042	0.0233	0.0364	0.061	0.0234	0.0709	0.0074
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	5.8E-06	1.1E-05	7.5E-06	6.1E-07	5.3E-08	2.9E-07	4.3E-07	8.5E-07	3.2E-07	9.5E-07	1.1E-07
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	<u>28</u>	<u>54</u>	<u>37</u>	2.7	0.26	1.4	2.1	4.1	1.6	4.7	0.54

Notes:

NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet

This site is assessed as Non-Industrial

RCL = Residual Contaminant Level

DC = Direct Contact

ng/kg = Parts Per Trillion (ppt)

< = Concentration Below Laboratory Detection Limit

- = Not Sampled/Collected

-- = No Standard/Not Applicable

TEQ = Toxicity Equivalent Calculations

¹ = TEQ values calculated using the U.S. EPA 2007 values.

TCDD: Tetrachlorodibenzo-p-dioxin

PeCDD: Pentachlorodibenzo-p-dioxin

HxCDD: Hexachlorodibenzo-p-dioxin

HPCDD: Heptachlorodibenzo-p-dioxin

OCDD: Octachlorodibenzo-p-dioxin

TCDF: Tetrachlorodibenzofuran

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HxCDF: Hexachlorodibenzofuran

HPCDF: Heptachlorodibenzofuran

OCDF: Octachlorodibenzofuran

Laboratory Qualifiers and Notes:

^J = Estimated Value

EMPC = Estimated Maximum Possible Concentration

^P = PCDE Interference

^I = Interference Present

^V = Results verified by confirmation analysis

^C = Results obtained from confirmation analysis

^D = Results obtained from analysis of diluted sample

^E = Exceeds calibration Range

Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
<u>Underlined</u>	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL

Table 1f
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						REI Engineering, Inc.									
Date-->						9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020
Sample-->						P6	P6	P7	P7	P8	P8	P9	P9	P10	P10
Sample Depth--(Inches)-->						2-3	10-12	2-3	10-12	2-3	10-12	2-3	10-12	2-3	10-12
Percent Moisture (%)-->						17.2	6.4	15.9	9.5	11.9	17.3	17.4	9.7	15.9	14.1
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL										
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	0.32 ^{I, J} _{EMPC}	<0.27	0.97 ^J	<0.27	0.69 ^J	0.61 ^J	<0.26	0.27 ^J	0.41 ^J	<0.38
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	3.2 ^J	0.33 ^J	3.8 ^J	0.62 ^J	6.4	6.6	3.3 ^J	0.68 ^J	5.9	2.7 ^J
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	7.9	<0.96	9.4	1.5 ^J	17	16	6.7	2.1 ^J	12	5.1 ^J
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	24	2.0 ^J	35	5.7	69	51	28	6.5	48	15
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	13	1.4 ^J	19	3.2 ^J	29	25	12	3.8 ^J	22	8.5
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	530	36	1,200	190	1,200	1,000	550	150	900	290
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	4,600	290	11,000 ^E	1,700	10,000 ^E	8,100	4,400	1,100	7,600	2,300
Total TCDD	--	ng/kg	--	--	--	8.1	0.61 ^J	20	5.2	18	9.5	16	3.5	10	3.6
Total PeCDD	--	ng/kg	--	--	--	24	0.33 ^J	45	8.9	49	50	44	6.6	44	22
Total HxCDD	--	ng/kg	--	--	--	180	1.6	330	52	480	390	250	5.7	350	130
Total HpCDD	--	ng/kg	--	--	--	1,000	66	2,400	360	2,300	1,900	1,100	280	1,800	560
Furan Congeners															
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	1.9 ^V	<0.44	3.7 ^C	0.86 ^{I, J} _{EMPC}	4.1 ^C	5.7 ^C	3.3 ^V	0.76 ^J	4.3 ^C	2.1 ^C
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	0.32 ^{I, J} _{EMPC}	<0.72	3.3 ^J	<1.1	4.7 ^J	5.9	3.4 ^J	0.88 ^J	4.5 ^J	2.7 ^J
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	17	1.9 ^J	8.9	2.0 ^J	32	66	8.5	2.3 ^{I, J} _{EMPC}	53	54
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	11	<0.86	11	2.3 ^{I, J} _{EMPC}	20	17	13	3.5 ^J	15	12
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	13	1.6 ^{P, J} _{EMPC}	8.7	2.5 ^{I, J} _{EMPC}	24	36	12	4.0 ^{P, J} _{EMPC}	24	37
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	10	<1.4	9.0	3.1 ^J	20	23	9.5	3.5 ^J	31	31
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	4.6 ^J	<0.69	3.7 ^J	0.67 ^J	8.3 ^I _{EMPC}	10	4.0 ^J	0.67 ^{I, J} _{EMPC}	8.4	6.8
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	180	16	230	42	310	330	230	59	300	140
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	12	<1.1	12	2.8 ^J	20	20	12	2.4 ^J	17	8.3
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	400	26	640	100	550	530	390	95	460	170
Total TCDF	--	ng/kg	--	--	--	56	4.5	77	16	82	150	86	18	140	110
Total PeCDF	--	ng/kg	--	--	--	250	32	150	30	500	990	150	47	810	930
Total HxCDF	--	ng/kg	--	--	--	450	36	300	52	830	1,300	350	78	1,000	950
Total HpCDF	--	ng/kg	--	--	--	560	40	570	96	790	840	480	120	730	360
Individual Exceedances (DC)			1	1	--	2	0	1	0	4	4	1	0	3	1
Cumulative Hazard Index (DC)			1.0	1.0	--	0.4105	0.0329	0.4747	0.0847	0.8475	1.0253	0.3827	0.1023	0.882	0.6476
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	5.3E-06	4.1E-07	7.2E-06	1.2E-06	1.1E-05	1.3E-05	5.0E-06	1.4E-06	1.1E-05	7.3E-06
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	26	2.0	35	6.1	54	62	24	6.6	53	36

Notes:
NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet
This site is assessed as Non-Industrial
RCL = Residual Contaminant Level
DC = Direct Contact
ng/kg = Parts Per Trillion (ppt)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled/Collected
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TEQ = Toxicity Equivalent Calculations
¹ = TEQ values calculated using the U.S. EPA 2007 values.

TCDD: Tetrachlorodibenzo-p-dioxin
PeCDD: Pentachlorodibenzo-p-dioxin
HxCDD: Hexachlorodibenzo-p-dioxin
HPCDD: Heptachlorodibenzo-p-dioxin
OCDD: Octachlorodibenzo-p-dioxin
TCDF: Tetrachlorodibenzofuran
PeCDF: Pentachlorodibenzofuran
HxCDF: Hexachlorodibenzofuran
HPCDF: Heptachlorodibenzofuran
OCDF: Octachlorodibenzofuran

Laboratory Qualifiers and Notes:
^J = Estimated Value
_{EMPC} = Estimated Maximum Possible Concentration
^P = PCDE Interference
^I = Interference Present
^V = Results verified by confirmation analysis
^C = Results obtained from confirmation analysis
^D = Results obtained from analysis of diluted sample
^E = Exceeds calibration Range
Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
<u>Underlined</u>	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL

Table 1g
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						REI Engineering, Inc.												
Date-->						9/14/2020	9/14/2020	5/12/2021	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020	9/14/2020
Sample-->						P11	P11	P11	P12	P12	P13	P13	P14	P14	P15	P15	P16	P16
Sample Depth--(Inches)-->						2-3	10-12	22-24	2-3	10-12	2-3	10-12	2-3	10-12	2-3	10-12	2-3	10-12
Percent Moisture (%)-->						18.7	17.7	9.3	20.5	14.3	20.7	13.8	16.8	3.7	12.1	6.9	15.3	6.6
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL													
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	1.5	0.79 ^{I, J} _{EMPC}	<0.17	<0.51	<0.39	<0.56	<0.44	<0.70	<0.27	<0.39	<0.36	<0.77	<0.50
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	--	11	7.1	1.3 ^J	1.9 ^J	1.1 ^J	1.5 ^J	0.97 ^J	1.5 ^J	<0.30	1.7 ^J	2.5 ^J	2.7 ^J	<0.93
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	--	24	15	1.5 ^J	3.5 ^J	1.9 ^{I, J} _{EMPC}	3.3 ^{I, J} _{EMPC}	2.1 ^{I, J} _{EMPC}	2.9 ^J	0.75 ^J	5.7	4.0 ^{I, J} _{EMPC}	5.0 ^J	<1.7
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	--	100	52	8.7	13	7.4	22	13	13	3.7 ^J	16	18	16	<2.0
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	--	45	25	3.8 ^J	6.7	4.8 ^J	10	6.9	5.9	1.6 ^J	9.7	9.4	10	<1.6
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	--	1,900	880	150	220	120	830	370	220	72	350	370	300	40
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	--	18,000 ^E	7,500	1,100	1,700	920	3,900	2,100	1,800	530	2,500	3,100	2,400	310
Total TCDD	--	ng/kg	--	--	--	21	19	0.57 ^J	8.0	4.2	5.3	4.5	6.9	1.7	1.4	4.8	4.4	<0.50
Total PeCDD	--	ng/kg	--	--	--	86	60	7.6	29	170	12	12	19	4.9	14	14	15	<0.93
Total HxCDD	--	ng/kg	--	--	--	700	380	52	120	64	220	120	100	30	140	140	130	8.1
Total HpCDD	--	ng/kg	--	--	--	3,700	1,700	270	410	240	1,400	660	420	130	690	760	570	74
Furan Congeners																		
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	--	9.1 ^C	8.7 ^C	0.83 ^J	2.2 ^C	1.2 ^C	0.91 ^{I, J} _{EMPC}	1.3 ^V	1.7 ^C	<0.30	2.2 ^C	1.9 ^V	1.1 ^{I, J} _{EMPC}	<0.69
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	--	11	7.4	0.88 ^J	2.0 ^{I, J} _{EMPC}	<1.8	<1.6	<1.4	<1.3	<1.3	2.1 ^J	1.9 ^{I, J} _{EMPC}	<0.74	<1.1
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	--	110	130	15	14	10	10	8.1	4.1 ^J	1.7 ^J	5.4	6.0	2.5 ^{I, J} _{EMPC}	1.0 ^J
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	--	22	17	3.1 ^J	6.6	2.6 ^{I, J} _{EMPC}	4.9 ^J	3.7 ^J	4.9 ^J	2.1 ^J	9.0	9.2	8.3	1.2 ^{I, J} _{EMPC}
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	--	46	32	5.3	20 ^P _{EMPC}	13 ^P _{EMPC}	5.7 ^J	5.8	7.7 ^P _{EMPC}	2.3 ^J	9.3	6.9 ^I _{EMPC}	7.9	<1.2
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	--	56	58	16	7.6	4.1 ^J	7.7	5.9	6.7	0.96 ^{I, J} _{EMPC}	5.5	7.3	5.3 ^J	1.8 ^J
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	--	18	16	2.0 ^J	2.5 ^J	<1.2	<1.5	0.97 ^{I, J} _{EMPC}	<1.4	<0.36	2.2 ^J	2.4 ^J	2.3 ^{I, J} _{EMPC}	<1.3
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	--	540	340	47	95	50	110	89	100	30	120	140	110	15
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	--	38	22	3.3 ^J	5.5 ^J	2.2 ^{I, J} _{EMPC}	5.5 ^{I, J} _{EMPC}	5.5 ^J	5.5 ^J	0.79 ^{I, J} _{EMPC}	6.5	8.4	5.7	<2.8
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	--	840	530	65	130	65	210	140	170	49	230	210	170	23
Total TCDF	--	ng/kg	--	--	--	280	290	33	72	39	34	38	32	7.7	26	27	25	1.9
Total PeCDF	--	ng/kg	--	--	--	1,400	1,500	220	230	160	150	150	87	28	100	92	74	5.0 ^J
Total HxCDF	--	ng/kg	--	--	--	2,100	2,000	130	260	170	230	200	130	42	220	210	180	22
Total HpCDF	--	ng/kg	--	--	--	1,300	890	130	200	100	280	210	220	66	300	310	230	31
Individual Exceedances (DC)			1	1	--	7	5	0	0	0	1	0	0	0	0	0	0	0
Cumulative Hazard Index (DC)			1.0	1.0	--	1.7746	1.4579	0.2136	0.2754	0.1665	0.253	0.181	0.196	0.0428	0.2285	0.2552	0.2148	0.0172
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	--	2.2E-05	1.7E-05	2.5E-06	3.3E-06	2.0E-06	4.2E-06	2.6E-06	2.5E-06	5.8E-07	3.1E-06	3.4E-06	2.3E-06	2.6E-07
Total 2,3,7,8-TCDD Equivalence ¹	--	ng/kg	4.82	21.8	--	108	84	12	16	9.6	21	13	11	2.9	15	16	14	1.2

Notes:

NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet

This site is assessed as Non-Industrial

RCL = Residual Contaminant Level

DC = Direct Contact

ng/kg = Parts Per Trillion (ppt)

< = Concentration Below Laboratory Detection Limit

- = Not Sampled/Collected

- - = No Standard/Not Applicable

TEQ = Toxicity Equivalent Calculations

¹ = TEQ values calculated using the U.S. EPA 2007 values.

TCDD: Tetrachlorodibenzo-p-dioxin

PeCDD: Pentachlorodibenzo-p-dioxin

HxCDD: Hexachlorodibenzo-p-dioxin

HPCDD: Heptachlorodibenzo-p-dioxin

OCDD: Octachlorodibenzo-p-dioxin

TCDF: Tetrachlorodibenzofuran

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Laboratory Qualifiers and Notes:

^J = Estimated Value

_{EMPC} = Estimated Maximum Possible Concentration

^P = PCDE Interference

^I = Interference Present

^V = Results verified by confirmation analysis

^C = Results obtained from confirmation analysis

^D = Results obtained from analysis of diluted sample

^E = Exceeds calibration Range

Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
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Table 1h
Soil Analytical Results
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Collected By-->						REI Engineering, Inc.							
Date-->						5/12/2021	5/12/2021	5/12/2021	5/12/2021	5/12/2021	5/12/2021	5/12/2021	5/11/2021
Sample-->						P17	P17	P18	P18	P19	P19	P20	P20
Sample Depth--(Inches)-->						2-3	10-12	2-3	14-16	2-3	14-16	2-3	12-14
Percent Moisture (%)-->						26.4	16.2	18.6	4.2	25.1	15.9	14.3	3.9
Saturated (S) vs Unsaturated (U)-->						U	U	U	U	U	U	U	U
Dioxin Congeners	CAS Number	Units	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL								
2,3,7,8-TCDD	1746-01-6	ng/kg	4.82	21.8	30.0	0.59 ^{J,I} _{EMPC}	1.2	<2.7 ^D	<0.37	<0.79	<0.32	<3.1 ^D	<0.32
1,2,3,7,8-PeCDD	36088-22-9	ng/kg	4.93	22.3	- -	4.7 ^J	7.6	<1.4 ^D	<0.21	1.1 ^J	0.63 ^J	2.5 ^{J,D}	<0.20
1,2,3,4,7,8-HxCDD	39227-28-6	ng/kg	49.3	223	- -	12	18	5.1 ^{J,D}	<0.46	2.4 ^J	0.87 ^J	3.3 ^{J,D}	<0.37
1,2,3,6,7,8-HxCDD	57653-85-7	ng/kg	49.3	223	- -	46	86	20 ^{J,D}	<0.44	9.4	3.4 ^J	11 ^{J,D}	1.0 ^{J,I} _{EMPC}
1,2,3,7,8,9-HxCDD	19408-74-3	ng/kg	49.3	223	- -	22	38	9.6 ^{J,D}	<0.41	3.9 ^{J,I} _{EMPC}	1.8 ^{J,I} _{EMPC}	5.1 ^{J,D}	0.4 ^{J,I} _{EMPC}
1,2,3,4,6,7,8-HpCDD	35822-46-9	ng/kg	484	2.19E+03	- -	900	1,400	360 ^D	3.9 ^J	180	72	240 ^D	17
OCDD	3268-87-9	ng/kg	1.64E+04	7.44E+04	- -	7,000 ^E	11,000 ^E	2,700	29	1,400	540	1,900 ^D	140
Total TCDD	- -	ng/kg	- -	- -	- -	7.9	8.7	<2.7 ^D	<0.37	5.6	4.0	<3.1 ^D	<0.32
Total PeCDD	- -	ng/kg	- -	- -	- -	40	51	2.4 ^{J,D}	<0.21	11	6.8	7.7 ^{J,D}	<0.20
Total HxCDD	- -	ng/kg	- -	- -	- -	300	480	150 ^D	1.4 ^J	72	28	84 ^D	6.2
Total HpCDD	- -	ng/kg	- -	- -	- -	1,700	2,700	710 ^D	3.9 ^J	330	130	450 ^D	33
Furan Congeners													
2,3,7,8-TCDF	51207-31-9	ng/kg	48.2	219	- -	2.1 ^V	4.2 ^C	<2.5 ^D	<0.69	1.6 ^V	<0.56	<4.0 ^D	<0.50
1,2,3,7,8-PeCDF	57117-41-6	ng/kg	164	744	- -	3.3 ^J	5.2	<2.5 ^D	<0.35	1.2 ^J	0.91 ^J	<2.9 ^D	<0.21
2,3,4,7,8-PeCDF	57117-31-4	ng/kg	16.4	74.4	- -	13	30	17 ^{J,D}	<0.38	3.4 ^J	1.9 ^J	6.7 ^{J,D}	0.43 ^J
1,2,3,4,7,8-HxCDF	70648-26-9	ng/kg	48.5	220	- -	12	22	8.8 ^{J,D}	<0.42	4.2 ^J	2.1 ^J	6.8 ^{J,D}	0.6 ^J
1,2,3,6,7,8-HxCDF	57117-44-9	ng/kg	48.5	220	- -	13	24	11 ^{J,D}	<0.35	3.9 ^J	1.9 ^J	6.9 ^{J,D}	0.38 ^{J,I} _{EMPC}
2,3,4,6,7,8-HxCDF	60851-34-5	ng/kg	49.3	223	- -	21	44	19 ^{J,D}	<0.41	3.2 ^J	1.6 ^J	6.7 ^{J,D}	0.53 ^{J,I} _{EMPC}
1,2,3,7,8,9-HxCDF	72918-21-9	ng/kg	49.3	223	- -	4.9	8.1	<4.6 ^D	<0.33	1.8 ^{J,I} _{EMPC}	0.89 ^{J,I} _{EMPC}	<1.9 ^D	<0.39
1,2,3,4,6,7,8-HpCDF	67562-39-4	ng/kg	490	2.22E+03	- -	210	340	130 ^D	1.5 ^J	62	30	100 ^D	6.5
1,2,3,4,7,8,9-HpCDF	55673-89-7	ng/kg	490	2.22E+03	- -	13	21	8.7 ^{J,D}	<0.57	3.3 ^{J,I} _{EMPC}	1.4 ^J	5.9 ^{J,I,D} _{EMPC}	<0.51
OCDF	39001-02-0	ng/kg	1.64E+04	7.44E+04	- -	380	590	170 ^D	2.1 ^J	120	58	170 ^D	11
Total TCDF	- -	ng/kg	- -	- -	- -	59	100	43 ^D	<0.69	20	11	<4.0 ^D	0.59 ^{J,B}
Total PeCDF	- -	ng/kg	- -	- -	- -	200	360	250 ^D	4.6 ^J	54	23	84 ^D	5.4
Total HxCDF	- -	ng/kg	- -	- -	- -	270	660	210 ^D	2.0 ^J	100	28	160 ^D	10
Total HpCDF	- -	ng/kg	- -	- -	- -	540	880	290 ^D	3.3 ^J	150	130	240 ^D	15
Individual Exceedances (DC)			1	1	- -	1	4	1	0	0	0	0	0
Cumulative Hazard Index (DC)			1.0	1.0	- -	0.5416	0.9879	0.2926	0.0015	0.1259	0.0537	0.2024	0.0106
Cumulative Cancer Risk (DC)			1.0E-05	1.0E-05	- -	7.4E-06	1.3E-05	3.7E-06	2.3E-08	1.7E-06	7.0E-07	2.6E-06	1.4E-07
Total 2,3,7,8-TCDD Equivalence ¹	- -	ng/kg	4.82	21.8	- -	36	63	18	0.063	8.1	3.7	13	0.70

Notes:
NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet
This site is assessed as Non-Industrial
RCL = Residual Contaminant Level
DC = Direct Contact
ng/kg = Parts Per Trillion (ppt)
< = Concentration Below Laboratory Detection Limit
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TCDD: Tetrachlorodibenzo-p-dioxin
PeCDD: Pentachlorodibenzo-p-dioxin
HxCDD: Hexachlorodibenzo-p-dioxin
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OCDD: Octachlorodibenzo-p-dioxin
TCDF: Tetrachlorodibenzofuran
PeCDF: Pentachlorodibenzofuran
HxCDF: Hexachlorodibenzofuran
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Laboratory Qualifiers and Notes:
^J = Estimated Value
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Results reported on a dry weight basis and are valid to no more than 2 significant figures

<i>Italic</i>	= Exceeds NR720 Groundwater Pathway Protection
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Table 2
Toxicity Equivalence Factors
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRTS# 02-37-584785

Compound	Toxicity Equivalence Factors (TEF)
Dioxins	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1
1,2,3,7,8,9-Heptachlorodibenzo-p-dioxin (HpCDD)	0.01
Octachlorodibenzo-p-dioxin (OCDD)	0.0003
Furans	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.1
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.03
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.3
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.1
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.1
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.01
Octachlorodibenzofuran (OCDF)	0.0003

Notes:

TEFs utilized as part of this site investigation were obtained from the U.S. EPA Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds (2010)

Table 3
Applicable WAC Chapter NR720 Standards
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRS# 02-37-584785

Compound	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Protection
Dioxins (ng / kg)			
2,3,7,8-TCDD	4.82	21.8	30
1,2,3,7,8-PeCDD	4.93	22.3	No Standard
1,2,3,4,7,8-HxCDD	49.3	223	No Standard
1,2,3,6,7,8-HxCDD	49.3	223	No Standard
1,2,3,7,8,9-HxCDD	49.3	223	No Standard
1,2,3,7,8,9-HpCDD	484	2.19E+03	No Standard
OCDD	1.64E+04	7.44E+04	No Standard
Furans (ng / kg)			
2,3,7,8-TCDF	48.2	219	No Standard
1,2,3,7,8-PeCDF	164	744	No Standard
2,3,4,7,8-PeCDF	16.4	74.4	No Standard
1,2,3,4,7,8-HxCDF	48.5	220	No Standard
1,2,3,6,7,8-HxCDF	48.5	220	No Standard
2,3,4,6,7,8-HxCDF	49.3	223	No Standard
1,2,3,7,8,9-HxCDF	49.3	223	No Standard
1,2,3,4,6,7,8-HpCDF	490	2.22E+03	No Standard
1,2,3,4,7,8,9-HpCDF	490	2.22E+03	No Standard
OCDF	1.64E+04	7.44E+04	No Standard

Notes:

WAC = Wisconsin Administrative Code

Table 4
WAC Chapter NR720 Exceedances
Riverside Rail Corridor
132 River Street
Wausau, WI 54401
BRRS# 02-37-584785

Compound	WAC Chapter NR720 Non-Industrial Direct Contact RCL Exceedances	Exceedance Count
Dioxins		
2,3,7,8-TCDD	No Exceedances	0
1,2,3,7,8-PeCDD	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), 117 Riv 1 (4-6 inches bls), 117 Riv 2 (4-6 inches bls), N4-2 (0-6 inches bls)^, N4-3 (0-6 inches bls)^, R1 (3-5 inches bls), P1 (7-9 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 and 10-12 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls)	16
1,2,3,4,7,8-HxCDD	No Exceedances	0
1,2,3,6,7,8-HxCDD	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), P1 (7-9 and 22-24 inches bls), P8 (2-3 and 10-12 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls)	9
1,2,3,7,8,9-HxCDD	Culvert In (4-6 inches bls)	1
1,2,3,7,8,9-HpCDD	Culvert In (4-6 inches bls)*, Culvert Out (4-6 inches bls), 117 Riv 1 (4-6 inches bls), 117 Riv 2 (4-6 inches bls), N4-1 (0-6 inches bls)^, N4-2 (0-6 inches bls)^, N4-3 (0-6 inches bls)^, R1 (3-5 inches bls), P1 (2-3, 7-9, and 22-24 inches bls), P6 (2-3 inches bls), P7 (2-3 inches bls), P8 (2-3 and 10-12 inches bls), P9 (2-3 inches bls), P10 (10-12 inches bls), P11 (2-3 and 10-12 inches bls), P13, (2-3 inches), P17 (2-3 and 10-12 inches bls)	22
OCDD	Culvert In (4-6 inches bls), P11 (2-3 inches bls)	2
Furans		
2,3,7,8-TCDF	No Exceedances	0
1,2,3,7,8-PeCDF	N4-2 (0-6 inches bls)	1
2,3,4,7,8-PeCDF	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls)*, 1003 EMT (8-10 inches bls)*, N4-3 (0-6 inches bls)^, P1 (2-3, 7-9, and 22-24 inches bls), P6 (2-3 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 and 10-12 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls), P18 (2-3 inches bls)	15
1,2,3,4,7,8-HxCDF	N4-3 (0-6 inches bls)^	1
1,2,3,6,7,8-HxCDF	No Exceedances	0
2,3,4,6,7,8-HxCDF	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), 1003 EMT (8-10 inches bls), P11 (2-3 and 10-12 inches bls)	4
1,2,3,7,8,9-HxCDF	No Exceedances	0
1,2,3,4,6,7,8-HpCDF	Culvert In (4-6 inches bls), P11 (2-3 inches bls)	2
1,2,3,4,7,8,9-HpCDF	No Exceedances	0
OCDF	No Exceedances	0
Cumulative Hazard Index	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), N4-3 (0-6 inches bls)^	3
Cumulative Cancer Risk	Culvert In (4-6 inches bls), Culvert Out (4-6 inches bls), N4-3 (0-6 inches bls)^, P1 (7-9 inches bls), P8 (2-3 and 10-12 inches bls), P10 (2-3 inches bls), P11 (2-3 and 10-12 inches bls), P17 (10-12 inches bls)	10

Notes:

WAC = Wisconsin Administrative Code

* = Concentration also exceeded the WAC Chapter NR720 Industrial Direct Contact RCLs.

^ = Sample location excavated during redevelopment