From: Luke, Glenn R <Glenn.Luke@wecenergygroup.com>
Sent: Tuesday, June 27, 2023 1:28 PM
To: 'Werner, Leah'
Cc: Krueger, Sarah E - DNR; Staci L Goetz; Korpela, Adrienne/MKE; Dombrowski, Frank J; Lauridsen, Keld B - DNR
Subject: 2023-06-27 Green Bay MGP - OU2 Sediment Stability Monitoring Memorandum
Attachments: 2023-06-27 Green Bay OU2 Sediments Stability Memo FINAL.pdf

Leah –

Please find attached the memorandum *Green Bay OU2 Sediment Stability Monitoring*, dated June 27, 2023. The memorandum was prepared to document post-remedial monitoring activities in OU2 completed by Wisconsin Public Service Corporation (WPSC) and Georgia Pacific in 2022 at the Green Bay Former Manufactured Gas Plant (MGP) Site, Green Bay, Wisconsin.

Please let us know if you have any questions.

Thanks,

Glenn R. Luke, PE
Principal Engineer - Environmental
WEC Energy Group – Business Services
office: 414-221-2577
mobile: 414-732-5819
glenn.luke@wecenergygroup.com

Serving WEC Energy Group, We Energies, Wisconsin Public Service, Michigan Gas Utilities, Minnesota Energy Resources, Peoples Gas, North Shore Gas, Upper Michigan Energy Resources and Bluewater Gas Storage

Wisconsin Public Service Corporation
P.O. Box 19001
Green Bay, WI 54307-9001
www.wisconsinpublicservice.com

June 27, 2023

Ms. Leah Werner
Remedial Project Manager
United States Environmental Protection Agency
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

RE: OU2 Sediment Stability Monitoring Memorandum
Former WPSC Green Bay Manufactured Gas Plant Site, Green Bay, Wisconsin, Wisconsin Public Service Corporation
CERCLA Docket No. V-W-06-C-847, CERCLIS ID – WIN000509948, BRRTS # - 02 05 000254

Dear Ms. Werner:

Please find attached the memorandum *Green Bay OU2 Sediment Stability Monitoring*, dated June 27, 2023. The memorandum was prepared to document post-remedial monitoring activities completed by Wisconsin Public Service Corporation (WPSC) in 2022 at the Green Bay Former Manufactured Gas Plant (MGP) Site, Green Bay, Wisconsin.

The objective of the post-remedial monitoring is to document current conditions in the South Focus Area (SFA) and North Focus Area (NFA) through a hydrographic survey per the *Sediment Cap and Cover Monitoring Plan- Revision 1* (Monitoring Plan), which is included as Appendix M of *Sediments Operable Unit Remedial Investigation (RI) Report- Revision 1* (Ramboll 2021).

As described in the attached memorandum, the sand cover remains in place over the majority of the SFA and based on the results no additional investigation or cap maintenance activities are warranted at this time for the NFA. WPSC plans to collect NFA pore water data in 2024 in accordance with the monitoring plan.

If you have any questions, please don't hesitate to contact me at (414) 221-2156 or via email at frank.dombrowski@wecenergygroup.com.

Sincerely,

Glenn R. Luke, PE
Principal Engineer - Environmental
WEC Energy Group - Business Services

Enclosures: OU2 Sediment Stability Monitoring Memorandum

For distribution to: Ms. Sarah Krueger, WDNR (via email)
Ms. Adrienne Korpela, Jacobs (via email)
Ms. Staci Goetz, Ramboll (via email)
Mr. Frank Dombrowski, WPSC (via email)

RAMBOLL

ENVIRONMENT
& HEALTH

MEMO

Project name	**Green Bay OU2 Sediment Stability Monitoring**
Project no.	**1940101550**
Client	**Wisconsin Public Service**
Memo no.	**1**
Version	**1**
To	**Glenn Luke, PE**
From	**Staci Goetz, PhD, PG and Julie Zimdars, PE**
Copy to	**Frank Dombrowski**
Prepared by	**Staci Goetz**
Checked by	**Abigail Small**
Approved by	**Eric Hritsuk**

June 27, 2023

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1 INTRODUCTION

Ramboll Americas Engineering Solutions, Inc. (Ramboll) has prepared this post-remedial OU2 Sediment Stability Monitoring Memorandum for Wisconsin Public Service Corporation (WPSC) to document the monitoring activities completed during 2022 at the Former Green Bay Manufactured Gas Plant (MGP) Sediments Operable Unit (OU) 2 in the East and Lower Fox Rivers, Green Bay, WI (Figure 1). The objective of the post-remedial monitoring is to document current conditions in the South Focus Area (SFA) and North Focus Area (NFA) through a hydrographic survey per the Sediment Cap and Cover Monitoring Plan- Revision 1 (Monitoring Plan), which is included as Appendix M of Sediments Operable Unit Remedial Investigation (RI) Report- Revision 1 (Ramboll 2021). The hydrographic survey evaluation documents whether the SFA sand cover and the NFA cap remain adequately in-place. Table 1 summarizes the Monitoring Plan from the RI Report – Revision 1 (Ramboll 2021).

2 BACKGROUND

MGP sediment removal activities were conducted in remedial footprints of the East River and Lower Fox River (LFR) during 2018 and 2019 as voluntary early actions, leveraging the resources and infrastructure of the LFR Polychlorinated Biphenyl (PCB) Project. Through agreements with the LFR Remediation LLC (LFRR LLC), the MGP voluntary removal actions were conducted under the umbrella of the LFR PCB project.

The South Focus Area (SFA) remedial action (RA) was completed in the East River in 2018. The SFA Remedial Action Summary Report Revision 2 (OBG 2019) was accepted by the Agency Oversight Team (A/OT, including USEPA, Wisconsin Department of Natural Resources [WDNR], and their oversight contractor Boldt) in July 2019.

Working meetings continued during the execution of the SFA and subsequently for the development of the North Focus Area (NFA) design, which was submitted

in the Addendum to the Final 2019 Update to Phase 2B Remedial Action Work Plan – Manufactured Gas Plant North Focus Area (RAWP Addendum), August 30, 2019 (Tetra Tech et al. 2019a). Subsequently, USEPA provided the LFRR LLC a letter on September 4, 2019 (USEPA 2018) which approved RAWP Addendum (Tetra Tech et al. 2019a). The NFA remedial action is located near the confluence of the East River and the LFR and was completed in 2019.

The NFA Remedial Action Summary Report Revision 2 (NFA RA Summary Report, Ramboll and AnchorQEA 2020) was accepted by the A/OT on July 20, 2020.

2.1 South Focus Area Removal Action

In 2018, adjacent riverbank shoreline soils and bedded soft sediment and clay were removed from the SFA in the East River. Remediation of the dense non-aqueous phase liquid (DNAPL) and polycyclic aromatic hydrocarbons (PAHs) in sediment was performed within a temporary sheet pile turbidity containment area to meet the following remedial action objectives (RAO) and cleanup levels:

- Removal of soft sediment to the underlying clay surface to the extent practicable, with consideration given to stability of bulkheads and shorelines (soft sediment removal).
- Removal of visually identified DNAPL in clay, to the extent practicable, with consideration given to the stability of bulkheads and shorelines (clay removal).
- Removal of visually identified DNAPL in the south shore of the East River, in front of the sheet pile wall installed to support Upland Area 3 excavation.

A 6-inch sand cover was placed inside the containment following removal activities for residuals management. The SFA RA was completed from July 9 to November 13, 2018, as documented in the SFA RA Summary Report Revision 2 (OBG 2019). Observations of DNAPL and 13 total polycyclic aromatic hydrocarbons (Total PAH-13) concentrations in surficial sediments were documented as a part of SFA post-removal sampling for subsequent incorporation into the RI Report (Ramboll 2021).

2.2 North Focus Area Remedial Action

In 2019, remediation of the PCB and MGP residuals in soft sediment and clay was performed in the NFA. The RAWP Addendum (Tetra Tech 2019a) identified target removal elevations to achieve the RAOs. The target removal elevations were based on visual observation of sediment sampling completed in the NFA in 2017 and previous sediment investigations (TetraTech et al. 2019a; Ramboll 2021). Target removal elevations near the bulkhead wall were limited by wall stability, which determined safe dredge elevation (SDE) within about 30-feet of the bulkhead wall. Areas beyond the SDE footprint were sloped 3:1 horizontal to vertical to intersect the target elevations at which DNAPL was identified in native clay. Soft sediment and clay were removed to target elevations and cap construction were performed within a steel sheet pile containment system to prevent releases of suspended dredged residuals and to protect the RA from LFR flows.

Remediation of the PCB and MGP residuals in soft sediment and clay was performed, to the extent practicable and with consideration given to the stability of adjacent bulkheads and shorelines, to meet the following objectives and cleanup levels as stated in the RAWP Addendum (Tetra Tech 2019a):

- Removal of all soft sediment in the NFA footprint
- Removal of all soft sediment between the containment system and the NFA footprint

- Removal of all soft sediment with PAH concentrations above 80 parts per million (ppm)
- Removal of visually identified DNAPL in clay
- Isolation of remaining DNAPL and elevated PAHs in sediment or clay and PCBs in sediment under a chemical isolation and armored cap

The NFA RA was completed from March 25 to November 20, 2019, as documented in North Focus Area Remedial Action Summary Report, Revision 2 (Ramboll and Anchor QEA 2020). Following removal, the NFA cap was placed, which includes two chemical isolation layers, a filter layer, and an erosion protection layer, with portions of the NFA receiving supplemental amendment placement concurrent with the armored cap. Observations of DNAPL and total PAH-13 concentrations in remaining surficial material were documented as a part of post-removal sampling prior to cap construction for subsequent incorporation into the RI Report (Ramboll 2021).

2.3 OU2 Response Action Summary

A summary of removed volumes and materials placed is provided in Table 3 below.

Table 3. Summary of Response Actions and Quantities

Remedial Action Area	Dredged Quantity[1] (cy)	Placed Materials
South Focus Area		
WPSC Shoreline	1,245	0.1 AC clean gravel
East River Soft Sediment	5,246	1.07 AC clean residual sand
East River Clay	1,637	
North Focus Area		
PCB Overburden Material	8,600	375 cy clean sand backfill 1.02 AC GAC sand area
MGP Soft Sediment and Clay	28,900	1.45 AC Organoclay 1.56 AC residual sand 1.27 AC of grouted mattress

[1] SFA sediment and clay were disposed under separate waste profiles. NFA sediment and clay were disposed under the same waste profiles and tracked together. PCB overburden in NFA was managed and disposed by the LFRR LLC.
AC = acre; cy = cubic yard, GAC = granular activated carbon; lf = lineal feet

3 MONITORING METHODS

To demonstrate that the sediment cap in the NFA and sand cover in the SFA remain effective and in-place, monitoring requirements were outlined in Sediment Cap and Cover Monitoring Plan- Revision 1 (Monitoring Plan), which is included as Appendix M of Sediments Operable Unit Remedial Investigation (RI) Report- Revision 1 (Ramboll 2021). Due to observations of sheen in the East River outside of the SFA and NFA in August 2021, RI Report – Revision 2 was paused until additional removal was completed to address the source of the sheen. The Early Action to address the source of sheen was completed in May 2023 and documented separately.

3.1 South Focus Area

A residual sand cover is not an engineering control (Wis. Stat. § 292.01(17m)) and does not require monitoring; however, due to construction limitations resulting in undredged inventory (i.e., dredge refusal on clay hardpan), the Monitoring Plan includes monitoring in the SFA consisting of sand cover/surface sediment monitoring at the request of USEPA (2022). The elements of monitoring are a one-time chemical sampling event and two hydrographic surveys, which have been completed as described below.

3.1.1 Chemical Sampling and Visual Observations of DNAPL

TPAH-13, metals, and PVOC concentrations were measured in surface sediment (0 – 0.5 feet [ft]) and near surface (0.5 ft to 2 ft below sediment surface [bss]) in 2019, one year after remedy completion in accordance with Section 3.1 of the Monitoring Plan (Ramboll 2021). Visual observations of DNAPL were recorded during chemical sampling as documented in the SFA RA Summary Report (OBG 2019) and RI Report (Ramboll 2021).

Comparison of Year-1 (2019) concentrations to Year-0 (2018) show criteria for "Case 2"[1] conditions were met, as summarized in the RI Report – Revision 1. A surface sediment concentration reduction of nearly 90% for PVOCs and TPAH(13) was attained and DNAPL observations were not significant (<25%).

Because the post-construction surface sediment concentrations of PAHs and PVOCs demonstrated an average reduction in concentration of 50% or more and DNAPL observations were not significant (<25%), no further sampling actions are required.

3.1.2 Hydrographic Survey

According to Section 3.1 of the Monitoring Plan (Ramboll 2021) and WDNR guidance, residual sand covers do not require monitoring or maintenance. However, USEPA requested two hydrographic survey monitoring events in comments on the RI Report Revision 1 (USEPA 2022).

Survey is to be completed at the same frequency as for the NFA to document SFA conditions because construction limitations resulted in undredged inventory remaining near the southern SFA footprint limits; therefore, hydrographic survey was performed in 2022, Year-4 post-construction, to follow-up the 2019 (Year-1) survey.

J.F. Brennan Company, Inc. and DoC Mapping were subcontracted by Ramboll on behalf of WPSC to perform a bathymetric and utility survey of the East River on September 26 through September 27, 2022. Survey lines were run at 30 ft intervals with a mounted R2Sonic 2024 multibeam echosounder, a mounted Innomar sub-bottom profiler, and a towed Geometric G882 magnetometer sensor run in

[1] Case 2: The surface sediment concentration for total PAHs or PVOCs is greater than RAF screening levels at the Year 1 monitoring period- Perform a comparison of 2018 post-construction concentrations to Year 1 concentrations. If the comparison between Year 1 and post-construction surface sediment demonstrates an average reduction in surface sediment concentration of 50% or more for total PAHs and PVOCs, no further action is required so long as DNAPL observations are also not significant (<25%). If the comparison does not demonstrate attainment of an average 50% reduction in surface sediment concentration for total PAHs and PVOCs, then consider analytical monitoring Year 5.

tandem. Data was collected in SonarWiz7. Multibeam data was gridded at 1-foot and 0.5-foot intervals to provide detailed imagery of the riverbed.

3.2 North Focus Area

According to the Monitoring Plan, monitoring in the NFA will consist of hydrographic survey monitoring and porewater monitoring. The Monitoring Plan includes a decision tree that presents the duration of monitoring, depending on the monitoring results.

3.2.1 Hydrographic surveys

Hydrographic survey is to be performed per the Construction Quality Assurance Project Plan (Tetra Tech et al. 2015), as described in the Monitoring Plan. Additionally, cap monitoring will be conducted one and four-years post-construction and as required to support future Five Year Reviews. However, cap monitoring was performed in 2022, which was Year-3 post-remedy under the Lower Fox River Cap Operation, Monitoring, and Maintenance Plan[2] (Tetra Tech et al. 2019b).

Bathymetric survey data were collected by Georgia Pacific's contractor, J.F. Brennan, in the NFA in October 25 through 26, 2022. Hydrographic data was collected using a multi-beam echosounder operating at 400 kHZ with 200% overlap in coverage. Real-Time Kinematic (RTK) GPS was used for positioning and elevations. Final output was delivered using a 1-ft by 1-ft grid with mean value point.

3.2.2 Porewater sampling

Porewater sampling will be conducted five-years post-construction (in 2024) using solid-phase microextraction (SPME) contained within passive sampling devices (PSDs) to measure PAH concentrations.

4 RESULTS

4.1 South Focus Area

Figure 2 presents the 2022 SFA hydrographic survey. The channel thalweg (deepest portion) runs from the southeast to the northwest through the midportion of the SFA with the riverbanks on either side. Channel elevations range from a depth of 566 feet in the North American Vertical Datum of 1988 (NAVD88) in the deepest portion of the channel thalweg to the shallowest elevations 577 feet NAVD88, located near the riverbanks. Figure 3 presents a comparison of the 2022 (Year-4) survey to the 2019 (Year-1) survey. The comparison evaluates where both years had survey coverage to document conditions in the SFA.

The results of the Year-1 to Year-4 comparison indicate the following:

- Sediment has aggraded (deposited >0.1 feet change) since 2019 throughout much of the SFA. This represents 65% of the area (42,292 square feet of 65,475 square feet of SFA footprint with both years' survey coverage). The greatest deposition occurred near the left (northwest) bank toward the downstream end of the SFA cover placement area, shown in blue on Figure 3.

[2] Until a final decision is made by the Agencies regarding the cap as part of the MGP final site remedy and a legally enforceable document under CERCLA authority transfers liability for the NFA amended armored cap to WPS, the Lower Fox River Cap Operation, Monitoring, and Maintenance Plan (COMMP) requirements of this cap are the responsibility of the PCB project's RPs subject to their respective CDs.

- Sediment has scoured (eroded <-0.1 feet change) since 2019 adjacent to the riverbanks in the SFA. This represents 21% of the area (13,508 square feet), shown in yellows and reds on Figure 3. The left bank, toward the south end of the SFA cover placement area experienced scour immediately adjacent to the riverbank.
- Another 15% (9,676 square feet) of the SFA area is essentially unchanged since 2019 (>-0.1 feet and <0.1 feet).

Overall, the hydrographic survey documented the conditions of the SFA cover are net depositional with scour limited to the shallowest areas near the riverbanks. No additional monitoring is required. The sand cover remains in place over the majority of the SFA.

4.2 North Focus Area

Figure 4 presents the 2022 NFA hydrographic survey. The NFA lies adjacent to the Georgia Pacific (GP) bulkhead wall with the deepest elevations inside the cap footprint occurring around 552 feet NAVD88 and the shallowest elevation of 578 feet NAVD88 occurs adjacent to the bulkhead near the GP rail line. Figure 5 presents a comparison of the 2022 survey (Year 3) to the 2019 (Year-0) survey.

The results of the Year-0 to Year-3 comparison indicate the following:

- Sediment has aggraded (deposited) since 2019 throughout areas within and beyond the extent of the armored cap as shown on Figure 5 in blue. This represents 72% of the NFA area (71,436 square feet of 98,877 square feet of NFA footprint with both years' survey coverage).
- Sediment has scoured (eroded) or the cap has settled since 2019 in areas within and beyond the extent of the armored cap as shown on Figure 5 in shades of cream to red. The cap settlement or scour is less than 12-inches (1-foot) over an area of 12,685 square feet (13%). The extent of more than a -1-foot change is 170 square feet. This represents 0.2% of the NFA area.
- The remaining 15% did not have significant change (erosion or deposition).

Per the Monitoring Plan, a significant differential lowering in cap elevation (12-inches or greater) over a contiguous area larger than 3,050 square feet (5% of the cap area), will trigger additional investigation to determine if cap maintenance activities are warranted.

Overall, the NFA cap elevation has settled, but less than 12-inches and is limited in area. Isolated scour has occurred over much less than 5% of the cap area. Based on these results, no additional investigation or cap maintenance activities are warranted. Porewater monitoring is scheduled for 2024, per the Monitoring Plan.

5 CONCLUSIONS

Overall, the hydrographic survey documented the conditions of the SFA cover are net depositional with scour limited to riverbanks. The sand cover remains in place over the majority of the SFA.

The NFA is net depositional within and outside the cap footprint. The cap placed in 2019 remains intact and although some settlement has occurred, it is less than 12-inches and limited in area. Isolated scour has occurred over much less than 5% of the cap area. Based on these results, no additional investigation or cap maintenance activities are warranted at this time.

WPSC plans to collect NFA pore water data in 2024 in accordance with the Monitoring Plan.

REFERENCES

OBG. 2019. *Former Green Bay MGP Site South Focus Area Remedial Action Summary Report, Revision 2*, August 23, 2019.

Ramboll and Anchor QEA 2020. *North Focus Area Remedial Action Summary Report, Revision 2*. June 26.

Ramboll 2021. *Sediments Operable Remedial Investigation Report – Revision 1. Former Green Bay Manufactured Gas Plant Site Sediments, Operable Unit 2, Green Bay, Brown County, Wisconsin.* February 19, 2021

Tetra Tech et al. 2015. *Construction Quality Assurance Project Plan for Remedial Action of Operable Units 4 and 5 in 2014 and Beyond, Lower Fox River and Green Bay Site; Brown, Outagamie and Winnebago Counties, Wisconsin*. April.

Tetra Tech et al. 2019a. *Lower Fox River Remedial Design; 2019 Update to Phase 2B Remedial Action Work Plan. Prepared for submittal to Wisconsin Department of Natural Resources and the United States Environmental Protection Agency. August 2019.*

Tetra Tech et al. 2019b. Tetra Tech EC, Inc., Anchor Environmental, LLC J.F. Brennan Company, Inc., Boskalis Dolman. 2019b. *Lower Fox River Remedial Design; Cap Operations, Maintenance, and Monitoring Plan*. Prepared for Appleton Papers Inc., Georgia-Pacific Consumer Products LP, and NCR Corporation. February.

United States Environmental Protection Agency (USEPA). 2018. Joint PCB and MGP-related Work Being Conducted Under the Umbrella of the Lower Fox River PCB Cleanup Project, Green Bay, Wisconsin. September 24.

USEPA. 2019. Approval of the Addendum to the Final 2019 Update to Phase 2B Remedial Action Work Plan – Manufactured Gas Plant North Focus Area (RAWP Addendum), submitted August 30, 2019. September 4.

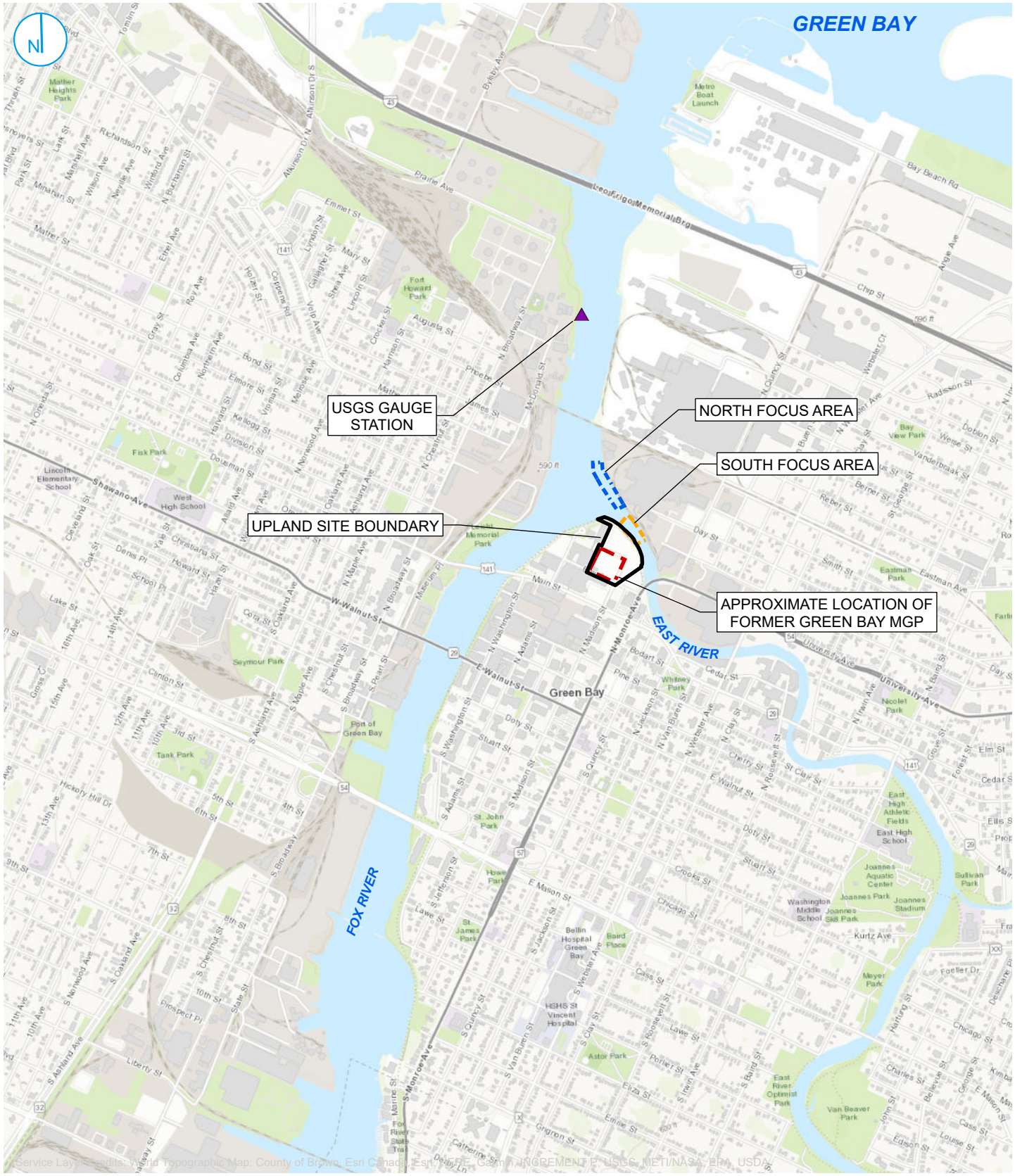
USEPA. 2022. Review of the Remedial Investigation Report – Revision 1, Sediments Operable Unit 2, Former Green Bay Manufactured Gas Plant Site, Green Bay, Wisconsin. January 6, 2022.

ATTACHMENTS

Figure 1 Site Location Map
Figure 2 South Focus Area – September 2022 Hydrographic Survey
Figure 3 South Focus Area – Scour Evaluation
Figure 4 North Focus Area – October 2022 Hydrographic Survey
Figure 5 North Focus Area – Scour Evaluation

Table 1 Summary of Former Green Bay MGP OU2 Long Term Monitoring Plan

FIGURES



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PROJECT: 73251 | DATED: 5/23/2023 | DESIGNER: stolzsd

KEY MAP

0 1,000 2,000 Feet

Map Scale: 1:1:24,000;
Map Center: 88°0'52"W 44°31'3"N

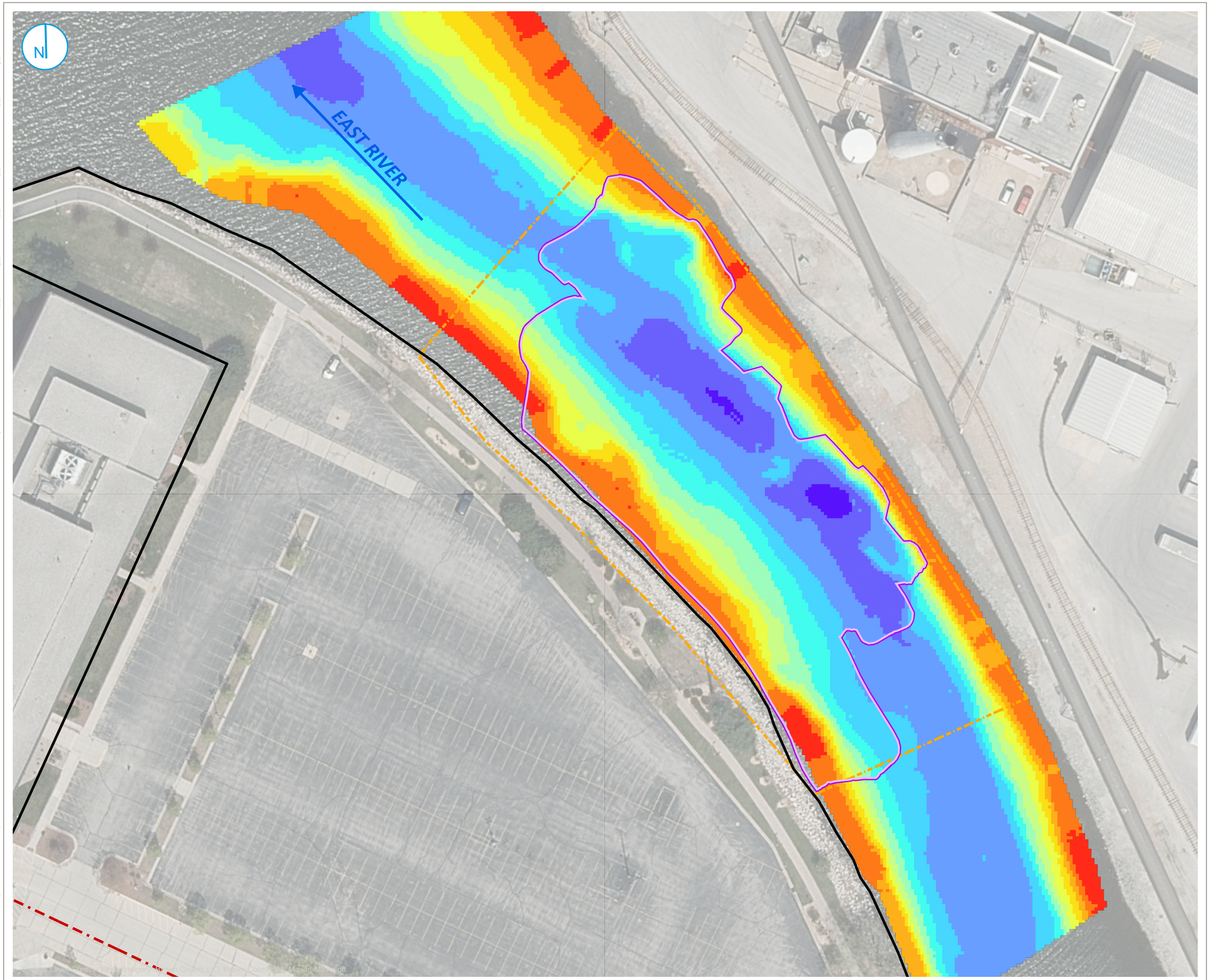
SITE LOCATION MAP

SEDIMENTS STABILITY MONITORING EVALUATION
FORMER GREEN BAY MANUFACTURED GAS PLANT SITE SEDIMENTS, OPERABLE UNIT 2
WISCONSIN PUBLIC SERVICE CORPORATION
CITY OF GREEN BAY, WISCONSIN

FIGURE 1

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL



SOUTH FOCUS AREA - SEPTEMBER 2022 HYDROGRAPHIC SURVEY

SEDIMENTS STABILITY MONITORING EVALUATION
FORMER GREEN BAY MANUFACTURED GAS PLANT SITE SEDIMENTS, OPERABLE UNIT 2
WISCONSIN PUBLIC SERVICE CORPORATION
CITY OF GREEN BAY, WISCONSIN

FIGURE 2

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

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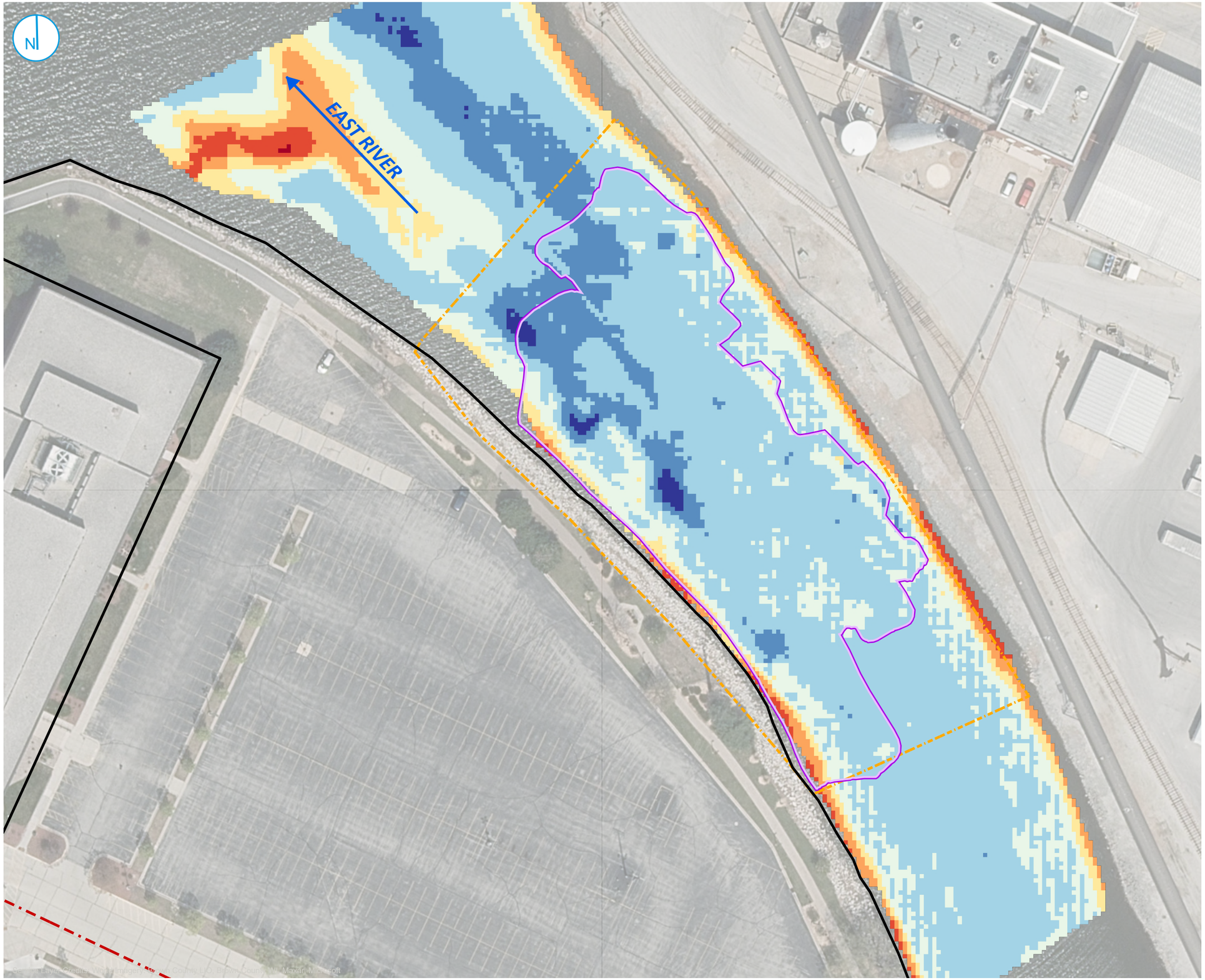
PROJECT: 1690000XXXX | DATED: 6/9/2023 | DESIGNER: STOLZSD



2018 REMEDIAL FOOTPRINT AND SAND COVER
UPLAND SITE BOUNDARY
FORMER MGP SITE
SOUTH FOCUS AREA

BATHY SURFACE COMPARISION - 2022 MINUS 2019 (FEET)
-4.1 - -4
-3.9 - -3
-2.9 - -2
-1.9 - -1
-0.9 - 0
0.1 - 1
1.1 - 2
2.1 - 3

NOTES:
POSITIVE NUMBERS INDICATE DEPOSITION, NEGATIVE NUMBERS INDICATE SCOUR.

0 30 60
US Feet

SOUTH FOCUS AREA - SCOUR EVALUATION

SEDIMENTS STABILITY MONITORING EVALUATION
FORMER GREEN BAY MANUFACTURED GAS PLANT SITE SEDIMENTS, OPERABLE UNIT 2
WISCONSIN PUBLIC SERVICE CORPORATION
CITY OF GREEN BAY, WISCONSIN

FIGURE 3

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1690000XXXX | DATED: 6/9/2023 | DESIGNER: STOLZSD

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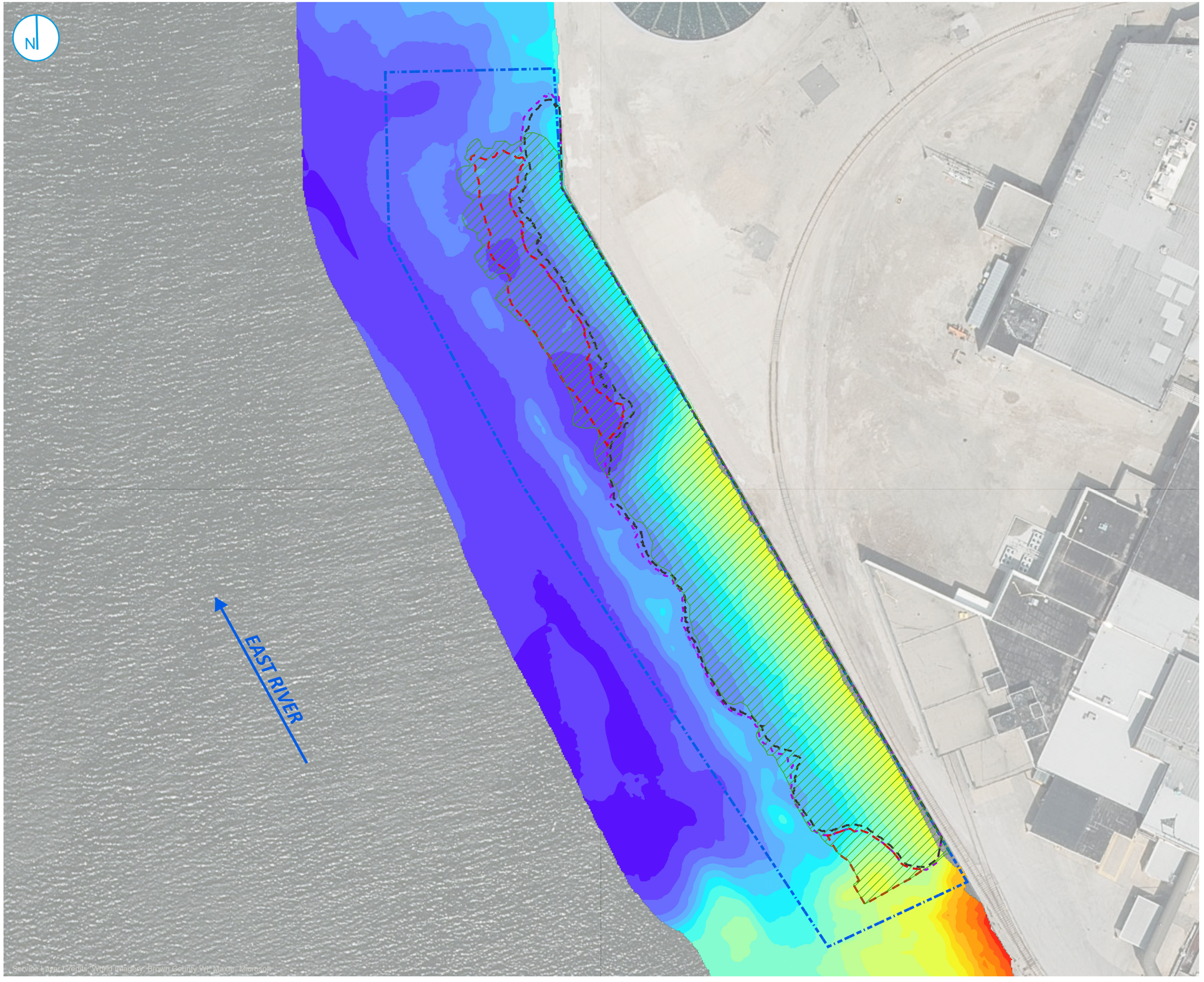


ARMORED MATTRESS EXTENT
BENTHIC SAND LAYER
ROCK BUTTRESS
SAND BUTTRESS
NORTH FOCUS AREA

HYDROGRAPHIC SURVEY (FEET, NAVD88)
- 550.9 - 552
- 552.1 - 554
- 554.1 - 556
- 556.1 - 558
- 558.1 - 560
- 560.1 - 562
- 562.1 - 564
- 564.1 - 566
- 566.1 - 568
- 568.1 - 570
- 570.1 - 572
- 572.1 - 574
- 574.1 - 576
- 576.1 - 578
- 578.1 - 580
- 580.1 - 582
- 582.1 - 584
- 584.1 - 586
- 586.1 - 588
- 588.1 - 590

0 30 60
US Feet

NORTH FOCUS AREA- OCTOBER 2022 HYDROGRAPHIC SURVEY

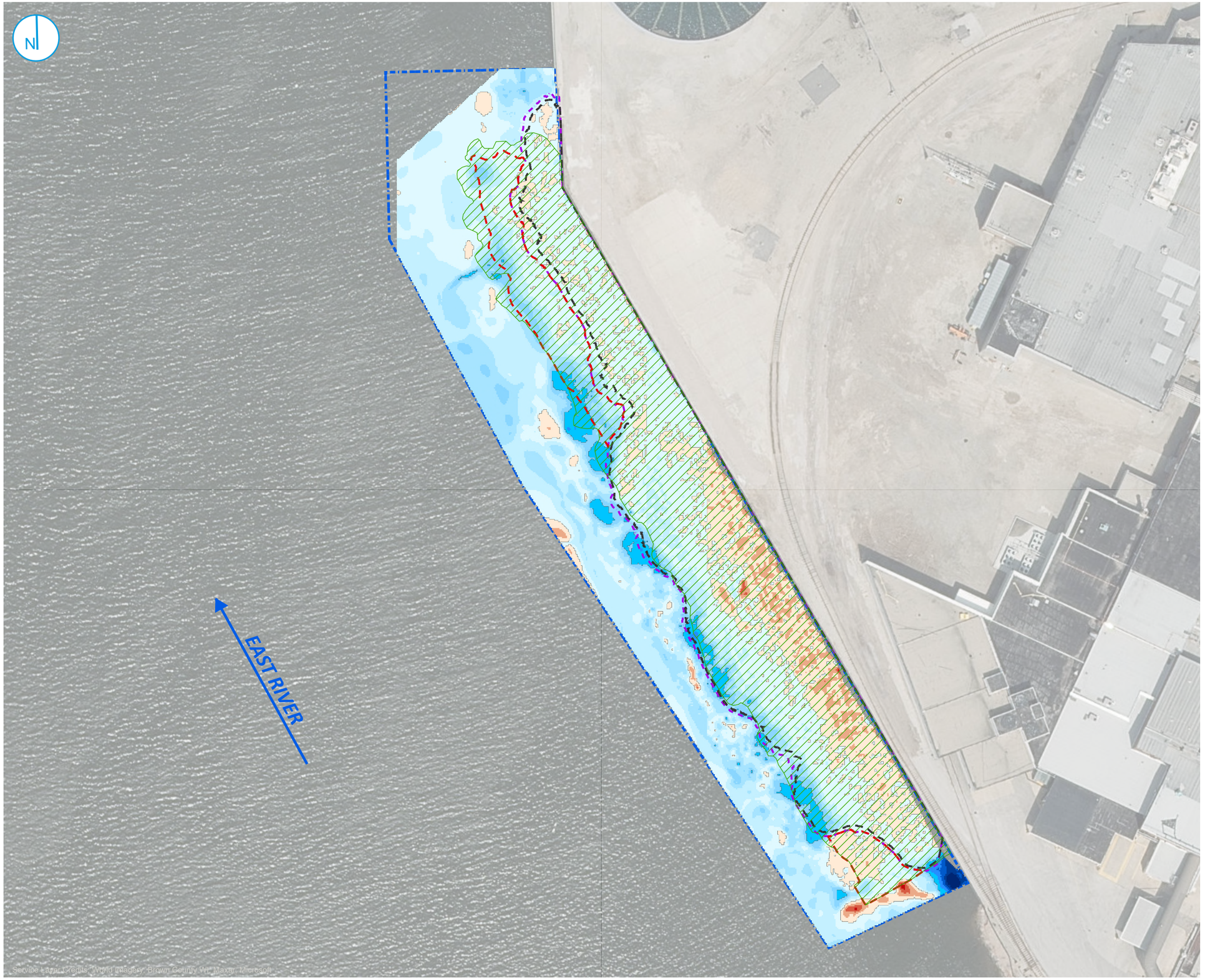
SEDIMENTS STABILITY MONITORING EVALUATION
FORMER GREEN BAY MANUFACTURED GAS PLANT SITE SEDIMENTS, OPERABLE UNIT 2
WISCONSIN PUBLIC SERVICE CORPORATION
CITY OF GREEN BAY, WISCONSIN

FIGURE 4

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

PROJECT: 169000XXXX | DATED: 6/9/2023 | DESIGNER: STOLZSD



ARMORED MATTRESS EXTENT
BENTHIC SAND LAYER
ROCK BUTTRESS
SAND BUTTRESS
NORTH FOCUS AREA

BATHY SURFACE COMPARISION - 2022 MINUS 2019 (FEET)
-1.83 - -1.5
-1.49 - -1
-0.99 - -0.5
-0.49 - 0
0.05 - 0.5
0.51 - 1
1.01 - 1.5
1.51 - 2
2.1 - 3
3.1 - 4
4.1 - 5
5.1 - 6
6.1 - 7
7.1 - 8

NOTES:
POSITIVE NUMBERS INDICATE DEPOSITION, NEGATIVE NUMBERS INDICATE SCOUR AND/OR SETTLEMENT.

0 30 60
US Feet

NORTH FOCUS AREA- SCOUR EVALUATION

SEDIMENTS STABILITY MONITORING EVALUATION
FORMER GREEN BAY MANUFACTURED GAS PLANT SITE SEDIMENTS, OPERABLE UNIT 2
WISCONSIN PUBLIC SERVICE CORPORATION
CITY OF GREEN BAY, WISCONSIN

FIGURE 5

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

Y:\GIS\Projects\15\15841MXD\Sediment\Stability_Monitoring_Eval\Stability_Monitoring_Evaluation\Stability_Monitoring_Evaluation.aprx
PROJECT: 1690000XXXX | DATED: 6/9/2023 | DESIGNER: STOLZSD

TABLES

Table 1. Summary of Former Green Bay MGP OU2 Long Term Monitoring Plan

Wisconsin Public Service Corporation
Former Green Bay Manufactured Gas Plant Sediments
700 N Adams St, Green Bay, Wisconsin
BRRTS# 02-05-000254 USEPA# WIN000509948

Monitoring Element	Frequency	Years	Events completed to date	Completed By/To Be Completed By	Monitoring Objective
North Focus Area Cap[1]					
Hydrographic survey/ Bathymetry	Yr 0	2019	2019	Georgia Pacific (GP)[3]	Confirm the integrity of the grouted armored mattress cap.
	Yr 3	2022	October 25-26, 2022	GP	
SPME porewater	Yr 5	2024	--	TBD	Evaluate the effectiveness of the chemical isolation layer portion of the NFA cap at sequestering PAHs.
Sourth Focus Area					
Hydrographic survey/ Bathymetry[2]	Yr 1	2019	2019	Wisconsin Public Service Corporation (WPSC)[4]	Document SFA conditions due to undredged inventory.
	Yr 4	2022	September 26-27, 2022	WPSC	
Sediment Chemistry	Yr 1	2019	2019	WPSC[5]	Evaluate reduction in surface sediment concentrations.

[1] As provided in Appendix M of the Former Green Bay MGP OU2 RI Report, until a final decision is made by the Agencies regarding the cap as part of the MGP final site remedy and a legally enforceable document under CERCLA authority transfers liability for the NFA amended armored cap to WPS, the Lower Fox River Cap Operation, Monitoring, and Maintenance Plan (COMMP) requirements of this cap are the responsibility of the PCB project's RPs subject to their respective CDs.

[2] Yr 0 bathymetry could not be completed because river ice precluded survey in 2018 so the survey was completed in Spring of 2019 as soon as river ice broke up. This puts the SFA bathymetric survey schedule on the same schedule as the NFA.

[3] Reported in NFA Removal Action Summary Report, Rev 2 (June 2020)

[4] Reported in SFA Removal Action Summary Report, Rev 2 (August 2019)

[5] Reported in OU2 RI Report, Rev 1 (February 2021)